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ORIGINAL

AN EVALUATION OF THE SEVEN CITY
HOME MAINTENANCE DEMONSTRATION
FOR THE ELDERLY: FINAL REPORT
(Draft)

Volume I

urban systems research & engineering, inc.

I

cambridge, massachusetts & washington, d.c.

AN EVALUATION OF THE SEVEN CITY HOME MAINTENANCE DEMONSTRATION FOR THE ELDERLY: FINAL REPORT
(Draft)

Volume I

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This is considered a final report by the author.

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EXECUTIVE SUMMARY

The Demonstration and the Evaluation

During the late 1970s, the use of home maintenance programs emerged as a possible policy alternative for elderly housing. Home maintenance programs have been advocated as one policy response to institutional care, providing maintenance and minor repair services which might enable elderly homeowners to postpone or forego more expensive shelter decisions.

A second reason for advocating home maintenance programs for the elderly has been their potential to stabilize or preserve a segment of the housing stock. If left unattended, these minor deficiencies are likely to become more serious problems affecting the conditions of the home.

Beginning in 1980, the Office of Policy Development and Research at HUD developed a demonstration designed to test the administrative feasibility and cost effectiveness of home maintenance programs for elderly homeowners and assess their effectiveness as strategies to promote continued elderly homeownership. The Office of Policy Development and Research also sponsored a concurrent evaluation of the Demonstration, conducted over the life of the demonstration by Urban Systems Research & Engineering, Inc. The evaluation had four overall objectives:

- to determine the maintenance and minor repair needs of the target population;
- to determine appropriate delivery systems to provide maintenance services;
- to determine costs associated with the delivery systems; and
- to determine benefits to the target population.

- Inspections were typically straightforward and, aside from scheduling constraints, experienced few problems.

- Subcontractors were used to varying degrees in all but one program. Subcontractors are used in approximately 50 percent of the comparable non-Demonstration programs surveyed. While repair crews generally performed the full range of repair tasks, subcontractors were more likely to be assigned specialized repair activities, such as plumbing and electrical work.

- Agency work crews, utilized by six of seven programs, were the source of numerous problems pertaining to repair crew recruitment and retention, scheduling, and performance. As scheduling and personnel problems became resolved, work crew problems subsided noticeably. In general, however, pay scales for repair crew staff were substantially lower than private sector wages.

- Backlogs constitued significant problems for most programs and occured when repair work was unable to keep pace with enrollment and inspections.

- The programs typically chose not to impose strict limitations to callback services. In general, clients did not appear to abuse the callback services. To contain callback problems, several programs institued post-repair inspections intended to improve quality control.

- The provision of client referral assistance is determined, in part, by parent agency orientation, prior experience, and the availability of other elderly resources in the target areas.

Client Characteristics

Overall, the most common household is a single-person household composed of a widowed female. The typical head of household is 72 years old, has less than a high school education, is retired or disabled, and receives social security income. Almost half of the household heads have some mobility problem, including problems getting into and out the home or bath or problems with stairs. Approximately two-thirds of the households have at least one member with a health problem. The average household income is about $540 per month, and approximately a third of this is spent on housing, utilities, and service costs.

Characteristics of Homes Served

- Most homes were detached (72.1 percent), single unit (79.5 percent) structures of wood frame construction (75.4 percent);

- Home exteriors were most likely to be wood (28.9 percent) or brick (23.5 percent);

- Homes typically had from four to seven rooms; 43.4 percent had four to five rooms while 38.0 percent have six to seven rooms;

- A majority of homes did not have complete sets of storm doors (54.8 percent) and storm windows (58.4 percent) and were not equipped with wall (90.7 percent), basement/floor (90.2 percent), or attic/ceiling (74.4 percent) insulation;

- Homes were most likely to have been built between 1920 and 1939 (38.5 percent). Most homes have been built between 1900 and 1959 (88.4 percent);

- The estimated mean property value for a home was $38,206.

These average client housing characteristics mask the range of housing types served by the demonstration. This range is notable and suggests that housing owned by the elderly cannot be easily stereotyped. Instead, regional and even neighborhood characteristics appear to affect the type of housing maintained by elderly clients.

Client Home Repair Needs

- At every site there was ample evidence of need for minor repair services for the elderly. For all sites there was an average of 12 repair needs per client, and the average varies from six repairs per client in Hot Springs to 26 in San Francisco. However, cross-site comparisons are not good indications of relative need. The number and type of needed repairs identified is undoubtedly influenced by the experience of the inspectors.

- Most repair needs are minor, costing less than $300 to fix, and most were repairs to the interior of the home.

- Generally, clients stated that they had more repair needs than were identified by inspectors. But client and inspector priorities agreed quite closely. The one exception was in the area of weatherization; clients expressed greater need for weatherization work than was identified by inspectors.

- Although client and housing characteristics explain repair needs at the sites, it is difficult to identify the impact of single characteristics because of the existence of multicollinearity.

- Housing value is significantly affected by repair needs, but these needs represent aspects of housing quality more complex than just the implied repair cost. Analysis of the determinants of the number of needed repairs and the effect of these on housing value indicate that housing characteristics represent different aspects of housing services and quality at different sites.

<u>Repair Services and Costs</u>

- Many different kinds of repairs are made, but a large proportion are to the interior of the home and to plumbing, followed by door, window and weatherization repairs. A significant number of these are concerned with safety and security. A relatively large number of interior repairs involve the installation of grab bars and smoke alarms, and a high proportion of repairs to doors involve the installation of deadbolt locks.

- Due to limited resources, only a fraction of repair need could be dealt with by the Demonstration.

- Besides the general repairs made, about six percent of all repairs are callbacks and emergencies. Callbacks are repairs to remedy deficiencies in original work, new repairs, and repairs not otherwise specified.

- A measure of the quality of repair work is the proportion of all repairs--general, callback and emergencies--which are callbacks to rectify inadequacies in original work. The overall quality of Demonstration repair work was exceptional. In the first year these are 1.5 percent of all repairs, and they increase to 3.0 percent in the second year.

- Average costs per repair vary from a low of $20 for Greensboro to a high of $175 for San Francisco, with both San Francisco and Boston averaging more than $100 per repair over the course of the Demonstration. Except for San Francisco and Boston, the average repair costs for the different sites are similar.

- Variations in average repair costs are due primarily to variations in the amounts of labor and materials used, which is a measure of the magnitude of the repairs done. Over half is explained by variations in labor costs per repair, and almost all of the labor cost variations are due to variations in the amount of labor used. The primary exception is San Francisco. Over half of San Francisco's higher labor costs are due to higher wages. and this results equally from using subcontractors for all work and from being a high wage area.

- When the average cost of repairs are adjusted for price differences across sites, the results vary from 21 dollars for Greensboro to 97 dollars for Boston.

- Real repair services per client vary from a low of 99 dollars for Hot Springs in the first year to a high of 314 dollars for San Francisco in the second year of the Demonstration. Over all sites repair services per client increase from the first to the second year, but this is due to the large increase for San Francisco.

- Five of the seven sites decrease the number of repairs provided from the first to the second year, and four of seven sites decrease or hold constant the magnitude of the repairs.

- Overall, San Francisco and Boston provided the highest levels of repair services per client, and they were also below average in the proportion of repairs due to callbacks to rectify previous work. In contrast, Hot Springs provided the lowest levels of service, resulting from providing the fewest repairs per client and repairs of about average magnitude. This site also had the highest percentage of repairs needed to remedy problems with previous work. Philadelphia provided the second lowest level of services per client, but was about average with respect to callbacks to fix previous work. It should be noted that Philadelphia and Hot Springs are the two sites whose organizations had no previous housing experience. The other three sites fell between these two groups.

The Costs of Service Delivery

- During the two year evaluation period, Demonstration sites spent, on average, $183,724. On average, sites expended $97,320 or 53 percnt of their program funds on direct maintenance and repair related costs. An additional $35,845 or 20 percent of the program total was expended on non-repair services such as inspections, referrals, and service support.

- Administrative expenses consume approximately one quarter of all Year Two Demonstration expenditures. On average, Demonstration sites spent $51,430 or 28 percent of their total funds on administrastion related costs.

Client Attitudes and Impressions

- Based solely on the opinions of elderly clients, the Elderly Home Maintenance Demonstration was rated an unequivocal success. Clients are overwhelmingly satisfied with the home repair program; Over 90 percent of those interviewed reported that they were happy with the repairs that were made and would recommend the program to other elderly homeowners.

- Based on client perceptions about their homes, there is a very real need for a program of this nature. Most respondents said that they did not want to move, despite mixed feelings about the condition of their homes and serious concerns about their declining ability to maintain their homes and keep up with rising housing costs. Since the Demonstration was designed to address all these concerns, one would expect that the program would have a very positive effect on the lives of these elderly homeowners.

- In fact, the program appears to h

The Sponsor Agencies

- The seven sponsoring agencies differed according to the type of agency, the age of the agency, the size of staffs, and the size of annual agency budgets. Prior experience and existing capacity to develop and administer elderly home maintenance programs also varied among the seven program grantees.

- The agencies generally agreed that their most important demonstration objective has been to enable elderly homeowners to remain in their homes. In general, agencies perceived the demonstration first, as a service for clients and only second as a innovative experiment in service delivery or housing stock maintenance.

- The target areas selected by the seven agencies are divided between jurisdiction-wide and neighborhood targeted geographic areas.

- A survey of non-demonstration home maintenance programs also found a wide variety of agency characteristics. Many types of agencies, from private non-profit organizations to state and local government agencies, have provided home repair services. Programs also varied widely in terms of age, staff, size, and objectives. Interestingly, both non-demonstration and demonstration agencies report that helping the elderly to remain in their homes was their most important program objective.

Program Organization and Service Delivery Procedures

- Despite general Demonstration guidelines, the organizational models used by the seven sites exhibited considerable varia-

- A key to the success of a repair program for the elderly is trust. The elderly are often suspicious and frightened, especially when dealing with repair people. They are concerned that they will be cheated, and many have been. The sooner this trust is developed, the sooner elderly clients can be attracted to the program. In the demonstration most of the sites had problems enrolling clients early in the first year. Once they established their credibility and the word got around, attracting clients was not a problem.

- The second key to success is that the program should serve as one source from which elderly home owners can obtain a wide range of repair services. The program serves as a clearinghouse for the various sources of repair services.

- A third characteristic for a successful program is experience, at least in the short run. One distinguishing feature of the sites providing the lowest levels of service is their lack of previous experience with housing programs. However, inexperience may increase startup costs more than affect the long-run performance of an agency.

- A fourth characteristic for a successful program is low cost. Program clients stated that the major reason they would not have made the repairs themselves was cost. Regardless of the form taken by a program, costs must be kept low. Clients who stated they would opt for a program which provided labor while they paid for materials also added that this is an attractive alternative because labor costs are so high.

Implications for Elderly Housing Policy

- Elderly home maintenance programs are important components of long term care strategies which emphasize appropriate placement.

- Elderly home maintenance programs create special problems for provider agencies due to their dual housing and social service orientation.

- Existing elderly home maintenance programs have very clear limitations that must be accommodated or at least recognized by policy strategists.

Chapter 1

INTRODUCTION

For generations, Americans have been formulating strategies to house the elderly. The resulting shelter approaches have been wide ranging: private rest homes, nursing homes, elderly public housing, Section 202 elderly housing, Section 8 elderly housing projects, and congregate housing. The rising costs of institutional care, however, have been a factor in the recent redirection of public resources toward non-institutional approaches to elderly shelter needs. The concepts of long-term care and appropriate placement have assumed a new respectibility in this period of fiscal constraint. It is in this context that home maintenance programs have been advocated as one policy response to institutional care, providing maintenance and minor repair services which might enable elderly homeowners to postpone or forego more expensive shelter decisions.

A second reason for advocating home maintenance programs for the elderly has been their potential to stabilize or preserve a segment of the housing stock. Without program intervention, elderly homeowners may be unable to make the necessary maintenance repairs to their homes. If left unattended, these minor deficiencies are likely to become more serious problems affecting the conditions of the home.

A number of observations and trends have influenced efforts to devise appropriate strategies to meet the shelter needs of elderly households.

- Large proportions of elderly (73 percent) own their homes. Even among elderly households with incomes below the poverty level, over 60 percent own their homes;

- Most elderly own their homes free and clear. Nationally, 84 percent of all elderly owner occupants own their homes free and clear;

- A majority of elderly households have incomes less than half the poverty level. Many of these households were able to purchase their homes when their real incomes were higher and when the real cost of housing was lower than it is today;

- While many elderly households have built up a significant amount of equity in their homes, that equity would be quickly consumed in today's market were they to sell their homes and move elsewhere;

- Keeping up with necessary maintenance and repairs on their homes is a burden for many elderly homeowners. When it comes to allocating limited incomes between mandatory and optional purchases, maintenance and repairs which are not immediately necessary are often deferred. This can have a negative impact on the overall condition of the neighborhood;

- Minor maintenance and repairs are sometimes not done because of the failing health of the elderly homeowner, or due to difficulties in securing somebody trustworthy who will do the work at a reasonable cost.

Beginning in 1980, the Office of Policy Development and Research at HUD developed a demonstration designed to test the administrative feasibility and cost effectiveness of home maintenance programs for elderly homeowners. The objective is to test their effectiveness as strategies to promote continued homeownership among the majority of elderly who own and occupy their homes.

Unlike traditional housing rehabilitation programs, home maintenance programs focus on minor repairs and maintenance related problems not typically covered by traditional housing rehabilitation programs. Such problems might include minor plumbing, security concerns, minor painting and carpentry. Repair work is usually small, ranging from such simple tasks as changing faucet washers to repairing damaged windows, or replacing deficient electrical outlets. Such repair deficiencies would normally be repaired by most homeowners. Elderly homeowners, however, are often unable to keep up with their home maintenance needs due to fixed limited incomes and deteriorating physical health.

The two year Demonstration extended financial assistance to program sponsors in seven cities: Cincinnati, Cleveland, Boston, Greensboro, Hot Springs (Arkansas), Philadelphia, and San Francisco. Each site received matching funds from one or more private foundations. The seven sponsor agencies represent an assortment of organization types: nonprofit housing agencies, nonprofit social service agencies, a public housing authority, and a newly developed single purpose organization. The Demonstration provided a broad framework for sponsors to develop and implement home maintenance programs designed to serve a minimum of 125 clients on an annual basis.

The Office of Policy Development and Research also sponsored a concurrent evaluation of the Elderly Home Maintenance Demonstration, conducted over the life of the demonstration by Urban Systems Research & Engineering, Inc. The evaluation has four overall objectives:

- to determine the maintenance and minor repair needs of the target population;
- to determine appropriate delivery systems to provide maintenance services;
- to determine costs associated with the delivery systems; and
- to determine benefits to the target population.

Three principal activities were undertaken to address these objectives: an administrative analysis of program operations and costs; a state-of-the-art survey of other existing maintenance and minor repair programs; and a survey of client attitudes and satisfaction over the two-year span of the demonstration.

This report integrates the data collected from these three principal activities. It builds upon the work presented in the revised Year One Preliminary Findings Report (June 1982) and assesses Demonstration experiences in the context of public sector elderly housing policy. Among the key issues addressed by the report are the following:

- What are the characteristics of the sponsoring local agencies and how do they affect program organization and service delivery?

- What organizational models are used by the agencies to deliver services and how and why do they vary?

- What are the characteristics of program clients and their homes? How and why do they vary between programs?

- What has been the experience of programs in the actual delivery of repair services? To what factors are variations in output attributable?

- To what extent have clients received such other services as referrals or counselling?

- What is the cost of service delivery? How do various repair types differ in cost within and between programs? What is the cost per unit of repair?

- What are the administrative costs of service delivery?

- What factors or conditions influence cost variations?

- What are the lessons of the Demonstration that can be applied to the development of new elderly home maintenance programs? To elderly housing policy overall?

Special emphasis is given to determining the cost of service delivery, so that policy-makers can later compare the cost effectiveness of the home maintenance strategy with other approaches to providing shelter for elderly households.

This report has been organized into ten chapters which address the key research and policy issues raised above. Chapter Two examines sponsor agencies, focusing on agency objectives, program target areas, the role of foundations, and state-of-the-art survey findings. Chapter Three documents home maintenance program organization and the service delivery process, describing outreach, intake, inspection, repair service delivery, and referral experiences. Chapter Four reviews Demonstration client characteristics, including socioeconomic, health, and housing burden variables. Chapter Five describes Demonstration client housing characteristics while Chapter

Six examines client home repair needs identified by both program staff and clients. Chapter Seven is devoted to an examination of the costs of repairs actually provided by the Demonstration programs, including emergency and callback repairs. Chapter Eight assesses the overall costs of service delivery, including the costs of nonrepair services and program administration. Chapter Nine focuses on Demonstration client perceptions of the home maintenance programs and services received. Chapter Ten offers an integrated assessment of the Demonstration and State-of-the-Art survey findings. Summary conclusions are proposed, lessons of the Demonstration enumerated, and policy implications presented. The numerous appendices provide the reader with extra detail, often site specific, not considered appropriate for inclusion in the main text.

Chapter Two

The Demonstration Sites

The institutional and environmental characteristics associated with each demonstration site undoubtedly affect the effectiveness with which the seven elderly home maintenance programs are administered. The progress and problems of these programs are better understood when examined in the context of the local participating parent agency, their demonstration motives and objectives, the target areas selected for program services, and the sponsoring foundations. In this chapter, the settings in which the home repair programs have operated are described and compared.

The chapter begins with an examination of the range of organizational attributes of the seven participating service agencies. In Section 2.2, agency objectives and reasons for participation in the demonstration are reviewed. Any changes that occurred in agency objectives and strategies during the Demonstration are also discussed. Section 2.3 describes the process used to select target areas, characteristics of these areas, and the agencies' experience in geographically targeting services. In Section 2.4, the role of foundations during both the program development and implementation phases is discussed.

The chapter shifts focus in Section 2.5 in order to examine the characteristics of other agencies and repair programs that were identified as part of a state-of-the-art survey of home maintenance and repair programs. In examining the characteristics of these programs, we will be able to identify the range of settings in which home repair programs operate. Finally, the contents of the chapter are summarized in Section 2.6.

2.1 The Participating Agencies

In cooperation with sponsoring foundations, HUD selected seven local service provider organizations to participate in the elderly home maintenance demonstration. Each organization received funds from HUD and sponsoring foundations, totalling about $100,000 per year, to conduct home maintenance programs. The agencies selected for participation in the demonstration and their foundation sponsors are listed in Exhibit 2-1.

2.1.1 Agency Attributes

The limited size of the HUD Demonstration means that the seven demonstration agencies are not representative of the universe of existing or potential elderly home maintenance service providers.* The seven agencies do, however, exhibit a variety of organizational attributes and characteristics. Selected characteristics are shown in Exhibit 2-2 and detailed descriptions of each agency are contained in Appendix A.

Several types of service organizations are represented in the Demonstration. Four agencies are traditional private, non-profit organizations, operating at either a neighborhood level (as in San Francisco and Boston), or a community-wide level (Cleveland and Cincinnati). Agencies in Philadelphia and Hot Springs are also private, non-profit entities, but possess very different organizational orientations. The Philadelphia agency is the designated Philadelphia Area Agency on Aging, responsible for administration and coordination of elderly programs as well as advocacy for elderly residents throughout the City. The Hot Springs agency is a newlycreated ad hoc citizens advisory committee formed expressly to oversee the implementation of the demonstration in Garland County, Arkansas. While the county government has formal responsibility for project

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*The Demonstration was designed to provide funding to programs in seven cities throughout the country. Each program needed matching funds from a local (or national) private foundation. Hence, the size and participants in the Demonstration were influenced by funding availability.

Exhibit 2-1

SERVICE AGENCIES AND SPONSORS OF THE
ELDERLY HOME MAINTENANCE DEMONSTRATION

Service Agency	City	Foundation Sponsor
• Philadelphia Corp. for the Aging (PCA)	Philadelphia	Samuel S. Fels Fund, The William Penn Foundation The W.W. Smith Charitable Trust
• Lutheran Housing Corp. (LHC)	Cleveland	The Cleveland Foundation George Gund Foundation
• Garland County Home Maintenance Advisory Council	Hot Springs, Ark.	Arkansas Community Foundation, (Little Rock) Ford Foundation
• Greensboro Housing Authority (GHA)	Greensboro, N.C.	Ford Foundation
• Ecumencial Social Action Committee (ESAC)	Boston	Permanent Charity Fund of Boston
• People Working Cooperatively (PWC)	Cincinnati	Charles F. Kettering Foundation The City of Cincinnati Community Chest Cincinnati Council on Aging
• Housing Conservation Institute (HCI)	San Francisco	Ford Foundation Haas Foundation

Exhibit 2-2

ORGANIZATIONAL CHARACTERISTICS OF
THE LOCAL SERVICE PROVIDER AGENCIES

CITY	AGENCY	TYPE OF AGENCY	AGE OF AGENCY***	SIZE OF STAFF
Cincinnati	People Working Cooperatively, Inc.	Community, Non Profit	8 years	40
Cleveland	Lutheran Housing Corp.	Community, Non Profit	10 years	22
Boston	Ecumenical Social Action Committee, Inc.	Neighborhood, Non-Profit	18 years	60
Greensboro	Greensboro Housing Authority	Local Housing Authority	35 years	111
Hot Springs	Garland County Elderly Home Maintenance Program	None/New Agency*	2 years	4
Philadelphia	Philadelphia Corporation for Aging	Non-profit Area Agency on Aging	10 years	120
San Francisco	Housing Conservation Institute	Neighborhood, Non-profit	8 years (2 years)**	9

*Formal responsibility assumed by the county government.

**Formally incorporated as a separate agency in 1980.

***As of 1982.

Source: Agency Plan of Service, Baseline Administrative Elderly Home Maintenance Demonstration Visits, 1980-82.

administration, the Hot Springs Advisory Committee actually oversees the program. In Greensboro, the local service provider agency is the Greensboro Housing Authority, a medium-sized local housing authority which develops and manages public and assisted housing projects in the greater Greensboro area.

With the exception of the Hot Springs Advisory Committee, which was organized in 1980, all participating agencies are well established organizations in operation for seven or more years. The 34 year old Greensboro Housing Authority and the 17 year old Ecumenical Social Action Committee of Boston represent longstanding organizations in their respective communities. The San Francisco Housing Conservation Institute was organized seven years ago as a short-term neighborhood-based program by another area agency although it was only incorporated as a free-standing agency in 1980.

Agency size varied considerably among participating local organizations at the start of the Demonstration. For instance, the number of paid staff ranged from four in Garland County to 120 at the Philadelphia Corporation for Aging. Excluding the Garland County and San Francisco sites, each of the participating agencies had 22 or more paid staff persons when the Demonstration began. To some extent, the relatively small size of San Francisco's Housing Conservation Institute reflected an agency policy to subcontract all repair work to outside firms. The other six agencies all employed in-house work crews for their elderly home maintenance projects, although only Cincinnati, Cleveland, and Greensboro were able to use existing staff.

Annual agency budgets also varied among the participant organizations. In 1980, the annual budget size ranged from $80,000 for the Garland County program to $14.8 million for the Philadelphia Corporation for Aging. Predictably, the number of paid staff appears to be a function of budget size.

2.1.2 The Capacity of Agencies to Deliver Elderly Home Maintenance Services

The capacity of demonstration agencies to deliver elderly home maintenance services depends primarily on prior staff and organizational experience with housing and/or elderly programs. The presence of such experience among the seven agencies ranged from considerable expertise in both housing and elderly programs to no experience at all.* (See Exhibit 2-3.) Three of seven agencies had extensive experience in both housing and elderly programs. First, in conjunction with the City of Cincinnati and the Council on Aging, Cincinnati's People Working Cooperatively administered a one year HUD grant whereby home rehabilitation and repair services were provided to elderly homeowners. In addition, the Ecumenical Social Action Committee in Boston has provided home repair and weatherization services to elderly and low-income persons using youth trainees and apprentices and has also offered an assortment of social services to elderly persons. Finally, the Greensboro Housing Authority has developed and managed a number of subsidized and unsubsidized elderly housing projects, including an unsubsidized congregate facility. The Authority retains a sizeable maintenance department that has conducted repairs to these units on an as-needed basis.

Two agencies have had previous housing experience, but little experience servicing elderly clients. In Cleveland, for example, the Lutheran Housing Corporation administered a CDBG-supported home rehabilitation program and rehabilitated several multi-family apartments, although this project was not targeted to the elderly. In San Francisco, the Housing Conservation Institute packaged loans and provided rehabilitation services to numerous middle-income homeowners, but also had no experience servicing low-income or elderly clients.

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*All seven agencies were able to draw on the technical assistance and support provided by the demonstration administrative contractor, BE&C Engineers, Inc.

Exhibit 2-3

THE INCIDENCE OF HOUSING AND ELDERLY SERVICE EXPERIENCE AMONG PARTICIPATING AGENCIES

SITE	Prior/Other Housing Experience	Prior/Other Elderly Service Experience
Cincinnati	YES	YES
Cleveland	YES	NO
Boston	YES	YES
Greensboro	YES	YES
Hot Springs	NO	NO
Philadelphia	NO	YES
San Francisco	YES	NO

Source: Agency Plan of Service, Baseline Administrative Elderly Home Maintenance Demonstration Visits, 1980-82.

The Philadelphia Corporation for Aging has served as the coordinating body for all elderly programs offered in the City of Philadelphia. Consequently, the organization has preeminent capacity to deliver services to the elderly. However, due to the scarcity of housing programs in the City, this agency has had no prior experience providing housing-related services.

Finally, because the Garland County advisory committee was created just prior to the start of the demonstration, the agency had no previous experience with either housing or elderly-related services.

2.1.3 State-of-the-Art Non-Demonstration Programs

There are two findings from the State-of-the-Art survey of home maintenance and repair programs which relate to sponsor agency considerations. First, the number of programs which provide primarily minor repair and maintenance service appears to be limited. While all programs responding to this survey provided minor repairs, only 37 offered minor repair or maintenance services as their primary activity.

Secondly, non-Demonstration programs tend to be administered by social service agencies. Most of the programs offering minor repair and maintenance service as their primary activity were sponsored by Area Agencies on Aging or other social service oriented organizations. These agencies were able to fund maintenance, minor repair, and handyman programs from HHS Title III or Title XX funding sources. The number of Neighborhood Housing Services (NHS) or CDBG programs operating home maintenance programs was suprisingly small.

2.2 Agency Objectives for the Demonstration

In this section, three questions are addressed. First, what prompted the seven agencies to participate in the demonstration? Second, what objectives did these local agencies hope to achieve through the demonstration? Finally, have these objectives changed as the demonstration progressed?

The seven agencies cited several distinct reasons for choosing to participate in the demonstration. All of the agencies indicated that their participation was based, at least in part, on a desire to address the needs of elderly residents in the service areas. Two agencies, Philadelphia and Boston, cited developing or enhancing agency capacity in housing repair as a major motivation for participation. Philadelphia also hoped to integrate the provision of housing services with its existing social service delivery system. At Greensboro, participation in the program was due primarily to an invitation to participate by HUD, who wanted to broaden the types of organizations represented in the demonstration. While no agency explicitly attributed their involvement to the receipt of funds, all seven agencies undoubtedly appreciated the financial benefits of the program.

With regard to original demonstration objectives, all seven agencies indicated that enabling clients to remain in their homes was their first or second most important demonstration objective. As shown in Exhibit 2-4, the summed rank score of this objective was twice the score of any other demonstration objective.* The overwhelming emphasis on the well-being of elderly clients is notable, yet not surprising. Agencies perceived the demonstration first, as a mechanism for aiding elderly clients and only second as an experiment in service delivery or housing stock maintenance.

It should be noted that there is a correlation between agency type and the choice of Demonstration objectives. Three of the four traditional non-profit agencies (Boston, Cleveland, and Cincinnati) plus the Philadelphia Corporation for Aging (PCA) said that enabling clients to stay in their homes was their top priority. The

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*Rank scores were determined by the agency responses to questions asking them to list their three most important demonstration objectives in order of priority. First place objectives received a score of three, second place objectives 2, and third palce objectives 1. When summed across agencies, the total rank score for each objective was obtained.

Exhibit 2-4

ORIGINAL DEMONSTRATION OBJECTIVES
IDENTIFIED BY PARTICIPATING AGENCIES

Objective	# Agencies indicating this was objective	Rank Score* (Most important objective)
To maintain the physical environment of the neighborhood	6	5
To provide better quality housing	5	9
To help the elderly or handicapped remain in their homes	7	18
To coordinate housing assistance and social services for clients	6	3
To provide job training	1	1
To provide jobs in the community	2	-
Code enforcement	1	-
To provide the elderly with a sense of community	1	-
Other: To make housing more liveable	1	3
To coordinate housing services	1	2
To bring together diverse interests in the city	1	1

* Rank order was determined as follows: agencies were requested to identify the three most important objectives, in order of priority. Objectives ranked most important received a weight of 3, second most important 2, and third most important 1. The summed totals represents the rank scores for the objectives.

Source: 1981 USR&E Year One Administrative Survey.

housing-oriented Greensboro Housing Authority, the Garland County agency, and the neighborhood improvement-minded Housing Conservation Institute (HCI) selected this objective as second-most important. These three agencies identified the improvement of the housing stock as their primary demonstration objective.

Other demonstration objectives were mentioned by particiating agencies although, generally, they were not considered as important as improving the housing stock or maintaining the independence of elderly homeowners. Thus, while most agencies agreed that maintaining the physical environment of the neighborhood was a program goal, it was not a major agency concern. The coordination of housing and elderly social service assistance programs was likewise perceived as an objective by most agencies, although typically not a demonstration priority. In Philadelphia, however, PCA regarded the coordination of housing services with existing social services as the second-most important program objective. Other objectives which were reported less frequently by participating agencies included providing jobs in the community and eliminating housing code violations.

None of the agencies have changed or modified program objectives during the life of the demonstration, although some did adopt new strategies in order to achieve these goals. For example, the Boston program now concentrates more on energy conservation repairs than it did in the first year of the program, and also places more emphasis on social service referrals. And, in Greensboro, the Housing Authority broadened the scope of eligible services to include some larger repairs. This change was made because of a demand for specific types of repairs and an increase in the number of housing code violations among elderly homeowners. The scope of eligible services was expanded in San Francisco as well, although the change occurred there because a decline in administrative costs enabled the agency to devote more resources to home repairs.

2.3 Target Areas

Agencies were given wide latitude in determining how the demonstration resources would be targeted. This flexibility has been reflected in approaches that agencies have taken in targeting home repair services. (See Exhibit 2-5.) Because of their organizational focus, three agencies (Hot Springs, Philadelphia and Greensboro) chose to serve a municipal or county-wide area. The remaining four agencies chose to target service to well-defined neighborhoods or geographic areas.

2.3.1 Designating Target Areas

At the start of the demonstration, five of the seven agencies selected target areas that conformed to their traditional service jurisdictions. In Hot Springs, low-income elderly homeowners, from the City of Hot Springs and rural outlying areas, were eligible to participate in the program. However, service delivery was concentrated in the City of Hot Springs in the first year; only in the second year did the repair crew begin to work in the outlying areas. In Greensboro, the Housing Authority originally designated the southeast quadrant of the City as a target area. However, the Authority accepted clients from throughout its jurisdiction, which includes the City of Greensboro and portions of the surrounding county within a ten mile radius of the City. In both Boston and San Francisco, the agencies chose city neighborhoods in which the organizations had established a track record.

The Philadelphia agency, a community-wide Area Agency on Aging, anticipated that there would be political resistance if services were geographically targeted and instead opted to offer the program on a city-wide basis to elderly persons affiliated with the agency. At the request of one of the sponsoring foundations, the Philadelphia agency also designated one community as a special service area. Forty percent of the program's clients have been drawn from this area.

Exhibit 2-5

DISTRIBUTION OF CITYWIDE VS. NEIGHBORHOOD TARGET AREAS AMONG DEMONSTRATION SITES

Site	Targeted Citywide	Targeted to Specific Neighborhood(s)
Cincinnati		X
Cleveland	*	X
Boston		X
Greensboro	X	**
Hot Springs	X	
Philadelphia	X	**
San Francisco		X

*Includes the entire City of East Cleveland.

** While these programs are city-wide, formal target areas were also designated.

Source: Agency Plan of Service, Baseline Administrative Elderly Home Maintenance Demonstration Visits, 1980-82.

At two sites, Cleveland and Cincinnati, the selected target areas did not correspond to the traditional service areas of the sponsoring organizations. Cleveland's Lutheran Housing Corporation selected service areas in Cleveland and East Cleveland, since both cities had been important sources of agency funding. The designated target areas -- the entire city of East Cleveland and the Glenville neighborhood in Cleveland -- are contiguous and logistically compatible since they are near to the agency's office and warehouse.

In Cincinnati, there were a number of actors who participated in the selection of the target area, including agency staff, the advisory committee established for the demonstration, city officials, and the sponsoring foundation. The foundation urged that the selected area possess an active local senior community center, capable of providing a focus for post-demonstration, neighborhood self-help activities. The City preferred that a west side neighborhood be selected, since this area had historically received few housing or social service programs. From a pool of 44 neighborhoods, the agency selected West Price Hill, a choice that satisfied both the City and the foundation. Unfortunately, the neighborhood was not convenient to the agency office.

During the first year of operations, four of the seven agencies expanded the boundaries of their target areas to overcome problems obtaining the required number of clients. In Cleveland, the Lutheran Housing Corporation doubled the portion of the Glenville neighborhood included in the target area. And in Cincinnati, the East Price Hill neighborhood was added to the service area, with the understanding that residents in the initial target area would continue to receive priority treatment.* Faced with lagging enrollment, the San Francisco Housing Conservation Institute (HCI) negotiated the expansion of their target area into an adjacent neighborhood which was traditionally the service jurisdiction of another non-profit organization. Through the negotiated agreement,

*Preferential treatment did not become an issue since, even with the expanded target area, the agency was pressed to obtain clients.

HCI was urged to focus on the elderly Latino population in the new neighborhood, since this group had previously been underserved. Finally, in Greensboro, it was expected that the majority of clients would come from the southeast quadrant of the City. However, due to enrollment problems, this formal target area was expanded to include the entire southern portion of the City. In fact, as noted earlier, the Greensboro agency allowed elderly homeowners from throughout the City to participate in the program.

In providing information about changes in service area boundaries, program directors also offered their opinions as to how, in retrospect, a program like the elderly home maintenance demonstration should be targeted. At three sites (Greensboro, Boston, and Hot Springs), the concensus was that the program should not be targeted to particular neighborhoods because the need for these services is widespread and because minor home repairs could not spur overall neighborhood improvements.

On the other hand, directors from Cincinnati, Cleveland, and Philadelphia gave two reasons why a targeted program is easier to administer. First, program outreach is a simpler task in small geographic areas where potential clients are more likely to hear about the program from their neighbors. Second, travel costs are reduced since the work crews spend less time and money travelling from one house to another. The opinions voiced by these program directors suggest that the decision to target can not be made in isolation, but should take into account the characteristics of the community, particularly the geographic dispersion or concentration of lowincome elderly homeowners.

2.3.2 Characteristics of Target Areas

The selected target service areas exhibit a wide range of demographic and housing characteristics.* In general, while these target areas contain large populations, they vary considerably

*Data for the section was obtained from the Agency Plans of Service. The discussion is limited, however, by the lack of standardized data between the various sites. A comprehensive examination of target area clients and their homes is presented in Chapters Four and Five.

in geographic size. The original neighborhoods in Cincinnati and San Francisco contain slightly over 20,000 persons, although both sites expanded the boundaries of their target areas to overcome enrollment difficulties. While Jamaica Plain is the sole neighborhood targeted by Boston's Ecumenical Social Action Committee, it contains over 45,000 residents and consists of numerous sub-neighborhood entities. The Greensboro, Garland County, and Philadelphia service areas cover large geographic areas relative to the neighborhood-specific areas targeted by the other agencies.

The number of eligible low-income and elderly residents living within designated service areas is typically proportional to the overall population. Within metropolitan Philadelphia, for example, the Philadelphia Corporation for Aging estimated that there are approximately 53,000 eligible residents while in Cincinnati, 1400 of 20,000 residents are eligible for the program. However, not all sites fit this pattern. For example, among the 100,000 residents in the Greensboro Housing Authority jurisdiction, only 3,356 are estimated to be low-income, elderly homeowners. On the other hand, Garland County has an exceptionally high proportion of elderly persons; approximately 35 percent of the total population consists of elderly persons, many of whom meet the program's elgibility criteria.

The proportion of minority group persons varies considerably among the target area. In San Francisco, minorities comprise 78 percent of the population in the original target areas, while in the Glenville neighborhood in Cleveland, black residents make up 95 percent of the neighborhood's population. Although 21 percent of the City of Philadelphia is considered minority, the proportion of minority persons in the Tioga target area is approximately 90 percent. By contrast, only 10 percent of Boston's Jamaica Plain neighborhood is minority, and Cincinnati's West Price Hill neighborhood is predominantly white, with only 1 percent minority persons represented.

There is also a wide range in the housing characteristics of the target areas. As shown in Exhibit 2-6, wood frame, singlefamily detached homes are quite common. However, the variations are notable -- the wood frame, walk-up triple deckers in Boston's Jamacia Plain; the two-family detached homes in Cleveland; brick and masonry row and semi-detached structures in Philadelphia; and in San Francisco, a predominance of attached row houses.

Housing characteristics and conditions differ within as well as among the sites. The Cleveland area is characterized by large single-family detached homes in Glenville and two-family duplex homes in East Cleveland. In Jamaica Plain, there is wide variety in the housing stock, from large Victorian homes to triple deckers to small modern ranchers. In Greensboro, there are both well-constructed brick homes in the northern quadrant and many small, deteriorating, wood frame structures in the predominantly lower-income southern quadrants. In Garland County, many of the small woodframed post and beam structures are in need of major rehabilitation and a number of homes are without indoor plumbing facilities.

2.4 The Role of Foundations

A distinctive feature of the Elderly Home Maintenance Demonstration has been the involvement of private foundations as program sponsors. The foundations have performed two key roles in the demonstration: recommending local agencies for inclusion in the demonstration and sharing with HUD the burden of program funding. Beyond these two activities, the role of foundations has depended on the interests and inclinations of individual foundation representatives.

At the Demonstration's outset, several foundations intervened in the target area selection process. For instance, the William Penn Foundation requested that the Philadelphia program designate a formal target area to demonstrate the program's visual impact. As a result, the Tioga neighborhood was designated as a priority service area. In addition, the Kettering Foundation urged the Cincinnati

Exhibit 2-6

Housing Stock Characteristics of the Seven Target Service Areas

Site	Housing Stock Characteristics							
	Predominantly Single Family	Predominantly 2 Family	Predominantly 3 family	Woodframe Construction	Brick or Masonry Construction	Detached	Row house	Other Characteristics
Cincinnati	X			X		X		
Cleveland	X	X		X		X		large single family in Glenville; 2 family in E. Cleveland
Boston			X	X				mixed stock
Greensboro	X			X	X	X		
Hot Springs	X			X		X		small wood post construction, many in poor condition
Philadelphia					X		X	old row and semi-detached units
San Francisco	X						X	

Source: Agency Plans of Service; Baseline Administrative Elderly Home Maintenance Demonstration Visits, 1980-82.

program to include the presence of an active senior community center as a key criteria for neighborhood selection.

During the first two years of service delivery, three foundations (Cleveland, Greensboro, and San Francisco), assumed a relatively passive role in the Demonstration, limiting their involvement to the review of periodic progress reports. The other four foundations provided varying degrees of technical assistance and support to the service agencies. In Cincinnati, for example, the Kettering Foundation provided People Working Cooperatively with an outline for converting the existing demonstration program to a self-supporting, locally-based program. In Garland County, a representative from the Arkansas Community Foundation has served as an active, regular participant of the Citizens Advisory Committee and acts as a "go between" for the agency and the Ford Foundation.* And in Philadelphia, the William Penn Foundation provided technical assistance to PCA when they applied for funds under another housing rehabilitation program. Although some foundations have provided this type of technical support, they have remained in the background as far as the home repair programs were concerned, serving primarily as a source of demonstration funding to elderly homeowners.

2.5 Characteristics of Other Home Repair Programs

Thus far in this chapter, we have examined the institutional and environmental factors that influenced program operations at each of the seven demonstration sites. At this point, we can not assess whether particular site features contributed or detracted from the efficiency of the various programs. For example, did the presence of in-house rehabilitation expertise make the program easier to administer? Did the program operate more efficiently when these services were targeted to specific neighborhoods?

While these questions will be explored later in this report, it is easier to generalize about preferred agency and program features

*The Ford Foundation funds the Arkansas Community Foundation in order that the local organization can help other non-profit agencies to get established.

if we can draw on the experience of more than the seven demonstration agencies. This can be done to a limited extent by examining the results of a state-of-the-art (SOTA) survey of home repair programs that was conducted in 1982.* What follows is a brief discussion of the types of agencies that offer home repair services and their approaches to the provision ofthese services (i.e., program objectives, target populations, service areas) that were identified through this survey. To the extent possible, the features of these agencies and programs will be compared with those of the elderly home maintenance demonstration.

2.5.1 Characteristics of Agencies that Offer Home Repair Services

Six characteristics of home repair programs are discussed below, including agency types and delivery capacity, program objectives, age, staffing and targeting strategies.

In the course of the survey, over 190 agencies provided information about home repair services. As Exhibit 2-7 shows, approximately 58 percent of these agencies were private, non-profit organizations such as Community Action Agencies, Neighborhood Housing Services agencies or neighborhood improvement associations. An additional 1 percent were non-profit organizations affiliated with religious institutions.

Most of the remaining home repair programs were administered through public organizations. Approximately 27 percent of repair programs surveyed were administered by city or county government agencies, such as a department of housing and community development, or a local housing authority. Only 2 percent of all programs surveyed were administered by for-profit organizations.

Previous experience with home repair and weatherization programs varied greatly among the agencies that provide minor home repair services. Non-profit housing-oriented agencies, such as the Neighborhood Housing Services Organization in Baltimore, tended to

*The State of the Art Survey was conducted by the Newman and Hermanson Company under subcontract to Urban Systems Research and Engineering, Inc.

Exhibit 2-7

DISTRIBUTION OF SOTA AGENCIES BY TYPE.

Agency Type	Percent of Total Agencies Sampled
Part of a City Agency	15.4%
Part of a State Agency	2.9
Part of a County Agency	11.4
Part of a Housing Authority	4.7
Part of a Community Action Agency	27.4
Religious Organization	1.1
Other Private Non-Private Organization	30.9
Private for-profit Organization	1.7
Other	4.5
Total	100.0

Source: 1982 State-of-the-Art Survey of Home Maintenance and Repair Programs.

have extensive previous experience with major residential rehabilitation and financing but little experience working with the elderly. Housing authorities and local departments of housing and community development had similar types of experience. On the other hand, as might be expected, some of the elderly-oriented social service agencies had little experience providing housing-related services. For example, non-profit agencies like Associated Catholic Charities of Cumberland, Maryland, the Bay County, Florida Council on Aging and the Trinity Coalition of El Paso, Texas, described previous social service experience, but noted that this was there first attempt to provide housing services.

Because the size of the SOTA survey sample was limited by available funding resources, we may assume that there are many more types of agencies that provide home repair services than are represented in the Demonstration. However, the most common SOTA agency type -- the private non-profit agency -- is wellrepresented, accounting for six of the seven demonstration sites. Like the Demonstration sites, most of the SOTA agencies had some experience providing elderly or housing-related services. In both cases, the type of prior experience depended on the orientation of the agency.

As shown in Exhibit 2-8, the home repair programs in the SOTA survey exhibited a variety of characteristics. The average number of years in operation for all programs included in the survey was 5.3. Approximately one-half of all programs had been operating between six and ten years. Thirty percent of the programs were between three and five years old, while only 17 percent were started since 1980.

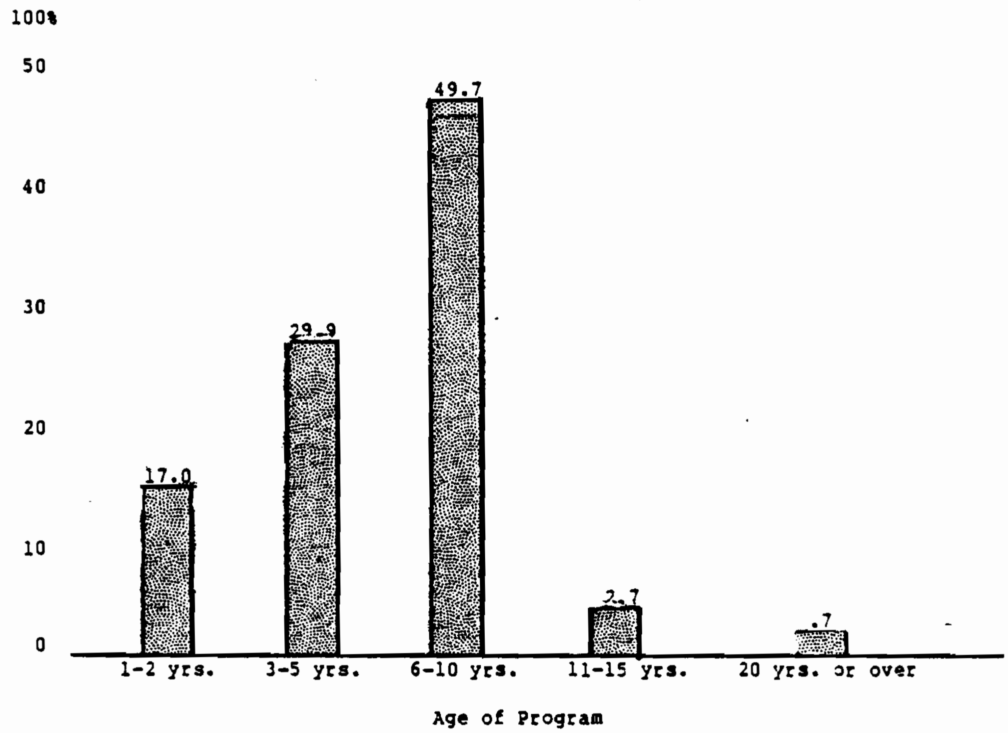
Most of the programs in the survey had fewer than 10 full-time employees. Almost 10 percent of the programs had no paid full-time staff at the time of the survey. In many of these cases, agencies had recently let staff go because of funding cuts. Over 60 percent of the programs had between one and five full-time employees.

The measurement of full-time staff underestimates the manpower devoted to these programs because a number of agencies supplemented

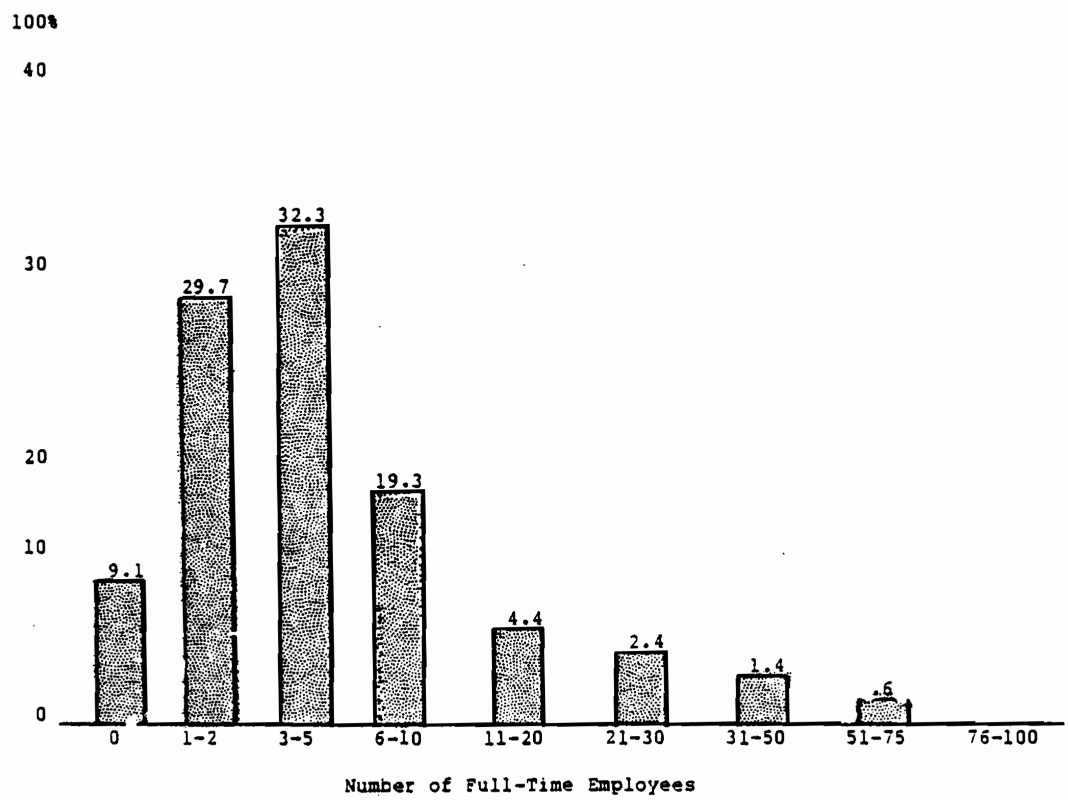
Exhibit 2-8

CHARACTERISTICS OF SOTA HOME REPAIR PROGRAMS

Distribution of SOTA Programs by Age of Program



Distribution of SOTA Program by Staff Size



Source: 1982 State-of-the-Art Survey of Home Maintenance and Repair Programs.

their program staff with part-time employees and volunteers. For example, the Trinity Coalition had two full-time employees, ten part-time employees and five volunteers. All of these employees were senior citizens. And, the Jackson County Senior Organization had 10 full-time staff members and 23 volunteers.

What objectives do SOTA agencies hope to achieve through these programs? A sample of 17 agencies were selected from the survey in order to address this question.* As shown in Exhibit 2-9, helping the elderly to remain in their homes was clearly the most popular program objective. This was followed by providing better quality housing and maintaining the neighborhood environment. Interestingly, these objectives were also the most important objectives reported by the Demonstration sites. As was also the case with the Demonstration agencies, the SOTA elderly and social service agencies were more likely to report that helping the elderly to stay in their homes was their most important objective, while housing-oriented agencies typically stated that improving the housing quality or maintaining a neighborhood's physical environment was their top priority.

A final program characteristic which can be examined is how the programs are targeted, both geographically and by population. Unlike the Demonstration programs, SOTA programs tended to be targeted to a broader population, including low-income households, female-headed households, the disabled and the elderly. Geographically, most SOTA programs are targeted to the service area of the sponsoring agency. Thus, unlike four of the Demonstration programs, unless the agency has a neighborhood focus, programs are not typically targeted by neighborhood.

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*The sample of agencies was selected based on two factors. First, a variety of agency types were included in the sample. Second, programs were selected that were similar to the Demonstration program; that is, they provided only minor home repair services and they were targeted primarily to the elderly.

Exhibit 2-9

PROGRAM OBJECTIVES IDENTIFIED
BY SOTA AGENCIES

OBJECTIVES	# AGENCIES INDICATING THIS WAS AN OBJECTIVE	RANK SCORE* (MOST IMPORTANT OBJECTIVE)
To maintain the physical environment of the neighborhood	6	14
To provide better quality housing	10	21
To help the elderly or handicapped independent remain in their homes	13	33
To coordinate housing assistance and social services for clients	8	12
To provide job training	0	0
To provide jobs in the community	2	2
Code enforcement	0	0
To provide elderly with a sense of community	7	10
Other	3	7

* Rank order was determined as follows: agencies were requested to identify the three most important objectives, in order of priority. Objectives ranked most important received a weight of 3, second most important 2, and third most important 1. The summed totals represents the rank scores for the objectives.

Source: 1982 State-of-the-Art Survey of Home Maintenance and Repair Programs.

2.6 Summary

There are several institutional and environmental characteristics which were important factors in the planning, development, and operation of the seven elderly home maintenance programs. These characteristics varied widely among the seven sites, reflecting the broad range of local conditions and agency attributes.

Sponsoring agencies differed according to the type of agency, the age of the agency, the size of staffs, and the size of annual agency budgets. Prior experience and existing capacity to develop and administer elderly home maintenance programs also varied among the seven program grantees.

The agencies generally agreed that their most important demonstration objective has been to enable elderly homeowners to remain in their homes. In general, agencies perceived the demonstration first, as a service for clients and only second as a innovative experiment in service delivery or housing stock maintenance.

The target areas selected by the seven agencies are divided between jurisdiction-wide and neighborhood targeted geographic areas. The four traditional non-profit organizations chose to target service delivery to well-defined neighborhood areas. In general, target areas tended to have large populations, but exhibited considerable variation in geographic size. Absolute numbers of potential elderly clients were greater in certain target areas, especially the area served by Philadelphia's PCA. Substantial minority populations were evident in five of the seven target areas.

Most foundations assumed a passive role in the demonstration. To date, foundations have performed two important roles: recommending appropriate local agencies for inclusion in the demonstration and sharing with HUD the burden of funding the demonstration. While some foundations have provided technical assistance and support to agencies, few have become involved in the operation of the home repair programs.

Like the demonstration sites, the SOTA agencies exhibited a wide variety of characteristics. Many types of agencies, from private non-profit organizations to state and local government agencies, have provided home repair services. Programs also varied widely in terms of age, staff, size, and objectives. Most programs have been in operation anywhere from one to ten years, and size of staff ranged from 0 to 100, with sixty percent of programs reporting staff sizes of between one and five persons. Interestingly, both the sample of SOTA agencies and the demonstration sites report that helping the elderly to remain in their homes was their most important demonstration objective.

In identifying the environments in which various home repair programs operate, we have set the stage for an analysis of which characteristics of these programs make the program easier to operate. What characteristics detract from the efficient operation of a home repair program? These questions will be addressed in Chapter 7 of this report.

Chapter 3

Program Organization and the Service Delivery Process

The HUD Demonstration imposed a general framework which shaped program design and development. The consistency imposed by this framework produced common elements and procedures for the six basic components of repair service delivery:

- an organization project staff;
- an outreach, intake, and client enrollment component;
- a home inspection component;
- a repair service component;
- a quality control, callback, and emergency service component; and
- a client referral component.

This chapter compares these shared system components among the seven participating programs, describing examples of convergence and divergence. The emphasis in this chapter is to review Demonstration delivery process experiences; subsequent chapters examine program output in more detail.

A series of process-oriented background issues are explored:

- What organizational structures were used to deliver services?;
- What components in the delivery process were most and least difficult to master?;
- What procedural and administrative constraints limited service delivery?; and
- What is the impact of program administration on service delivery costs?

Section 3.1 compares the project staffing and organizational strategies utilized by the seven programs. Section 3.2 describes the experience of the programs in conducting client outreach, intake, and enrollment. Section 3.3 describes the inspection phase of the delivery process. Section 3.4 reviews the first year experiences of the program in the actual provision of repair services. A detailed discussion of the repairs provided will be presented in Chapter 7. Program experiences with callback and emergency repair procedures are discussed in Section 3.5 The provision of ancillary client referral assistance is compared in Section 3.6. In Section 3.7, the impact of program administration on service delivery costs is examined utilizing data from monthly cost reports and Agency Plans of Service. Summary comparisons are provided in Section 3.8.

3.1 Program Organization and Staffing

Organizational structures and staffing patterns constitute primary program building blocks. As will be shown later, success in service delivery can be traced, in part, to the organizational structures developed and staffing patterns perpetuated throughout the life of the program. This section examines the experience of the seven HUD Demonstration programs in program organization and staffing by describing the structures and patterns emerging from initial program development, the changes that occur to organization and staffing over time, and such poignant issues as staff size, staff recruitment, staff background, staff turnover, and use of the parent agency for staffing support.

3.1.1 Initial Organization and Staffing

The seven local service provider agencies were permitted to organize their programs according to their own specifications and staffing strategies. The end-product of this organizational flexibility was a number of varied staffing arrangements predicated on a range of staff positions and responsibilties. The various staffing patterns that initially emerged for the seven Demonstration programs are summarized in Exhibit 3-1.

Exhibit 3-1

Initial Organization of Elderly Home Maintenance Program Staffs, by Site

<table>
<tr><th>Site</th><th>Day-to-Day Administration</th><th>Enrollment Responsibility</th><th>Inspector Status</th><th>Foreman Status</th><th>Work Crew Status</th></tr>
<tr><td>San Francisco</td><td rowspan="2">Project Coordinator</td><td>Director/outreach worker</td><td>Part time Inspector</td><td colspan="2">Repairs subcontracted</td></tr>
<tr><td>Greensboro</td><td>Director</td><td rowspan="2">No Inspector</td><td rowspan="4">Full Time Foreman or Supervisor</td><td rowspan="7">Work Crews</td></tr>
<tr><td>Hot Springs</td><td rowspan="6">Project Director</td><td>Director/Secretary</td></tr>
<tr><td>Boston</td><td>Outreach worker</td><td rowspan="2">Full-Time Inspector</td></tr>
<tr><td>Philadelphia</td><td rowspan="4">Director</td></tr>
<tr><td>Cleveland</td><td colspan="2" rowspan="3">Inspector/Foreman</td></tr>
<tr><td>Cincinnati</td></tr>
<tr><td>Baltimore*</td></tr>
</table>

Source: 1981 Elderly Home Maintenance Demonstration Evaluation Administrative Survey.

*Not one of the seven Demonstration sites.

Each program organizational structure addressed five program functions: day to day administration; outreach and enrollment; inspection; repair work supervision; and actual provision of repair services. As Exhibit 3-1 shows, the seven agencies produced six different organizational configurations for meeting these functions. Only Cleveland and Cincinnati initially shared similar program organizational structures, the same structure utilized by the Baltimore elderly home maintenance program. The Baltimore program was considered to be a prototype model for this Demonstration.

Day-to-Day Administration

Most programs were administered by a Project Director assigned principal responsibility for day-to-day as well as planning and policy decisions. Two agencies chose to utilize an alternative administrative staffing strategy. Project Directors in Greensboro and San Francisco were agency executives who devoted a small proportion of their work time to the demonstration, primarily on planning and policy decisions. The day-to-day administration of the projects was assigned to Project Coordinators. In Greensboro, the Director of the Department of Planning, Research and Evaluation headed the project, but delegated administrative record keeping and liaison to one staff assistant and the day-to-day project administration responsibilities to another staff person. The Project Director in Hot Springs shared planning and policy decision-making with the program's Board of Directors, which participated regularly and actively in the overall administration and guidance of the program.

Outreach and Enrollment Responsibilities

Initial responsibility for client enrollment typically resided with the project director/coordinator. In San Francisco, the Coordiantor received enrollment/outreach assistance from a community coordinator who was assigned part-time to the demonstration. In Hot Springs, the director was assisted in both enrollments and inspections by the project secretary. The only program that did not initially utilize the director for enrollment and outreach was Boston, which had a separate, full-time outreach and enrollment staff person. Philadelphia also made use of a part-time outreach worker assigned to identify potential clients from the PCA client files.

Inspection Responsibilities

Project inspector staffing responsibilities varied sharply among programs. Full-time staff persons who devoted all of their time to home inspections and quality control checks were present in only two programs, Boston and Philadelphia. San Francisco employed part-time inspectors who were used on an as-needed basis. In Cleveland and Cincinnati, inspectors also performed crew foremen responsibilities. Two programs, Hot Springs and Greensboro, decided to proceed without a designated inspector. Instead, inspection duties were performed by the project directors.

Repair Service Provision and Supervision Responsibilities

Repair crews and supervisors/foremen were present in all but one demonstration program. In San Francisco, all repair work was subcontracted to local contractors, hence eliminating the need to maintain repair crews and supervisors. Crew foremen also served as inspectors in Cincinnati and Cleveland. The remaining programs employed full time crew foremen, who maintained oversight and supervision of day-to-day repair activities and developed the necessary work order specifications.

Other Staff Responsibilities

In addition to the staff needed to fulfill the above five functions, each program had a program secretary or office administrative assistant, whose responsibilties varied from program to program. Secretarial responsibilities ranged from record-keeping and filing maintenance to client enrollment, home inspections, and work order scheduling.

Several programs utilized other permanent agency employees, usually on a part-time basis to provide specialized services required by the demonstration. Bookkeeping and accounting assistance was provided on a regular basis by agency personnel in Greensboro and San Francisco. The Hot Springs program received bookkeeping and budget services on a monthly basis under a contractual arrangement with a local accounting firm.

3.1.2 Changes in Organizational Structure and Staffing

The initial staffing patterns and organizational arrangements established by the Demonstration programs were not rigidly upheld over the two year life of the Demonstration. Four of the seven programs made significant changes to their organizational plans. Three programs--Cleveland, San Francisco, and Boston--decreased the overall size of their staffs, merging responsibilities among remaining personnel, while Philadelphia increased the size of its repair crew staff. In Cleveland and Boston, secretarial positions were eliminated in the second program year. This change resulted in an overall savings in salary expenditures but also required the program director to assume additional responsibilities previously carried out by the secretary. Cleveland and Boston also each reduced the size of their repair crew staff by one. Since program enrollments were all completed during year one, San Francisco eliminated the outreach worker position in the second program year, redistributing client liaison responsibilities to the remaining program staff.

In general, shifts in roles and responsibilities occurred in three functional areas: inspections; secretarial chores; and repair supervision. The reliance on full-time program inspectors decreased during the course of the Demonstration. Change in staff performing inspections was observed in three programs. Program coordinators assumed an increased share of the inspection chores in San Francisco and Greensboro. In Hot Springs, responsibility for inspections resided initially with a foreman/inspector, but were later transferred first to the program director and eventually to the office secretary/administrative assistant.

Shifts in foremen responsibilities were observed in another three programs. The initial Philadelphia organizational plan called for the foreman to schedule and write work orders, conduct post-repair, quality control inspections, and devote one-half of his time to actual repair work. This job description changed radically during the course of the Demonstration; post-repair inspections were transferred to the program director, work order scheduling was transferred to the office secretary, and half-time work on actual repairs was discontinued. Instead, the foreman became responsible for supervising work and obtaining the delivery of needed materials to the work sites. The purchase and delivery of materials was also later assigned to the Cincinnati inspector/foreman, eliminating excessive travel costs by individual repair crew members. In Hot Springs, the foreman's responsibilities shifted from inspections and work order writing to the ordering of materials and actual repair work.

Changes in organization and staffing were made for two principal reasons. First, reductions in staff positions resulted in substantial savings which could be applied to other budget items, most noteably repair materials. Second, and perhaps most important, changes in staffing patterns reflect an acquired experience about the most appropriate division of responsibilities once the existing staff capabilities become known. The readjustment of foremen responsibilities exemplifies how initial program designs can overestimate the time required to perform certain tasks. Some program organizational plans were predicated on superhuman efforts by their foremen. When this output was not forthcoming, the programs wisely redistributed responsibilities to create more efficient functional organizations.

3.1.3 Issues in Program Organization and Staffing

Throughout the duration of the Demonstration, programs confronted a number of organization and staffing issues common to all seven Demonstration sites. The impact of these issues on the delivery of repair services varied from program to program and was often reflected in program repair backlogs, repair expenditure rates, and other program delays. Program organization and staffing issues shared by the Demonstration sites include the following:

- staff recruitment
- background/prior experience of staff
- staff turnover
- preferred staff size
- use of parent agency
- use of advisory committees

Staff Recruitment

The recruitment of capable staff during the initial program development phase and throughout the course of the Demonstration proved to be an important, yet often perplexing issue. Recruitment problems related primarily to repair and maintenance staff; there was no evidence of programs experiencing difficulties obtaining sufficient administrative personnel. Attracting experienced repair staff was considered a serious problem for several programs due to the salary structure used for compensating repair workers. In Philadelphia, limited salaries for repair workers made competition with the private sector for qualified, experienced workers difficult. The programs' repair staff was characterized as possessing limited skills of a general nature, often self-taught and with unorthodox, individual work procedures. Other programs reported similar experiences in repair crew recruitment. The cost of specialized skills almost always precluded the hiring of workers with licensed plumbing, electrical, roofing, or flooring experience. Not all sites experienced problems in recruitment. Due to recessionary conditions in 1980 and 1981, the Cincinnati program was able to select crew members from a wide pool of applications. Agency staff did admit that their success in recruitment and retention was linked to the economy; in an improving economy, recruitment would have been a more serious issue. While repair crew wages varied among programs (see Chapter 7), recruitment problems were more likely to be related to the relative position of program wages to prevailing private sector wages and the condition of the local building and construction economy.

Staff Background and Prior Experience

Staff background and prior experience, particularly among housing repair staff, appeared to influence program orientation and service delivery decisions. Several project directors observed that the previous training or experience of work crew members, notably the supervisor/foreman, was related to the types of repairs provided to clients. For example, in Hot Springs previous repair supervisor experience in carpentry was reflected in a large proportion of miscellaneous carpentry jobs. Conversely, general handymen in several other programs were observed to be reluctant to undertake such specialized repairs as plumbing or electrical work.

Staff Turnover

Staff turnover was a pervasive problem throughout the life of the Demonstration, occurring in six of the seven agencies. Due to the small size of the project staffs, loss of a single staff person had a serious impact on program production.

Turnover was most frequent among repair staff; five of the seven Demonstration programs experienced turnover of repair crew or repair supervisors/foremen. In Boston, Cleveland, Cincinnati, Philadelphia, and Hot Springs, the loss of repair staff delayed repair work and resulted in temporary, yet serious, delays. Turnover among repair supervisors/foremen was particularly costly. Because foremen were typically responsible for establishing day-to-day work procedures and regimens, adapting from one foreman to another tended to be time consuming. The loss of the original repair foreman in Cleveland was further exacerbated by a delay of three months necessary to locate a suitable replacement. Turnover among repair crew positions was particularly severe in Cincinnati and Philadelphia, where repair worker positions turned over three times in two years. In general, repair staff turnover resulted both from voluntary resignations and terminations due to performance problems.

Turnover among other administrative staff was less frequent. Office secretaries were lost at two sites, Boston and Cleveland. Program director turnover only occurred in San Francisco, where both the HCI executive director and the elderly home maintenance program director resigned.

There were no special remedies employed by the sites to overcome their staff turnover problems. Problem resolution was often time-consuming, dependent on recruiting and training suitable replacements. The best method to remedy turnover problems was apparently to prevent it from occurring in the first place through a combination of careful, selective recruitment and effective personal staff management. Even with these safeguards in place, voluntary resignations occurred, particularly among repair staff, when higher wage positions became available.

Preferred Staff Size

In general, the project directors regarded their existing program capacities as slightly understaffed. Five of seven project directors suggested that the addition of one or two staff persons, typically repair staff on a temporary basis, would have resulted in more consistent, timely service delivery. Programs in Cleveland and San Francisco regarded their current staff capacities as adequate.

Use of Parent Agencies for Staffing

The ability to draw on the staff resources of the parent agency during difficult administrative periods was a valuable asset for several Demonstration programs. Additional agency assistance included secretarial support, bookkeeping assistance, outreach and referral assistance, and the provision of repair crew workers on a temporary basis. Temporary repair specialists and administrative clerical staff were assigned to the project by the agency during severe backlog periods. The addition of these temporary staff resources enabled the PWC program to meet its first year demonstration deadlines.

Parent agency relationships were not always complementary to the elderly home maintenance program. In Greensboro and Cleveland, program repairs were delayed due to conflicting commitments for work on other agency projects on the home maintenance repair staff.

Use of Advisory Committees

Community advisory committees were established by three Demonstration programs (Hot Springs, Boston, and Cincinnati) as well as the Baltimore home maintenance program. The roles and responsibilities of these committees varied sharply, depending on the intended purpose of the organization. In Cincinnati, the advisory committee's role was generally passive, limited to review of program plans and progress. The committee membership, drawn from diverse sectors of the community, was kept informed of program progress and occassionally utilized in program fundraising efforts. By contrast, the Hot Springs committee was formally incorporated and became intimately involved in program policy decisions, finance, and funds distribution.

The Hot Springs Committee was effectively a surrogate parent agency, formed for the singular purpose of providing guidance and oversight to the elderly home maintenance program. In Baltimore, a committee of residents and NHS staff was charged with providing guidance and direction to the program. The Baltimore advisory committee was actively involved with program design, policy decisions, and determining on a case-by-case basis which clients could exceed the general dollars limit on repair assistance.

3.2 Client Outreach and Intake/Enrollment

To enhance comparability, the demonstration guidelines committed each program to the enrollment of a minimum of 125 eligible clients. Additional clients could be enrolled at the discretion of the local programs. Beyond this numeric client goal, programs were granted subtantial flexibility in developing outreach procedures and conducting intake and enrollment.

3.2.1 Outreach Experiences

The seven demonstration programs utilized a number of outreach methods with varying levels of success. Methods most frequently attempted were newspaper advertising, the use of neighborhood churches, soliciting referrals from other area organizations, and word of mouth referrals. Use of radio, televisions, posters and flyers, visits to senior citizens groups, and appeals to local officials were other marketing strategies used on a less widespread basis.

Selection of strategies was influenced by the characteristics of the target population, as well as the geographic size and location of the target areas. In Philadelphia, PCA's decision to service frail elderly who were already existing agency clients resulted in a very limited marketing strategy that utilized available agency files and client case records. Conversely, wide ranging strategies utilizing television as an outreach medium were employed by Hot Springs and Greensboro, two programs with city or county-wide service areas.

Among the various outreach methods attempted, three were isolated by program staff as most effective in generating interest and subsequent client enrollments:

- Referrals from other programs: Programs in Philadelphia, Boston, San Francisco, and Cleveland identified the use of referrals as their most successful outreach strategy. In San Francisco, HCI relied predominantly on existing networks of elderly persons prepared by other local area programs to locate and attract clients. Information letters to local senior citizens groups were also most effective in Cleveland.

- Word of Mouth: Word of mouth was identified by Cincinnati, Hot Springs and Greensboro as their most successful outreach strategy.

- Television: Greensboro also cited television as another effective program outreach method.

Least successful outreach strategies varied from program to program. Use of churches was identified as the least productive strategy in both Greensboro and Cleveland. In Cincinnati, advertising in the city-wide newspaper was unable to generate the level of trust necessary to attract clients. Use of flyers in the San Francisco neighborhood and television and radio spots in Hot Springs were also regarded as unable to evoke a sufficient level of trust in the project and the agencies. Resident trust was further eroded in San Fransicso due to the use of lists of clients from the local weatherization program, which was found to have had a poor reputation among its recipients. This problem in San Francisco underscores the drawbacks to using lists from other agencies. While an excellent source of names and addresses, the residents listed are likely to remember any shortcomings in previously provided services.

In general, outreach and enrollment problems centered on establishing trust among the targeted elderly homeowners. Outreach was perceived as a problem in five of the seven programs. Only in Boston and Philadelphia, where client identification was facilitated through the use of case records from other agency sponsored programs, was enrollment perceived as problem free.

- In Cincinnati, the target area was on the opposite side of the city from the PWC offices and its residents were unfamiliar with PWC as a service agency. Local groups and individuals also harbored deep distrust of public programs. The area had received few, if any, public assistance programs in the past.

- In Cleveland, the target area residents were extremely skeptical of public assistance programs. The distrust was the result of both philosophic conservatism and prior experience with other city housing assistance programs which were held in low regard.

- In Hot Springs, distrust was fueled by past experiences with other public agency programs, particularly weatherization, which were perceived as ineffective and by previous experiences with private contractors. Many elderly residents feared liens on their homes. There was also a problem reaching and attracting clients from the rural county, who were less familiar with social service programs and more reluctant to participate.

- In San Francisco, the agency attempted numerous outreach approaches without realizing substantial results. The ineffectiveness of several methods, particularly neighborhood leafletting and the use of the weatherization lists, was based on a failure to establish trust with the elderly residents.

- In Greensboro, program staff expected a limited enrollment incubation period during which the program would catch hold. This period, however, was considerably longer than anticipated, and was eventually alleviated, in part, by word of mouth references from existing clients. The GHA also had to overcome any stigma associated with being recognized as a public housing authority. In advertising, the program was described with little or no reference to the authority.

These problems suggest that program outreach strategies consist of two components: a descriptive, informational component designed to introduce the program, and a trust component, responsible for convincing residents of the credibility and integrity of both the provider agency and the program itself. The two agencies who did not cite outreach as a problem were able to draw upon existing clients already familiar with the reputation of the agency. The program experiences also suggest that once trust has been established, the enrollment process proceeds in a smooth fashion, often relying on word of mouth referrals.

3.2.2 Program Intake/Enrollment Experiences

Intake and enrollment refer to the process of formally accepting clients who have been identified and attracted by outreach efforts into the program. This process involved home or office visits with clients, application-taking, determination of eligibility, and verification of application information.

All programs but one conducted enrollment interviews in the client homes. These enrollment interview visits were frequently combined with home inspections. Hot Springs, the only program which did not utilize home enrollment visits on a regular basis, suggested that potential clients complete the enrollment form at the program office. This policy supported a secondary program objective, to offer the elderly residents a reason for getting out of their homes. When infirmity or inconvenience restricted the ability of a potential client to come to the office, the staff would conduct home visits.

The demonstration required that all participant programs adhere to three fundamental eligibility criteria:

- Income: all clients must have incomes below the Section 8 eligibility level;
- Age: all clients must be elderly, at least 62 years in age; and
- Homeownership: all clients must be homeowners.

Programs were given the flexibility to adopt any other locally appropriate eligibility criteria. In general, agencies were satisfied with the demonstration imposed criteria and did not modify or expand the HUD criteria. Philadelphia was the only program to substantially add to the demonstration mandated criteria. PCA targeted their resources to existing agency clients, particularly those clients considered frail, aged, and homebound. Housing condition, defined as not severely dilapidated housing, was added in Cleveland and Boston.

Verification of client income and homeownership status was generally not performed by the demonstration programs. Five of seven programs reported no procedures to verify client information. These programs typically adopted a self-certification policy which was based on the belief that most applicants would not falsify information and, irrespective of the validity of the information, that genuine need was almost always evident.

3.3 Home Inspections

Demonstration procedures required that enrolled clients receive home inspections at the beginning of the demonstration prior to the provision of any repair services and at the start of the second program year. Inspections served several purposes in the demonstration:

- Needs identification: Home deficiencies and repair needs were identified using inspections. Needs were also identified by clients.

- Insurance and Peace of Mind to Clients: Several programs suggested that inspections could be considered services on their own merit. Some clients felt more secure knowing that their home had been inspected recently.

- Data collection: Inspections also served as a source of data on repair needs and home deficiencies. Data collected by inspectors formed the basis of repair needs used in the evaluation of the Demonstration.

3.3.1 The Inspection Process

Inspections at the seven demonstration sites were conducted utilizing a standard inspection report form developed for the Demonstration.* Inspections consisted of a room by room, system by system check of condition, with inspectors describing an item based on the supposed cost to repair or replace; no cost/no deficiency; items requiring less than $100 materials and labor to repair; items requiring between $100 and $300 materials and labor to fix; and items requiring over $300 materials and labor to repair. Inspections were intended to be comprehensive, identifying major as well as minor repair needs.

Year One inspection routines were typically straightforward and, aside from scheduling constraints, experienced few complications or problems. In general, the program inspected only those parts of the house eligible for service; rental units in duplexes or tripledeckers were usually not inspected. Portions of structures common to all units, such as roofs and porches, were routinely covered. Only Cincinnati and Hot Springs inspected all portions of the housing structure, including rental units. Hot Springs, however, only provided repair service to the client's personal unit.

During the second program year, inspections were likely to be more superficial and focused on particular items of priority to individual programs. In Philadelphia, inspectors attached priority

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*See Appendix E.

to security-related items such as windows and doors and to leaking water faucets. Gutters were a priority item during Year Two inspections in Cincinnati.

Inspections were conducted by both formal inspectors and other program staff. As indicated in Section 3.1, responsibility for inspections was often transferred among staff persons during the course of the Demonstration. This shifting in inspection responsibility was generally in response to efforts to reduce costs and to improve efficiency, particularly for the repair supervisors who also were initially assigned inspection duties. This wide variation in the training and prior experience of inspectors is important: the number of home deficiences identified appears to be affected by the background of personnel performing the inspections. This issue will be discussed in more detail in Section 3.3.2 and in Chapter Six.

While home inspections were incorporated into the basic Demonstration design, they were not always utilized by non-Demonstration home maintenance programs. Only two-thirds (66.7 percent) of the Area Agency of Aging (AAA) sponsored home maintenance programs responding to the State-of-the-Art survey offered home inspections. The programs most likey to forego inspections tended to be small scale, low budget handyman oriented operations. For these programs, inspections were beyond the scope of the programs. The AAA program that used inspections generally reported that program staff or trainees conducted the inspections. Contractors were rarely used for this work.

3.3.2 Inspection Issues

The inspection process was generally uncomplicated and not considered to be a problem by the program sites. However, issues surfaced during the two year Demonstration which deserve special attention: scheduling and the use of inspectors for evaluation data collection.

Scheduling Inspections

Scheduling was the predominant inspection problem identified most by the programs, particularly in Year One. In San Francisco, additional temporary inspectors were required to assist the two existing part-time inspectors overcome peak period backlogs. The length of time required to perform inspections was unexpected in Cincinnati, where the average Year One inspection consumed about two hours, including travel time. Overall, the length of the inspection routine, combined with program backlogs, accounted for most of the inspection-related scheduling difficulties.

There was no uniformity in the scheduling of inspections among the seven programs. Greensboro and Boston performed most inspections on the same day as enrollment. In Greensboro, same day inspection service was attributable to the project coordinator being responsible for conducting both enrollments and inspections. There was a one week period between enrollment and inspection in Hot Springs, even though the project director also performed both enrollments and inspections, and a two week interval in Cincinnati.* In Philadelphia, the inspections generally occurred four to six weeks after initial enrollment. Cleveland routinely scheduled its inspections to occur one week prior to receipt of repair service.

The Use of Inspectors for Data Collection

The use of inspectors for data collection on repair needs for evaluation purposes has several associated benefits and costs. Detailed information on home condition and deficiencies is typically difficult and costly to assemble. Use of inspection data reduced cost to a minimum and afforded a level of detail not available from any cost comparable methods.

To ensure that a reasonable level of comparability was maintained, a standard inspection form was utilized for data

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*Although the project director in Hot Springs conducted both enrollment and inspections, the lag time resulted from enrollments being taken in the program office.

eyes of an inspector. Comparison between sites can only highlight the magnitude of needs identified, not the actual comparative condition of homes. These limitations will be further detailed in Chapter Six.

3.4 The Delivery of Repair Services

The demonstration permitted programs discretion in the selection of an appropriate minor repair service delivery strategy. Throughout the life of the Demonstration, three alternative repair delivery strategies were utilized: the exclusive use of agency repair crews; the exclusive use of subcontractors; and the combined use of both agency repair crews and subcontractors.

Five programs (Philadelphia, Cleveland, Boston, Greensboro, Hot Springs) employ both agency repair crews and subcontractors at some point during the Demonstration. Boston, Greensboro, and Hot Springs were consisent throughout the Demonstration in their use of both repair crews and subcontractors. Cleveland used subcontractors only in Year One while Philadelphia began its use of subcontractors only in Year Two. Cincinnati performed all repair work using in-house program repair crews. San Francisco was the only demonstration program to exclusively use private subcontractors.

3.4.1 The Use of Agency Repair Crews

Programs chose to utilize repair crews as their primary method for repair service delivery for one or more of three reasons: to promote job training and employment; to contain costs; and to be able to better monitor quality control,

Job training was a justification for repair crew use in only one of seven programs. In Cincinnati, the parent organization was committed to the principal of providing local employment opportunities, particularly to the building trades, and this commitment was a key factor in the program's decision to forego the use of subcontractors. While commitment to employment and job training were important in the decision to utilize a repair crew, the demonstration collection. All program staff likely to conduct inspections were given specific training on the use of the form and the conventions to be followed.

Limitations in the use of inspectors to collect home condition data do exist. Despite training, each inspector's efforts to identify repair needs was influenced by prior professional training, work background, and agency association. The types and quantity of repair needs identified were likely to differ between programs and among program staff conducting inspections, irrespective of actual housing stock conditions. For example, the San Francisco inspectors were retired FHA appraisal and inspection staff with considerable prior experience in property inspections. Their thoroughness and attention to detail is reflected in the quantity of repair needs identified in San Francisco relative to other program sites. Conversely, the relatively low number of repair needs identified in Hot Springs can be attributed in large measure to the inexperince of the project director and secretary in conducting thorough inspections.

Agency orientation also appears to influence repair need identification by inspectors. An agency oriented toward social services delivery and elderly care, such as Philadelphia, was more likely to identify a high proportion of safety-related needs (safety railings, grab bars).* Some programs chose to emphasize particular minor housing problems, such as secure windows and doors, particularly in Year Two. These priorities were reflected in the inspection process; inspectors placed priority on identifying these problems.

Consequently, the data collected by inspectors may not always reflect actual conditions and may not be consistently collected across sites. While rich and detailed, the data cannot be assumed to represent actual repair needs. It does, however, offer a comprehensive look at the perceived condition of homes as seen through the

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*See Chapter Six for a complete analysis of repair needs.

was subsequently not perceived to be an appropriate source of job training due to the limited number of crew members and the importance of qualified, experienced workers.

Several programs selected repair crews as their primary method of service delivery in the belief that crews were substantially less expensive than subcontractors. Reducing the cost of repairs permitted the programs to either expand their scope of repair services offered or expand the number of clients served. An analysis of repair costs and service delivery is detailed in Chapter Seven.

Increased quality control was cited as an important benefit by nearly all programs utilizing repair crews. Repair supervisors or foreman were seen as better able to monitor the progess of work and to assess the quality of workmanship and materials used.

The use of repair crews had certain limitations, shortcomings, and costs. Recruitment of experienced, qualified personnel was often difficult, due to the limited salaries available for repair crew positions. In general, the pay scales for repair crew staff were substantially lower than private sector wages. In Cleveland, a low salary was believed to be a primary reason for a three month delay in filling the vacated position of repair supervisor. In Philadelphia, concern over low repair crew salaries was alleviated, in part, by the benefit package also offered to repair crew employees. While the Cincinnati repair crew salaries were not competitive with the private market, attracting and retaining qualified repair crew staff has been relatively easily due to the stagnating local construction industry. Program directors perceived some relationship between salaries and staff turnover. As discussed in Section 3.1., turnover among repair crew staff was a critical problem for five of the six agencies employing in-house repair staff.

Turnover has been a serious liability for programs utilizing repair crews. Turnover has been responsible for service delivery delays due to shorthanded crews that existed during the replacement period. New crew members needed to be acclimated to the program repair delivery system, regardless of prior work experience. This transition period often resulted in reduced work output. Turnover was also reported to be psychologically damaging to the programs, causing considerable energy and attention to be diverted to personnel issues rather than repair delivery.

Other issues associated with utilization of repair crews were transportation, tools and equipment, the purchase of materials, and storage. While these activities were also concerns for private subcontractors, they become direct responsibilties of programs who chose to use their own repair crews.

Transportation: Travel to and from the work site was costly both in terms of funds expended and time diverted from actual repairs. The severity of transportation problems varied by program. In Cincinnati, the target neighborhood was on the opposite side of the city from the agency. Philadelphia and Greensboro serviced clients throughout their city limits, while Hot Springs included clients from rural portions of Garland County. To promote efficiency, clients were often serviced on a geographic basis, so that repair crews could minimize travel between homes.

Tools and Equipment: The purchase of tools and equipment was considered either an individual crew member's responsibility or an obligation of the program. In Cincinnati, the agency maintained a staffed tool and equipment room from which needed tools would be borrowed on a daily basis. By contrast, the Phialdelphia program required its crew members to provide their own tools for most routine jobs.

Material Purchasing: Some programs were able to utilize bulk purchasing to reduce unit costs of repair materials. The Greensboro programs utilized bulk purchasing for smoke alarms and deadbolt locks, assuming beforehand that these items would be repair priorities for their clients. Hot Springs similarly prepurchased faucets and lock sets. Bulk purchasing was not widespread, however, due to the wide variation in repair jobs from house to house. Several programs had not considered bulk purchasing and bought materials on a job by job basis.

Storage: Bulk purchasing for materials was hampered most often by storage constraints. Most agencies had limited capacity for storing materials and hence were unable to maintain existing inventories of commonly used materials. Those agencies with some storage capacity were also concerned about the security of stored materials due to losses from theft.

3.4.2 The Use of Subcontractors

The use of subcontractors has been a novel aspect of the Demonstration. Historically, most weatherization and rehabilitation programs of comparable size have utilized work crews to perform work, often taking advantage of low cost labor available through CETA. Given the reduction of public sector funding for job training and work programs such as CETA, the use of private subcontractors offers a sound alternative for minor repair and maintenance programs.

The use of subcontractors appears to have been understated in the Demonstration. The State-of-the-Art survey of non-Demonstration home maintenance and repair programs found that the use of subcontractors is widespread. Among Area Agency on Aging (AAA) programs, the program type most comparable to the Demonstration model, subcontractors were utilized by 50 percent of the programs. There appears to be an increasing emphasis on the use of subcontractors to perform repair work previously funded through the CETA program.

The rationale for utilizing subcontractors varies among programs. In San Francisco, the exclusive use of private subcontractors is a traditional agency policy for all programs, predicated in part on the strong local union influence, which would insist that union wage rates be paid to any constituted program repair crew.

Four programs utilized subcontractors to perform tasks which were beyond the experience or capability of the repair staff or for work which required specialized professional licenses. While repair crews generally performed the full range of repair tasks, these programs were likely to apportion specialized repair activities, such as plumbing and electrical work, to subcontractors.

Cost was another reason cited for the utilization of subcontractors. In Greensboro, subcontracting for plumbing was considered essential, due to prohibitive costs associated with retaining a licensed plumber on the GHA staff. The Greensboro program also subcontracted flooring tasks, which required the use of expensive equipment. In Boston, ESAC routinely subcontracted out all wallpapering work, contending that private subcontractors could perform the work more efficiently than the untrained repair staff.

Subcontractors were also utilized to assist work crews in alleviating severe backlogs, particularly toward the end of the Year One repair delivery cycles. In these instances, subcontractors performed a wide range of repairs not necesssarily limited to specialized activities such as plumbing and electrical work.

Procedures for utilizing subcontractors tended to be program specific. In San Francisco, elderly home maintenance program repairs were parceled out to five subcontractors selected from the agency contractor pool. The subcontractors typically scheduled these repairs to fill time between larger non-demonstration related jobs. Quality control was maintained by the two part-time inspectors, who supervised all jobs. Subcontractors used in the GHA minor repair program also worked on other GHA projects. This relationship gave the program additional leverage in insisting upon timely, well done, and reasonably priced work.

The use of subcontractors was not without problems. San Francisco reported increased problems in Year Two with the timeliness of subcontractor work. Often, it was difficult to locate a contractor who would attend to a work order request in a reasonable period of time, due to other conflicting non-demonstration work. Related to the initial scheduling of work was the ability of subcontractors to accommodate callbacks and return visits. Several San Francisco clients reported long delays in receiving callback assistance from subcontractors for additional or deficient work.

Quality control issues were raised by programs in Boston and Hot Springs. While subcontractor work was generally inspected upon completion by most programs, it was not possible to easily monitor workmanship while work was in progress. Boston identified an example of more extensive, unauthorized work done by a roofer, while Hot Springs cited quality control problems with a subcontracted roofer reluctant to make necessary callback repairs.

In general, subcontractors were found by clients to be personable and understanding of eldery needs and concerns. Several programs reported instances of contractors voluntarily performing extra work not specified on the work order forms. The primary difference betwen the use of subcontractors and repair crews involves the cost of service delivery. This is analyzed fully in Chapter 7.

3.4.3 Scheduling and Backlog Issues

During the life of the Demonstration, scheduling was a serious issue in six of the seven programs. Organizing the daily work routines of the repair workers/subcontractors and coordinating repairs with inspections were considered problems in all program cities except Greensboro. Difficulties in scheduling repair work were due to several reasons:

- Elderly client schedules: Elderly clients did not always have open, flexible schedules, and repair work had to be rescheduled to accomodate homeowner schedules.
- Weather: Cold and inclement winter weather was a factor in scheduling repair work. Harsh weather limited exterior work and hampered travel.
- Staff Turnover: Problems with staff turnover also contributed to scheduling difficulties.

Scheduling difficulties were responsible, in part, for two repair crew-related administrative problems; downtime and backlogs. Downtime resulted when the distribution of repair work did not coincide with available repair staff hours. Insufficient work for a day or a prolonged period of time resulted in inefficient use of labor resources. Year One personnel problems in Hot Springs, for example, resulted in initial downtime problems, which were subsequently rectified by increasing central administrative control over the work patterns of the repair staff.

Backlogs occured when repair work was unable to keep pace with enrollment and inspections, resulting in prolonged waiting times between enrollment/inspection and receipt of repair services.

Programs averaged four weeks between enrollment and receipt of services during Year One. In Year Two, the waiting time was reduced to 2 1/2 weeks. All programs except San Francisco reported shorter client waiting periods to receive services in the second year. The most obvious reason for this improvement in service delivery time is the elimination of the enrollment requirement in Year Two, hence reducing the number of steps involved in service delivery. Programs also reported acquiring more experience in arranging schedules and budgeting repair staff time. In San Francisco, Year Two client waiting time did not improve due, primarily, to problems with contractor scheduling during the summer months.

Waiting times are not necessarily signs of inefficient operation. Several programs specifically structured their schedules to permit a one to two week backlog of clients in need of service. This practice was used to ensure that repair staff would not experience any downtime. When problems in scheduling occur, the built-in backlog assured continued operation. However, these programs preferred to limit their built-in lead time to two weeks.

3.4.4 State-of-the-Art Survey Finding

Most non-Demonstration programs appear to be small scale operations often focused on specific repair types. In general, the programs operated with no more than two or three persons. Handyman oriented programs were particularly prevalent. The various programs typically operated as appendages of the parent social service agency, taking advantage of overhead and administrative skills. Due to their size and budgets, a number of programs focused on specific repair activities such as the installation of smoke alarms, grab bars, and security locks.

Most non-Demonstration programs emphasize the provision of weatherization related repairs. Among the comparable Area Agency on Aging sponsored programs, weatherization was the minor repair type most frequently provided to clients. Approximately 92 percent of the AAAs extended weatherization related minor repair assistance. This high proportion suggests that the programs are responding to a considerable unmet elderly household need for weatherization assistance despite the widespread availability of Department of Energy (DOE) weatherization programs and energy conservation services provided by private utility companies.

The use of subcontractors appears to be widespread. Private subcontractors were utilized by one-half of the comparable AAA sponsored programs. Contractors were frequently used for such repair tasks as electrical work, plumbing, and heating/cooking.

3.5 Callback and Emergency Repairs

The demonstration design required participating programs to adopt explicit callback and emergency repair procedures appropriate to local conditions and needs. These procedures were intended to supplement the delivery of routine "work order" repair services.

Callback Services

According to administrative policies formulated for the Demonstration, callback services were intended to respond to instances of unsatisfactory or incomplete original workmanship and defective original materials. These requests for corrective repair service could be initiated by the client or as a result of program-sponsored quality control inspections. In practice, demonstration programs provided callback services for two reasons: to correct any deficient or unsatisfactory previous work and to provide additional repairs requested but not initially performed. New repair problems were often identified by clients upon completion of their routine work-order repairs. Depending on the availability of funds and program policy, this additional work was performed and classified as callback assistance. The analysis of callback repairs in Chapter 7 distinguishes between callbacks responding to workmanship and callbacks that are related to new repair work.

In general, the programs did not attach strict limitations to callback services. No programs specified formal limitations on the number of callback visits permitted per client. San Francisco assigned a per client dollar limit for all repair, callback, and emergency service. Once this limit was reached the client was ineligible for any further repair services. In San Francisco, all repairs were guaranteed by the participating subcontractors, at no additional cost to the program. Hot Springs was the only program to establish a cost ceiling for callback repirs, $50 for both materials and labor, but it was also flexible in its application.

The types of repairs conducted during callback visits were not uniform from site to site. This variation in repair type corresponds to the different program repair priorities and client needs. In Cleveland, plumbing repairs and weatherstripping were most likely to require callback visits. In Philadelphia, lock repairs and security related work were typical callback repairs. The other programs were unable to identify any outstanding type of repair work performed during callback visits. The repair jobs in Boston subcontracted to another housing agency were found to have a higher than normal incidence of callbacks.

Among the Area Agency on Aging (AAA) programs studied by the State-of-the-Art survey callback assistance appeared to be a standard service provided to clients. Approximately 80 percent of AAA programs offered callback services.

Emergency Services

As required by the demonstration design, all seven participating agencies provided emergency repairs to clients on an as needed basis. While emergency assistance was intended to generally respond to problems affecting client health and safety, specific definitions were left to the individual programs. Some agencies adopted strict interpretations of emergency assistance. In Greensboro, emergency assistance was provided only if the situation required instant attention and endangered life or property. A similar policy in Hot Springs resulted in emergency assistance treating such problems as gas leaks or lock sets to which keys had been lost.

A less rigid interpretation of emergency assistance was maintained by the other demonstration programs. In Cincinnati, emergencies were determined on a case by case basis without the assistance of any formal, written definition. In Year One, PWC staff were willing to extend emergency service to persons prior to formal enrollment, provided the homeowner agreed to subsequent enrollment in the program. In contrast, LHC in Cleveland would provide emergency service only after the first round of repairs had been made. In San Francisco, the unspent portion of each client's allocation, up to $350, could be applied to emergency assistance. If necessary, HCI would supplement these funds with reserves from a discretionary account of enrollment fees.

Emergency service was typically provided only during regular working hours. Only Greensboro and Cincinnati, two programs with considerable prior experience responding to emergency requests, provided 24 hour emergency service. Most programs, however, were able to respond to emergency requests within a 24 hour period.

By the end of the second year of the Demonstration two principal types of emergency repairs were identified across all seven sites: security related emergency work and winter/cold weather related repair problems. Security emergency visits typically involved changing lock sets after break-ins and replacing broken windows. Winter weather related emergencies included plumbing problems caused by broken or cracked water pipes, broken windows, wind damage to roofs, and roof leaks.

The provision of emergency services is not always a standard service provided by non-Demonstration programs. Among the AAA programs surveyed in the State-of-the-Art analysis, emergency services were offered by 60.5 percet of the sample. While several programs specialized in providing only emergency services, many could not afford to extend their services to provide the widespread emergency service availble to Demonstration clients.

Limited Use of Callback/Emergency Assistance

Throughout both years of the Demonstration the seven programs reported little abuse of callback and emergency services. Only a handful of clients reportedly attempted to abuse these services by securing additional unplanned work. This conclusion is supported by callback and emergency service utilization data presented in Chapter 7. This limited use of callback and emergency assistance can be attributed to the following reasons:

- Services Not Advertised: Several programs did not advertise the existence of their callback and emergency services. In order to limit repair requests to a reasonable figure, Hot Springs refrained from promoting the availability of these supplemental services.

- Limited Allocations: Clients in San Francisco were allotted a dollar limit for all repairs, routine or emergency. Most clients exhausted their allocations with routine work order repairs and were aware of their limited allocation status.

- Understanding of Services Unclear: Clients in several programs were unclear regarding the use and availability of callback and emergency services. In Cincinnati, clients were initially confused about what problems callback and emergency services could address.

- Character of Clients Selected: The nature of the elderly homeowners served may affect the utilization of emergency and callback services. Philadelphia clients did not typically initiate the program enrollment and hence did not comprehend the scope and overall purpose of the program.

Program actions to reduce the number of callback visits due to unsatisfactory work generally consisted of instituting post-repair inspections and/or improving communications with the repair crew or subcontractor. Philadelphia and Hot Springs began systematic post-repair inspections in Year Two in an effort to discourage any tendencies toward incomplete or improper work. Cincinnati renewed efforts to mantain regular, close contact between regular staff and admnistrative staff to safeguard against any misperceptions. The Cincinnati crew leader and each homeowner conducted a final walk-around the house before leaving the job site to check for client satisfaction. In Boston, callbacks were reduced by eliminating their suspected source--another local nonprofit agency under subcontract to perform a limited number of repair jobs.

Emergency services received such limited attention that there was no need to adopt any remedial actions to restrict or qualify their use.

3.6 Client Referral Assistance

The provision of referral assistance was considered to be an integral component of the elderly home maintenance demonstration. While the demonstration focused on providing home maintenance and repair services, there were a number of elderly clients in need of other housing related and non-housing services not available through the demonstration. The role of client referral was to provide assistance to clients in meeting these other needs.

The seven programs cumulatively addressed a wide range of referral needs of demonstration clients. Social services and other housing related referrals constitute the majority of referral types. Common social service referrals included food and nutrition, transportation, housekeeping, medical, and recreation services. Housing related referrals were often related to more substantial housing rehabilitation loan and grant programs, weatherization, and handyman services. Financial referrals included counseling assistance and homestead tax abatement available in a number of states. Also important were referrals to the low income emergency fuel assistance program.

This wide variety of referral types was not characteristic of every program. Throughout the two year Demonstration participating programs exhibited wide variation in the types and quantity of referral assistance offered to their clients. In general, the delivery of routine referral assistance among Demonstration sites was limited. Demonstration programs were more likely to be passive rather than active providers of referral assistance. During the Year Two steady state phase four of seven programs offered either no specific referral assistance or provided assistance only on a request basis. Cleveland reported limiting its referral assistance to the Year One enrollment period when questions arising from the application interview could be addressed. San Francisco relied largely on a compendium of local resources available to elderly residents prepared by the agency and distributed to clients upon enrollment. By Year Two, provision of referral assistance in Greensboro and Cincinnati had evolved into a client initiated process.

The two programs sponsored by social service agencies were the only Demonstration programs to offer consistent regular referral assistance throughout the two year demonstration period. Boston and Philadelphia made extensive use of their existing client social service networks. In Philadelphia, client needs identified by the elderly home maintenance program were referred to the agency service manager assigned to the client for further assistance and followup. In Boston, referrals were routinely made directly to other parent agency social service and other housing related programs.

The Hot Springs program, which had provided only minimal referral assistance during Year One, targeted referral assistance as a priority activity in Year Two. The program added a full-time community resource facilitator whose time was divided between proposal writing and referral. Referrals were typically made to one of two sources: the Area Agency on Aging or to FmHA for Section 504 loan and grant housing rehabilitation assistance.

The ability of participating agencies to provide referral assistance was determined, in part, by the availability of other existing resources in the target areas and the prior agency experience in making client referrals. The diversity of social service programs available in Philadelphia and Boston, for example, contrasts with the scarcity of such programs in Hot Springs and Cincinnati's West Price Hill neighborhood. The abundance of other housing programs available in San Francisco and Boston differs from the lack of such programs in Philadelphia and Hot Springs. While other housing, weatherization, or social service programs may exist in some participating agency cities, referrals were often infeasible due to severe backlogs and waiting lists. This was particularly evident with city funded major housing rehabilitation programs in Greensboro and Cincinnati. In Hot Springs, local CDBG funds have not been used to develop housing rehabilitation programs; consequently, there were no other housing programs available for referral.

Prior referral experience may provide agency staff with existing network and communication links with other elderly oriented programs. Utilizing existing networks facilitates the referral process. Prior experience may also have acquainted demonstration staff with the techniques and procedures used in referral. Prior experience in referral varied according to agency orientation. The two social service oriented agencies in Boston and Phildelphia had substantial social service referral experience in their targeted areas. San Francisco and Cleveland, two predominantly housing oriented agencies, had prior experience referring clients to other housing programs, but no experience with social service referrals. The Greensboro Housing Authority maintains a community services department which had been responsible for public housing tenant referrals to both housing and social service programs. PWC's prior referral experience, acquired from the administration of a citywide major housing rehabilitation program, had been sporadic and limited. As a newly created organization, the Hot Springs program had no record of referral experience.

Among a majority of the Demonstration sites, there were no systematic follow-ups with clients after they received referrals to other programs or services. Exceptions to this practice occurred in San Francisco, Hot Springs, and Philadelphia during Year Two. San Francisco agency staff administered both the Demonstration and the deferred loan housing rehabilitation program, hence making follow-up automatic. The community resource facilitator in Hot Springs attracted FmHA 504 loan and grant applications through the entire application and construction period. In Philadelphia, referrals to agency service managers resulted in periodic follow-up by other PCA social service staff.

In a limited number of cases, Demonstration programs were able to utilize referrals to other home repair programs to effectively increase the amount of repair services received by clients. Other home repair programs, both major and minor, were used to supplement the repairs completed by Demonstration resources. Often these referrals were promoted by unfilled repair needs identified by Demonstration inspectors.

Five programs were able to piggyback Demonstration repair resources with other housing funds. A sixth program, Greensboro, was able to provide home maintenance services to persons on city housing rehabilitation program waiting lists. Four of the five programs able to combine Demonstration funds with other housing resources all utilized other programs administered by their own parent agencies. Cincinnati was able to piggyback seven Demonstration clients with the major housing rehabilitation program run by the agency. Economies of scale were not realized since city CDBG requirements necessitated client re-enrollment and re-inspection. A number of San Francisco Demonstration clients received additional major repairs from the agency administered housing rehabilitation deferred loan program. The pool of Demonstration clients was considered an excellent source of deferred loan receipts. Beginning in Year Two the Philadelphia agency administered a city funded Basic Systems grant program which served a number of Demonstration clients. Efficiencies were realized by PCA due to shared subcontractors and simultaneous enrollments. Inspections for the city CDBG program were, by regulation, different from the Demonstration inspection process. The use of FmHA Section 504 housing rehabilitation loans and grants for elderly households in Hot Springs represented the only successful leverage of non-parent agency housing resources to supplement Demonstration repairs. Boston was the only site to piggyback Demonstration funds with other minor home repair resources. The Boston program effectively leveraged electrical service and carpentry services provided through other agency programs.

3.7 The Impact of Program Administration on Cost

The Demonstration programs had certain activities and costs not directly attributable to the delivery of repair services. These administrative costs are important program characteristics; they determine the total amount resources directly available for repair of client homes and they influence the per repair and per client costs of service delivery. This section reviews the costs of program administration during Year Two of the Demonstration and provides background data for the more detailed analyses of program costs found in Chapters Seven and Eight.

The demonstration design specified seven major project functions which provide an organizational structure encompassing the entire elderly home maintenance delivery process. These seven major functions are:

- project planning/development;
- participant intake;
- inspection/diagnosis;
- maintenance and repair services;
- counseling, information, and referral;
- service support; and
- project management

Along with a separate overhead category, all program budgets and expenditures were tracked according to these designations.* Program administrative costs consist of all non-service delivery functions--project planning, participant intake, project management, and overhead (including fringe benefits related to administrative labor). For descriptive purposes, service delivery has been broadly interpreted to include maintenance and repair services as well as inspection, referral assistance, and service support nonrepair services.

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*Overhead costs include utilities, rent, insurance, audit and legal expenses and other office related expenses.

Administrative expenses consume approximately one quarter of all Demonstration expenditures. During Year Two administrative costs averaged 25.3 percent per program, as shown in Exhibit 3-2. This proportion is nearly identical to the total amount of administrative costs projected in Year Two budgets. The amount projected to be expended on administration in the Agency Plans of Service was 25.7 percet.

As the varying program characteristics in the previous sections suggest, the proportion of expenditures devoted to administration differs noticeably between programs. Above average proportions of resources were devoted to administration in Boston (39.1 percent) and Hot Springs (35.7 percent). Both programs found it necessary to spend considerable resources to hire consultant services for payroll, bookkeeping, and accounting tasks.

The proportion of expenditures allocated to administration was least in San Francisco and Cleveland. The San Francisco program allocated only 11.9 percent of its resources to administrative costs in Year Two. The low administrative costs in San Francisco reflect the small staff size and the reduced administrative workload that accompanied the use of subcontractors. In Cleveland, administrative costs totalled 17.8 percent of Year Two expenditurs. Cleveland's ability to contain administrative costs results, in part, from the large proportion of time spent by the administrative staff performing other service related functions such as inspections and quality control checks.

When actual administrative expenditures are compared with budget projections for administration, significant deviations are found for three programs--Boston, Hot Springs, and San Francisco. Boston is the only program to show a substantial budget overrun (approximately 12 percent) for Year Two administrative expenses. Conversely, Hot Springs and San Francisco underspent substantially relative to their Year Two budgets. In Hot Springs this underage is attributable to the Year Two budget containing nearly $30,000 in miscellaneous office and unspecified costs. These costs were not actually incurred in Year Two.

Exhibit 3-2

Local Program Administrative Costs*
Year Two

	Total Expenditures in Year Two**	Total Administrative Expenditures in Year Two	% Cost Allocated to Administration	Year Two Budget	% Year Two Budget Allocated to Administration
Cincinnati (6/30/82)	102,134	28,199	27.6%	109,996	25.0%
Cleveland (6/30/82)	127,145	22,580	17.8%	127,049	14.5%
Boston (6/30/82)	94,708	37,046	39.1%	100,000	26.9%
Greensboro (8/31/82)	100,409	27,064	27.0%	108,557	24.2%
Hot Springs (4/30/82)	81,677***	29,173	35.7%	125,957	47.0%
Philadelphia (6/30/82)	125,507	30,472	24.3%	133,455	23.5%
San Francisco (6/15/82)	110,157	13,161	11.9%	107,640	18.0%
All Programs	741,737	187,695	25.3%	812,654	25.7%

* Includes project management costs, overhead, project planning, participant intake, and fringe benefits attributable to administrative labor.

** Through June 30, 1982.

*** Through April 30, 1982.

While slightly more than one third of all expenditures can be attributed to administration, it does not necessarily follow that the remaining expenses were allocated to direct repair and maintenance service to clients. The "soft" services such as inspections and referrals/counseling received considerable resources in several programs. A detailed analysis of repair costs and repair expenditures is contained in Chapter Eight.

The impact of the administrative costs are ultimately reflected in the costs of repairs and amount of service dollars received by clients. Exhibit 3-3 shows the impact of administrative costs on repairs and client service. Overall, administrative costs contribute $47.03 to the cost of an average Demonstration repair. Greensboro had the smallest administrative cost per repair, $16.63, reflecting that program's ability to spread its administrative costs among a large number of repairs. Conversely, the administrative costs per repair in Hot Springs averaged $133.82, reflecting the relatively small number of repair jobs accomplished.

Across all sites, Year Two administrative costs contributed $226.68 to the average cost of service per client. Philadelphia averaged $282.15 per client while San Francisco averaged only $109.68 per client.

3.8 Summary

During the life of the Demonstration, the seven agencies were responsible for organizing programs based on their Agency Plans of Service submissions, enrolling a minimum of 125 clients, conducting first and second year inspections of all client homes, and providing two rounds of repair services. This delivery process was the subject of administrative field interviews with program staff occurring at the beginning of the Demonstration, toward the end of the first repair cycle, and at the end of the Demonstration. Based on a review of the data collected from these visits, the following summary statements can be drawn:

Exhibit 3-3

Administrative Costs per Repair Job and per Client*
Year Two

Site	Administrative Cost/ Repair	Administrative Cost/ Client
Cincinnati	$ 59.87	$266.03
Cleveland	$ 48.04	$182.10
Boston	$130.44	$308.72
Greensboro	$ 16.63	$191.94
Hot Springs	$133.82	$267.64
Philadelphia	$ 53.30	$282.15
San Francisco	$ 34.82	$109.68
All Programs	$ 47.03	$226.68

* Includes project management costs, overhead, project planning, participant intake, and fringe benefits attributable to administrative labor.

- Despite general Demonstration guidelines, the organizational models used by the seven sites exhibited considerable variation. Differences were characteristically related to roles of the key program staff in performing the day-to-day administration, enrollments, inspections, foreman responsibilities, and repair work. During the Demonstration several programs did adapt their organizational models in reaction to unexpected problems, most notably staff turnover. Typical changes involved project directors and coordinators assuming such additional responsibilities as inspections.

- In general, outreach problems centered on establishing trust among the targeted elderly homeowners. The most successful outreach methods were word of mouth and referrals from other programs, approaches best able to convince residents of the credibility and integrity of both he provider agency and the elderly home maintenance program. The two agencies who did not cite outreach as a problem were able to draw upon existing clients already familiar with the reputation of the agency. Most programs experienced early outreach/intake problems and tended to gravitate toward outreach strategies which generaterd the highest levels of trust.

- Enrollment procedures posed few problems for the programs. Verification of client income and homeownership status, however, was generally not performed.

- Inspections were typically straightforward and, aside from scheduling constraints, experienced few problems. Program backlogs, combined with the length of inspection routines, accounted for most of the inspection-related scheduling difficulties. To overcome backlogs, several programs used project directors to assist with home inspection. Second year inspections were not conducted with the same systematic consistency that characterized first year inspections.

- Subcontractors were used to varying degrees in all but one program. While repair crews generally performed the full range of repair tasks, subcontractors were more likely to be assigned specialized repair activities, such as plumbing and electrical work. Several programs utilized subcontractors to alleviate repair backlogs while another has become more familiar with the opportunities to be gained from subcontracting particularly difficult repair tasks.

- Subcontractors are used in approximately 50 percent of the comparable non-Demonstration programs surveyed.

- Agency work crews, utilized by six of seven programs, were the source of numerous problems pertaining to repair crew recruitment and retention, scheduling, and performance. As scheduling and personnel problems became resolved, work crew problems subsided noticeably. In general, however, pay scales for repair crew staff were substantially lower than private sector wages.

- Backlogs constitued significant problems for most programs and occured when repair work was unable to keep pace with enrollment and inspections. Personnel and scheduling problems also contributed to severe backlogs, particularly in Year One. The average waiting time from client enrollment to receipt of repair services varied substantially among pro- grams and tended to change from month to month, dependent on backlog status and staff turnover problems.

- The programs typically chose not to impose strict limitations to callback services. Cost and visit limitations were rare and clients were usually treated on a case-by-case basis. In general, clients did not appear to abuse the callback services. To contain callback problems, several programs instituted post-repair inspections intended to improve quality control.

- The provision of client referral assistance is determined, in part, by parent agency orientation, prior experience, and the availability of other elderly resources in the target areas. The two programs most successful in referring clients to other programs both had strong social service orientations and were actually responsible for administration of a number of these other elderly services. In general, routine follow-up visits or telephone conversations are seldom conducted once referrals have been made.

- Administrative expenses consume approximately one quarter of all Year Two Demonstration expenditures. Boston and Hot Springs had the highest proportions of program expenditures devoted to Administration; San Francisco and Cleveland the lowest.

- Overall, Year Two administrative costs contribute $47.03 to the cost of an average Demonstration repair, and $226.68 to the average cost of services per client.

Chapter 4

Client Characteristics

Since a primary objective of this research is to compare the effectiveness with which agencies administer repair programs, it is important that we compare the circumstances under which they operate. Thus, in this chapter, the characteristics of clients of the Elderly Home Maintenance Demonstration are described and compared across the seven demonstration sites. By examining client characteristics, particularly the housing needs and living standards of program participants, we are better able to assess the range of problems of elderly homeowners which this program must address.

The chapter begins with an examination of the household characteristics of clients, such as household size, sex, age and education of the head of household. Next, the health and mobility of participants is discussed in Section 4.2. This is followed by a description of the involvement and integration of elderly clients in the community in Section 4.3.

In Section 4.4, the sources and levels of client income are examined, and the housing expenditures of the program participants are described in Section 4.5. A comparison of the characteristics of home repair program clients with the national elderly population and with other home repair program populations is made in Section 4.6. Such a comparison allows us to identify whether the demonstration clients are representative of the elderly population at large and how they compare with the clients of other repair programs. In the last section of the chapter, a summary of client characteristics at each of the demonstration sites is presented and differences among the sites are highlighted.

4.1 Demographic Characteristics of Client Households

The majority of households in the Demonstration consist of widowed females who are living alone. Approximately 75 percent of all client households are headed by women, while 60 percent are widowed. Depending on the site, from one-half to two-thirds are single-person households. The average age of clients was about 72 at the start of the Demonstration, and approximately 60 percent have less than a high school education.

As Exhibit 4-1 shows, the characteristics of clients vary across the demonstration sites. About two-thirds of the clients in Boston, Greensboro, and Philadelphia are widowed, compared with over half of the clients in Cincinnati, Hot Springs, and San Francisco. In Cleveland, the proportion of widowed persons (49 percent) is somewhat smaller than at the other sites. Clients in Cleveland also tend to live in somewhat larger households; approxomately 59 percent of Cleveland households contain two or more people. The Hot Springs and Greensboro sites have the largest number of single-person households, 70 and 67 percent, respectively.

The program participants in Cleveland also tend to be younger than clients at other sites. While the average age of clients over all sites is 72, it is 69 in Cleveland. By contrast, clients in Boston and Philadelphia are somewhat older, with average ages of 74 and 75, respectively. About 28 percent of Philadelphia program participants are over 80 years old.

Most of the demonstration's clients are either white or black. The few Hispanics and Asians who participated in the program live in San Francisco. All of the clients in Cincinnati and over 90 percent in Boston are white. By contrast, over 80 percent of clients in Cleveland are black. The remaining sites fall in between: Greensboro and Hot Springs have predominantly white clients, and Philadelphia and San Francisco have predominantly black clients.

The educational attainment of program participants varies significantly across sites. (See Exhibit 4-2.) Over 70 percent of clients in Greensboro, Hot Springs, and Philadelphia did not complete high school. On the other hand, approximately half of

Exhibit 4-1

SELECTED CHARACTERISTICS OF CLIENT HOUSEHOLDS. BY CITY.

Client/Household Characteristics	CITY							
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
% Female Headed Households	72.7%	71.6%	79.8%	72.8%	71.4%	77.0%	72.8%	73.9%
% Widowed Heads of Households	59.0%	49.3%	66.1%	66.7%	58.7%	61.0%	56.2%	59.5%
% Married Heads of Households	30.3%	34.5%	22.6%	23.8%	27.0%	23.6%	27.0%	27.0%
% Single Person Households	54.5%	40.9%	64.5%	67.1%	69.8%	63.1%	57.7%	
Mean Age of Head of Household	70	69	74	72	73	75	71	72
% White Households	100.0%	14.1%	93.5%	72.8%	60.8%	35.5%	30.1%	57.2%
% Black Households	0.0%	84.5%	5.6%	27.2%	39.2%	64.5%	58.1%	40.8%

Exhibit 4-2

EDUCATIONAL ATTAINMENT OF CLIENTS, BY CITY.

Education	CITY							
	Cincinnati (n=118)	Cleveland (n=140)	Boston (n=124)	Greensboro (n=145)	Hot Springs (n=124)	Philadelphia (n=121)	San Francisco (n=129)	All Cities (n=901)
0-11 yrs.	61.0%	57.9%	46.0%	71.8%	71.8%	71.1%	51.2%	61.6%
12 yrs.	30.5	23.6	44.4	15.9	16.1	23.1	28.7	25.7
13 yrs. and greater	8.4	18.5	9.6	12.4	12.1	5.8	20.2	12.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean Educ. (St. Dev.)	10.2 (2.4)	10.3 (3.3)	10.3 (2.9)	9.0 (3.5)	9.0 (3.1)	8.5 (3.3)	10.4 (3.8)	9.7 (3.3)

Source: USR&E Demonstration Enrollment File.

Boston and San Francisco clients completed 11 years of schooling. These observations are consistent with the observation that average educational attainment is lower in rural than urban areas, and it is inversely related to age.* The low levels of educational attainment in Greensboro and Hot Springs may be explained by the fact that more clients in these cities live in rural areas than do clients at the other sites. In Philadelphia, the fact that clients are older than those at other sites may explain why so few had extensive schooling.

While the mean number of years of school completed does not vary among clients in Boston, San Francisco, Cincinnati, and Cleveland, the distribution does. About 13 percent of all clients in these cities completed more than 12 years of education. In San Francisco, over 20 percent of clients completed more than 12 years of education, while in Cleveland this figure is 18 percent. To some extent, the high levels of educational attainment in Cleveland can be explained by the fact that clients tend to be younger than those at the other sites. In the case of San Francisco the explanation is different. In the 1960s, the target neighborhood was considered black and middle class, especially when compared with other black residential areas in the San Francisco Bay Area. This was reflected in education, occupation, and residential tenure.** As we shall see below, over two-thirds of San Francisco clients moved into their homes in the 1950s and 1960s.

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*See U.S. Dept. of Commerce, Statistical Abstract of the United States. 1979. Table No. 229, p. 144 for the relationship between age and education. See U.S. Dept. of Housing and Urban Development and U.S. Dept. of Commerce. Annual Housing Survey: 1977. Part A General Hosing Characteristics, Table A-1, for the average educational attainment in rural and urban areas.

**See William G. Moss, The Effects of Housing Segregation on the Negro Journey to Work. Unpublished Ph.D. dissertation, Department of Economics, University of California, Berkeley, 1973. Chapter 4.

The average length of time that clients have lived in their homes is 27 years. (See Exhibit 4-3.) Clients in Boston and Philadelphia have lived in their homes the longest -- a finding that is consistent with the fact that program participants in these target neighborhoods tend to be older than those at other sites. By contrast, Cleveland clients, who tend to be younger than program participants at other sites, have lived in their homes the shortest period of time. The mean year moved in is 1959; over 82 percent moved in after 1949.

4.2 Health and Mobility of Participants

In this section, the health and mobility of program participants are described. The physical condition of program participants suggests to what extent they are able to take care of themselves and to keep up their homes. The discussion is based primarily on three sources of information about the physical condition of elderly clients: (1) opinions of clients about their health and mobility; (2) the observations of interviewers who evaluated program participants at enrollment; and (3) the responses of clients to questions about their ability to undertake minor repairs.

About two-thirds of all clients stated that they or some member of their family have a health problem. (See Exhibit 4-4.) Among the most common health problems reported were cancer, diabetes, heart ailments, and arthritis. In Hot Springs, over 75 percent of households reported health problems at enrollment, compared with about half of the Boston clients and close to 60 percent of Greensboro program participants. Interestingly, reports of health problems were not unusually high in Philadelphia, where the home repair program was targeted to the infirm.*

Interviewers also rated the health of clients according to one of four categories: (1) healthy; (2) some impairment; (3) in need of assistance; and (4) major disability.** Overall, 63

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*Enrollment interviewers were more likely to rate Philadelphia clients in poorer physical condition than later self-assessments of health by the clients themselves.

**A complete discussion of these data is presented in Appendix B-3.

Exhibit 4-3

DISTRIBUTION OF CLIENTS BY YEAR MOVED INTO HOUSE. BY CITY.

Year	CITY							
	Cincinnati (n=122)	Cleveland (n=142)	Boston (n=124)	Greensboro (n=147)	Hot Springs (n=125)	Philadelphia (n=123)	San Francisco (n=137)	All Cities (n=920)
1980	0.0%	0.7%	0.0%	1.4%	0.8%	0.0%	0.0%	0.4%
1975-79	7.4	7.7	1.6	4.8	12.8	3.3	4.4	6.0
1970-74	4.9	12.0	4.0	8.8	16.0	2.4	2.9	7.4
1960-69	27.9	36.6	22.6	24.5	20.8	18.7	34.3	26.8
1950-59	23.0	25.4	28.2	27.9	17.6	27.7	35.0	26.5
1949 and Before	36.9	17.5	43.6	32.6	32.0	48.0	23.4	32.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean (St. Dev.)	1954 (15)	1959 (12)	1948 (16)	1955 (14)	1957 (18)	1951 (12)	1957 (11)	1954 (14)

Source: USR&E Demonstration Enrollment File.

percent of elderly clients who were interviewed were rated as healthy. There was wide variation among the sites regarding these ratings, however. For example, almost 80 percent of clients in Cleveland and Hot Springs were considered healthy compared with 26 percent in Philadelphia. In Philadelphia, a much higher proportion of clients were considered in need of help or having a major disability. Also, at the Cincinnati and Boston sites more clients were found to be in need of outside assistance than at the other cities.

Concerning the mobility of elderly clients, just less than half of the heads of households that participated in the program said that they had problems getting around their homes. (See Exhibit 4-5.) Among the sites, 70 percent of Philadelphia heads of households have mobility problems, a finding that is consistent with the observations of program interviewers and with the way that the Philadelphia program targeted services. In contrast, only about 30 percent of respondents in Cincinnati and Hot Springs reported such problems.

Overall, from 60 to 70 percent of those reporting a mobility problem said that they have difficulty climbing stairs, getting into and out of the bath, and entering and leaving the house. The incidence of each these problems is highest among clients in Philadelphia. In addition, clients in Cleveland tend to have more problems climbing stairs than elderly persons at other sites, and problems getting into and out of the bathtub were reported more frequently in Cleveland and Greensboro.

A final indicator of health and mobility is the ability of elderly clients to do minor repairs. At enrollment, clients were asked whether they can perform tasks which ranged from replacing a light bulb to rehanging a door.*

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*The skill required for replacing a light bulb involves removing the old and inserting a new bulb, not necessarily climbing a ladder to perform this task.

Exhibit 4-4

HEALTH PROBLEMS OF MEMBERS OF CLIENT HOUSEHOLDS. BY CITY.

	CITY							
	Cincinnati (n=122)	Cleveland (n=142)	Boston (n=124)	Greensboro (n=147)	Hot Springs (n=125)	Philadelphia (n=121)	San Francisco (n=137)	All Cities (n=918)
Percent Responding Any member of Household has Health Prob. (%)	69.7%	62.7%	53.2%	59.2%	77.6%	68.6%	67.2%	65.3%

$X^2(6) = 21.0$ $P = 0.002$

Source: USR&E Demonstration Enrollment File.

Exhibit 4-5

MOBILITY PROBLEMS OF HEADS OF CLIENT HOUSEHOLDS. BY CITY.

	CITY							
	Cincinnati (n=122)	Cleveland (n=142)	Boston (n=124)	Greensboro (n=147)	Hot Springs (n=126)	Philadelphia (n=121)	San Francisco (n=137)	All Cities (n=919)
Percent Indicating Some Mobility Problem	33.6%	52.8	41.1%	57.8%	29.4%	71.9%	46.7%	47.9%
TYPES OF MOBILITY PROBLEMS								
Difficulty Getting In/Out of House	19.5	39.4	24.7	31.0	23.8	44.5	26.0	29.9
Problems Using Stairs	27.4	46.1	31.2	31.7	19.1	55.7	31.9	34.7
Problems Getting In/Out of Bath	15.9	42.4	23.8	47.5	16.7	52.2	26.7	32.6
Other Problems	0.9	1.5	4.9	1.4	4.0	5.1	0.0	2.5

Source: USR&E Demonstration Enrollment File.

As shown in Exhibit 4-6, the number of clients indicating they can perform a particular task decreases as the difficulty of the task increases. While 86 percent of clients said that they can change a light bulb, only 30 percent can do inside painting and only 5 percent can rehang a door. At two sites, Cincinnati and Cleveland, higher proportions of clients indicated an ability to do repairs, compared with Greensboro, Hot Springs, Philadelphia, and San Francisco, where the number that said they could make repairs was below average. The greater ability of Cleveland and Cincinnati clients to do these repairs may be related to the fact that client households in these cities are larger and younger than at the other sites.

4.3 Elderly Involvement in the Community

According to gerontologists, elderly persons are often isolated from their communities because of mobility problems or because they are fearful of the outside world. The extent to which home repair program clients are involved in community activities is important to this study because participation in outside activities represents potential sources of help in dealing with health problems, home repair and maintenance, and other needs.

At enrollment, program clients were asked whether they participate in a variety of senior citizen programs including, recreational activities, meal programs, visiting nurse or health services, and transportation services. Except for Hot Springs, from 30 to over 40 percent of clients at all sites participate in at least one senior citizen activity. (See Exhibit 4-7.) Participation in senior programs is especially low in Hot Springs, perhaps because programs for the elderly are less likely to be available in a rural area.

Philadelphia clients reported average or above average participation in most senior citizen activities. They are particularly active in meal services, visiting nurse/health services, and transportation programs for senior citizens. The high level of community integration among clients in Philadelphia can be attributed to the fact that the program participants were already clients of the social service agency that administers the demonstration in that city.

Exhibit 4-6

PERCENT OF CLIENTS STATING THEY CAN MAKE SELECTED REPAIRS. BY CITY.

Repairs	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
	CITY							
Percent That Can Change A Light Bulb	98.3% (n = 121)	95.8% (n = 142)	95.2% (n = 124)	83.0% (n = 147)	78.6% (n = 126)	79.3% (n = 121)	70.8% (n = 137)	85.7% (n = 918)
Percent That Can Replace A Fuse	65.0 (n = 120)	68.3 (n = 142)	79.8 (n = 124)	58.5 (n = 147)	45.6 (n = 125)	53.3 (n = 120)	52.9 (n = 136)	60.5 (n = 914)
Percent That Can Paint Inside of House	45.5 (n = 121)	47.2 (n = 142)	34.7 (n = 124)	10.2 (n = 147)	30.2 (n = 126)	19.0 (n = 121)	31.4 (n = 137)	30.9 (n = 918)
Percent That Can Fix A Broken Window	18.2 (n = 121)	19.7 (n = 142)	7.3 (n = 124)	2.0 (n = 147)	7.9 (n = 126)	6.6 (n = 121)	5.1 (n = 137)	9.5 (n = 918)
Percent That Can Rehang A Door	4.1 (n = 121)	15.5 (n = 142)	4.8 (n = 124)	0.7 (n = 147)	3.2 (n = 126)	2.5 (n = 121)	2.9 (n = 137)	4.9 (n = 918)

Source: USR&E Demonstration Enrollment File.

Exhibit 4-7

PERCENT OF CLIENTS PARTICIPATING IN SENIOR CITIZEN PROGRAM ACTIVITIES. BY CITY.

Senior Citizen Programs	CITY							
	Cincinnati (n=121)	Cleveland (n=142)	Boston (n=124)	Greensboro (n=147)	Hot Springs (n=125)	Philadelphia (n=121)	San Francisco (n=137)	All Cities (n=917)
Recreational Activities	30.6%	17.6%	49.2%	38.8%	10.4%	27.3%	33.6%	29.7%
Meal Services	18.2	15.5	28.2	21.8	15.2	31.4	30.7	22.9
Visiting Nurse/ Health Services	3.3	0.0	7.3	3.4	1.6	29.8	8.8	7.4
Transport Services for Senior Citizens	19.0	5.6	23.4	14.3	6.4	43.0	13.1	17.3
Other	0.0	44.4	8.1	12.9	8.8	12.4	40.1	18.9

X^2 for all such that $P << 0.01$

Source: USR&E Demonstration Enrollment File.

In other cities, clients report high levels of participation in particular types of programs. For instance, approximately one-half of Boston clients participate in recreational activities for the elderly. And in both Boston and San Francisco, participation in meal services programs is above average when compared with the other sites.

We should point out that no firm conclusions can be drawn from the information on client participation in elderly programs. We do not know if these participation rates are typical of all elderly households, although there is reason to believe that they are not. Because many clients learned about the home repair program through participation in other senior citizen programs, we suspect that the demonstration clients are not representative of the elderly population as a whole, and that these clients are more active in social programs that the general elderly population. This shortcoming is not surprising; many social welfare programs have had difficulties reaching the frail, the feeble-minded, the isolated, and the withdrawn.

4.4 Employment and Income

We now turn to a discussion of the economic status of the participants of the Elderly Home Maintenance Demonstration. In this section, the employment status of program clients and their levels and sources of income are described. In the next section, we discuss elderly household expenditures for housing and utilities.

The majority of program participants (73 percent) are retired although the percentage of retired persons varies from one site to the next. As Exhibit 4-8 shows, over 80 percent of Greensboro clients are retired as are 77 percent of San Francisco program participants. In comparison, 58 percent of clients in Boston fall into this employment category.

Approximately 14 percent of all clients are disabled. This was the second most common employment status at all sites except Boston, where 25 percent of household heads reported that they "kept house."* At all other sites, between 0 and 9 percent of

*This probably refers to widows that are housewives when their husbands were alive and working.

clients said that they kept house.Six percent of all participants are still working. The number of clients who work is lower in Philadelphia (2.4 percent) and San Francisco (3.6 percent). The percentage of employed persons is slightly higher in Boston (8.9 percent) and Cleveland (8.5 percent).

At the time of enrollment, each client was asked to report their total household income from all sources. In comparing responses to this question across sites, it is important that we take into account differences in the cost of living in various cities. By using the lower budget price index that is based on the Bureau of Labor Statistics' Three Budgets for a Retired Couple, Autumn 1980, we can make these city-by-city comparisons.* The lower budget, which has been adjusted to apply to homeowners, is not geared to a subsistence or poverty level, but simply a level relatively lower than the intermediate budget.** As we shall demonstrate below, clients' incomes are closer to the lower budget.

In Exhibit 4-9, we present unadjusted and adjusted mean total household income per month per site, the lower budget for a retired couple in 1980 for the respective cities, and the index used to obtain adjusted income. When we compare the average unadjusted income of participants at different sites, San Francisco client households have the highest incomes, followed by Boston and Cincinnati. Clients in Hot Springs have the lowest average incomes of all sites. When adjusted incomes are compared, Cincinnati has the highest average income followed by San Francisco and then Cleveland. Hot Springs again has the lowest mean income.

When unadjusted and adjusted incomes are considered together, two cities, San Francisco and Cincinnati, show particularly high incomes relative to the other sites. Clients in San Francisco have high unadjusted as well as adjusted incomes. In Cincinnati, clients

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*USDL: 81-384, Monday, August 10, 1981. For a more detailed description of the budgets and the indexes, see "Three Budgets for a Retired Couple in Urban Areas of the United States, 1967-68." BLS Bulletin 1570-6.

**Ibid, p. 1.

Exhibit 4-8

HEAD OF HOUSEHOLD'S EMPLOYMENT STATUS, BY CITY

Employment Status	CITY							
	Cincinnati (n=122)	Cleveland (n=141)	Boston (n=124)	Greensboro (n=147)	Hot Springs (n=126)	Philadelphia (n=123)	San Francisco (n=137)	All Cities (n=920)
Working	5.7%	8.5%	8.9%	7.5%	7.9%	2.4%	3.6%	6.4%
Unemployed	0.8	0.7	0.0	0.7	0.0	0.0	0.0	0.3
Keeping House	9.0	2.1	25.8	0.7	2.4	4.9	0.0	6.1
Retired	68.0	73.8	58.1	83.0	71.4	74.0	76.6	72.5
Disabled	16.4	14.9	6.5	8.2	17.5	17.9	19.7	14.3
Other	0.0	0.0	0.8	0.0	0.8	0.8	0.0	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

$X^2(30) = 139.8$ $P = 0.0000+$

Source: USR&E Demonstration Enrollment File.

Exhibit 4-9

UNADJUSTED AND ADJUSTED MEAN MONTHLY INCOME OF CLIENT HOUSEHOLDS*, BY CITY

	CITY							
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Total Mean Income Per Month (4)	$614	$593	$623	$468	$372	$464	$630	$538
Mean Income/month Adjusted by 3 Budgets Index	620	559	551	454	409	464	612	--
Lower Budgets for Retired Couple 1980 (3)	553	592	635	570 (1)	508 (2)	561	580	--
Index of Lower Budget; Deflator of Income (3)	99	106	113	103 (1)	91 (2)	100	103	--

(1) Durham, N.C. budget for 1978 inflated by CPI for Southern cities from 385,000 to 1,250,000.

(2) Lower budget for nonmetropolitan areas in the South.

(3) USDL: 81-384. "Three Budgets for A Retired Couple, Autumn 1980," Monday, August 10, 1981. Tables 1-4, adjusted for homeowners.

(4) Source: USR&E Demonstration Enrollment File.

*See Table B-4 for sample sizes and standard deviations.

have high unadjusted incomes, and a relatively low cost of living results in the highest mean adjusted household income among the seven sites. On the other hand, while Boston clients have a high average unadjusted incomes, the high cost of living in that city results in the third lowest unadjusted mean income.

Regarding the sources of client incomes, almost all program participants receive social security, which typically accounts for between 50 to 90 percent of total household income. Except for Hot Springs, 25 to 50 percent of participants at each site receive income from pensions. The low incidence of pensions among Hot Springs clients (14 percent) may be attributed to the fact that in the rural south people often work in agriculture or in non-union industries that have no pension plans.

4.5 Housing Expenditures

In this section, the housing expenditures of client households are examined. In addition, the burden that these costs place on program clients is analyzed by calculating housing, utility, and other service costs as a proportion of household income.*

Housing costs consist of mortgage payments, property taxes, and property insurance. The average percent of income spent on housing costs for all clients is 15.3. (See Exhibit 4-10.) This figure varies among the sites, from a low of 8.2 percent in Philadelphia to a high of 29.4 percent in San Francisco. In Philadelphia, participants have resided in their homes longer than participants at other sites and consequently are more likely to own their homes free and clear. In contrast, San Francisco program clients have not lived in their homes as long as clients at other sites. In addition, property taxes and insurances costs are generally quite high in San Francisco.

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*Household income refers to current income, excluding any assets. Due to program eligibility requirements, no data is available on assets held by the elderly, especially, non-interest or non-rent bearing personal property.

Exhibit 4-10

MEAN PROPORTION OF INCOME SPENT ON HOUSING AND HOUSING RELATED SERVICES

	CITY							
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Mortgage, Prop., Tax & Insurance as Percent of Income	9.4% (n=116)	16.9% (n=199)	19.2% (n=119)	12.6% (n=129)	10.6% (n=106)	8.2% (n=94)	29.4% (n=109)	15.3% (n=792)
Percent of Income Spent on Utilities: Oil, gas, & electricity.	15.5% (n=122)	20.6% (n=142)	24.1% (n=124)	19.6% (n=145)	17.7% (n=125)	22.4% (n=121)	10.7% (n=137)	18.6% (n=916)
Percent of Income Spent on Other Services: Water, Garbage, Etc.	1.3% (n=122)	2.5% (n=142)	2.0% (n=123)	0.9% (n=145)	2.6% (n=125)	1.5% (n=121)	2.9% (n=137)	2.0% (n=915)
Percent of Income Spent on housing, utilities, and services	26.3% (n=116)	39.2% (n=119)	45.4% (n=118)	32.2% (n=129)	31.6% (n=105)	32.0% (n=94)	43.6% (n=109)	35.8% (n=790)

Source: USR&E Demonstration Enrollment File.

Other housing related expenditures include utilities, water and sewer, and garbage. For all participants, the average percent spent on utilities is 18.6 of total household income. This includes gas, electricity, oil, and other types of energy used in the household. Utility expenditures vary by site from about 11 percent of household income in San Francisco to 24 percent in Boston. These expenditures typically account for over 20 percent of household income in Cleveland and Philadelphia. Overall, water and sewer, garbage, and other services cost an average of two percent of income. This varies from less than one percent of income in Greensboro to almost three percent in San Francisco.

Taken together, housing, utility, and service expenditures are on average about one-third of the household income of elderly clients, although this figure varies among the sites. In Cincinnati, the average amount devoted to housing is 26 percent of household income, while the average is 45 percent in Boston and 44 percent in San Francisco. Expenditures are relatively high in Boston because housing costs are above the average for all sites and utility costs in New England are unusually high. In addition, housing expenditures are relatively high among San Francisco clients because the cost of housing is generally high in that city and because many participants still make mortgage payments. (See Exhibit 4-11.) Also, as noted above, average property tax payments in San Francisco are the second highest among the sites, and average home insurance costs are the highest (see Exhibit 4-12).

Between 25 and 30 percent of household income is considered an acceptable amount to devote to housing expenditures. In looking at Exhibit 4-13, the distribution of clients according to the proportion spent on housing, utilities, and services shows that many clients have a greater burden of housing expenditures than what is considered acceptable for owner-occupant households. About 49 percent of all program participants spend more than 30 percent of their income on housing and housing related services, and 30 percent spend over 40 percent of their income on these services. The average amount of income devoted to these expenditures differs by site. Clients in Cincinnati appear to be less burdened by housing costs

Exhibit 4-11

PERCENT OF CLIENTS MAKING MORTGAGE PAYMENTS, BY CITY.

	CITY							
	Cincinnati (n=122)	Cleveland (n=142)	Boston (n=124)	Greensboro (n=147)	Hot Springs (n=126)	Philadelphia (n=122)	San Francisco (n=137)	All Cities (n=920)
Owning: No Mortgage (%)	80.3%	54.9%	75.0%	78.2%	76.2%	86.1%	44.5%	70.2%
Owning: Mortgage Payments (%)	19.7	45.1	25.0	21.8	23.8	13.9	55.5	29.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: USR&E Demonstration Enrollment File.

Exhibit 4-12

MEAN PROPERTY TAXES AND INSURANCE COSTS OF CLIENT HOUSEHOLDS PER MONTH*. BY CITY.

	CITY							
	Cincinnati (n=109)	Cleveland (n=70)	Boston (n=111)	Greensboro (n=112)	Hot Springs (n=85)	Philadelphia (n=56)	San Francisco (n=91)	All Cities (n=634)
Property Taxes (St. Dev.)	$15 (11)	$13 (16)	$65 (60)	$20 (12)	$ 8 (6)	$15 (14)	$24 (14)	
Sample Size	113	76	103	117	120	103	109	
Home Insurance (St. Dev.)	$13 (4)	$17 (23)	$24 (9)	$11 (10)	$13 (8)	$11 (9)	$33 (46)	$18 (22)

* Mean payments only for those respondents who pay property taxes and have insurance separately from mortgage payments or who do not have mortgage payments.

Source: USR&E Demonstration Enrollment File.

Exhibit 4-13

DISTRIBUTION OF CLIENTS BY INCOME SPENT ON HOUSING, UTILITIES, AND OTHER SERVICES. BY CITY.

Percent of Income Spent for Housing, Utilities and Other Services	CITY							
	Cincinnati (n=116)	Cleveland (n=119)	Boston (n=118)	Greensboro (n=129)	Hot Springs (n=105)	Philadelphia (n=94)	San Francisco (n=109)	All Cities (n=790)
0 - 25%	68.1%	31.1%	16.1%	41.1%	46.6%	37.2%	33.0%	39.0%
25+ - 30%	9.5	11.8	5.9	16.3	10.5	16.0	14.7	12.0
30+ - 40%	8.6	22.7	24.6	20.2	20.0	23.4	11.9	18.7
Greater than 40%	13.7	34.4	53.3	22.5	22.8	23.4	40.4	30.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

$X^2(30) = 127.0$ P = (0.0000+)

Source: USR&E Demonstration Enrollment File.

since about 78 percent pay less than 30 percent of their income for housing. On the other hand, over 50 percent of clients in Boston, San Francisco and Cleveland spend more than 30 percent of their income for housing.

4.6 Comparison of Demonstration Clients With the U.S. Elderly Population and Clients of Other Home Repair Programs

Are the clients of the Elderly Home Maintenance Demonstration similar to those of other home repair programs? Are they representative of the population of elderly Americans? These questions are addressed below. However, as a point of reference, we first present a summary sketch of the demonstration clients.

Overall, the most common demonstration household is a single-person household composed of a widowed female. The typical head of household is 72 years old, has less than a high school education, is retired or disabled, and receives social security income. Almost half of the household heads have some mobility problem, including problems getting into and out of the home or bath, or problems climbing stairs. Approximately two-thirds of the households have at least one member with a health problem. The average household income is about $540 per month, and approximately a third of this is spent on housing, utilities, and service costs.

The overview of the demonstration's participants shows that, in a number of ways, this sample is representative of the population of elderly Americans and more particularly elderly homeowners. First, just as the number of female clients outnumbers the number of male program participants, in the general population the ratio of women to men over 65 years of age is 146 to 100.* And thirty-three percent of all households consist of women living alone.**

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*Herman B. Brotman, "Every Ninth American," prepared for Developments in Aging Special Committee on Aging, U.S. Senate, Revised January 1980.

**"How Well Are We Housed, The Elderly," U.S. Department of Housing and Urban Development, Office of Policy Development and Research, p. 3.

Second, the average elderly person has completed 9 years of education compared with a mean of 9.7 for Demonstration clients. As of 1979, approximately one-half of all elderly Americans had less than a tenth grade educaton.* By comparison, just over 60 percent of demonstration clients said that they had completed less than eleven years of education.

In terms of household size, approximately 44 percent of elderly American live alone, compared with approximately 60 percent of the demonstration's clients.** The discrepancy in these percentages can be attributed to the fact that the demonstration was targeted more to those who could not make minor repairs--typically women who are living alone. Thus the percentage of single-person households in the Demonstration sample was unusually high.

In terms of health and finances, demonstration clients fare as well, if not slightly better than the general elderly population. In a recent survey of elderly Americans, over 80 percent reported that they experienced some chronic health problems although less than 18 percent said that this condition limited their mobility.*** Approximately 14 percent said they were in poor health. This data can be compared with the reports of program clients. Approximately two-thirds said that at least one member of their household had a health problem.

The mean income of elderly American households is typically one-half of the average income of households with heads under age 65.**** Perhaps as a result, elderly persons tend to spend much more of their income on housing and housing-related expenditures than does the general population. On average, elderly Americans spend an average of 29 percent of their incomes on housing costs, excluding utility and services.***** Interestingly, demonstration clients spend less than this amount on housing

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*Brotman, "Every Ninth American, p. 24.

**"How Well Are We Housed, The Elderly," p. 3.

***Brotman, "Every Ninth American," p. 13.

****<u>Ibid</u>., p. 7.

*****<u>Ibid</u>., p. 8.

4.7 Summary

The preceding discussion has focused on the characteristics of program participants at different sites. In a general fashion, comparisons among the sites have been made. In this summary section, we present short sketches or overviews of clients at each of the demonstration sites. First, we present the common characteristics of program participants over all sites. Then the individual sites are discussed based on how clients differ from the average. In this way, a better picture of the client characteristics of each site is obtained.

Overall, the most common household is a single-person household composed of a widowed female. The typical head of household is 72 years old, has less than a high school education, is retired or disabled, and receives social security income. Almost half of the household heads have some mobility problem, including problems getting into and out the home or bath or problems with stairs. Approximately two-thirds of the households have at least one member with a health problem. The average household income is about $540 per month, and approximately a third of this is spent on housing, utilities, and service costs.

Cincinnati. The sample of Cincinnati participants is entirely white, and has fewer health and mobility problems than client populations at other sites. These households are above average in their ability to do minor repairs such as replacing a light bulb or fuse and doing interior painting. Of all sites, Cincinnati client households are least likely to have mortgages. Cincinnati participants also have the highest household incomes and spend the smallest proportion of their incomes on housing, utilities, and services. Overall, clients in Cincinnati are better off in terms of health and finances than clients at most other sites.

expenditures (about 15 percent of their incomes over all sites), although when other housing-related expenditures are added this figure jumps to 36 percent. Housing costs are probably lower for demonstration clients than for the general population because a large proportion of clients are homeowners (100 percent of the sample compared to 72 percent of all elderly persons) most of whom have paid off their mortgages. At those sites where many clients are still paying mortgages, housing costs are as high or higher than for the national average for elderly persons. Overall, while the housing expense burden may be slightly less for clients, it is still high when com- pared to the general population. After all, approximately one-half of Demonstration clients spend more than 30 percent of their income on housing and housing-related expenditures.

As discussed in Chapter 2 of this report, the state-of-the-art survey showed that home repair programs are targeted not only to the elderly, but also to the handicapped, female-headed households, and low-income families. Thus, we would expect that the characteristics of home repair program clients are fairly diverse. Perhaps the only common characteristic of these clients is that most have low- or moderate-incomes.

In looking only at those programs that service the elderly, we see that for the most part, clients of these programs have very similar characteristics to the demonstration clients. In most cases, programs were targeted to homeowners, the majority of whom are retired and have incomes of between $4000 and $8000. More women than men are clients of home repair programs. At most programs, clients are reported to be in fair or good health. Programs also are more likely to direct repair services to white households, perhaps due to the higher proportions of whites who are likely to be homeowners.

Cleveland. Cleveland client households are larger, younger, and are more likely to have members that are married or divorced than households at other sites. They are also less likely to have members that are widowed. Households are primarily black and have lived in their homes for a relatively short period of time compared to households at other sites. A relatively high percentage of Cleveland clients graduated from high school. They tend to have fewer mobility problems than clients at other sites. A number of Cleveland program participants are still employed, although over half of the households spend more than 30 percent of their income on housing, utilities, and services.

Boston. Boston has the highest proportion of households of all sites whose heads are female and widowed. About two-thirds of the households consist of one person. Over 90 percent of program participants are white, and they have typically lived longer at their current residences than participants at the other sites--over 30 years. Although absolute employment levels are low, an above average proportion are still working when compared with other sites. Household income is high, but so is the relative burden of housing, utility, and public service costs. Over half of the households in Boston spend 40 percent or more of their income on housing and housing related services. Boston households have the highest property taxes and utility costs of any site and the second highest home insurance costs.

Greensboro. Greensboro has the highest proportion of households with widowed heads and the second highest proportion of one-person households of the seven sites. Over 70 percent of respondents in Greensboro have attained less than a high school education. Almost three-fourths of participant households are white. While health problems in Greensboro are not as prevalent as in some other cities, over half of the heads of households have mobility problems. (This is the second highest rate of all the sites.) Greensboro client households have the second lowest average income and an above average burden of housing and related expenses.

Hot Springs. The Hot Springs site has the highest percentage of one-person households and the lowest average educational attainment of all the sites. Sixty percent of the participant households are black and 40 percent are white. Of all sites, Hot Springs has the lowest proportion of clients who state that they have mobility problems and the highest proportion admitting to health problems. Participation in services and programs for the elderly is lowest among Hot Springs participants, probably due to the unavailability of these services. Participant households at this site have the lowest incomes of the sites, but they also have the smallest burden of housing and related expenses; over 50 percent of client households spend 25 percent or less of their incomes on housing, utilities, and public services.

Philadelphia. Of all sites, Philadelphia has the highest proportion of households with female heads and above average proportions of single-person households and households with widowed heads. Clients are among the least educated, and heads of household have the highest average age of all the sites. The average household has lived in their current home for about 30 years. Philadelphia has a relatively high proportion of heads of households that are retired or disabled and a relatively large number of clients participate in services for the elderly. This site is the third lowest in terms of household income, and an average of 30 percent of household income is spent on housing, utilities, and services--slightly below the average for the seven sites. On average, Philadelphia participants are in the worst physical shape in terms of mobility and health problems.

San Francisco. Average educational attainment among participants is the highest in San Francisco. Sixty percent of households are black and 30 percent are white. The remainder are Asian and Hispanic. San Francisco clients have resided in their homes for shorter periods of time than clients at many other sites. In addition, compared with other cities an above average number of clients are disabled. San Francisco participants have the second highest mean household income of the seven sites; most households receive social security, and over half receive pensions. However, clients in San Francisco also have one of the highest housing cost burdens of the seven sites. Almost 40 percent of households spend more than 40 percent of their income on housing and related services. This is due to relatively high costs of housing, high property taxes and home insurance costs, and the large number of clients that still have mortgage payments at this site.

Chapter 5

Client Housing Characteristics

The diversity among program target areas has resulted in a wide array of client homes and housing attributes. These various housing attributes have governed program policy formulation and influenced minor repair and maintenance service delivery decisions over the entire demonstration and in each city. This chapter examines the range of characteristics for the homes of elderly clients enrolled in the demonstration during the first program year. The chapter describes in detail the types of homes served by the demonstration, overall and comparatively, in each of the seven program sites.

Data on housing characteristics was extracted from the standard inspection form developed specifically for the demonstration. This form was completed by the staff inspectors, or in several instances program directors, after formal client enrollment but prior to any repair visits. Except where interrupted by staff turnover, there was consistency in the personnel assigned to collect this data.

Chapter headings conform to the major attributes of residential housing. Section 5.1 examines exterior housing characteristics; Section 5.2 documents the age of client homes; Section 5.3 describes the incidence of such ancillary characteristics as garages, attics, and basements; Section 5.4 documents the size of the client homes served by the demonstration; Section 5.5 reviews electrical and heating system characteristics; Section 5.6 examines weatherization-related home characteristics; Section 5.7 assesses the estimated property value of client homes; and Section 5.8 summarizes the chapter findings.

5.1 Exterior Housing Characteristics

Exterior housing characteristics refer to the following identifying visual features; type of unit (detached or rowhouse), type of construction (wood frame or masonry), and type of exterior surface (brick, wood, siding, asbestos, other, or some combination). These prominent client home exterior features help to define the physical character of the targeted neighborhoods and geographic areas. The three characteristics are summarized by site in Exhibit 5-1.

Overall, client homes are predominantly detached. While 72.1 percent of the inspected homes among all seven sites are detached, several individual sites served exclusively detached homes. All client homes are detached in both Cincinnati and Greensboro, and all but one are detached in Hot Springs. Cleveland and Boston also have high proportions of dettached homes. At the two sites where detached homes were not common, rowhouses are the primary structure type. In Philadelphia, 88.5 percent of the client homes are row houses, while in San Francisco a majority of homes (71.1 percent) are also attached row structures. Small proportions of semidetached dwellings are recorded in four sites.

Overall, three of every four client homes have wood frame construction; the remaining quarter have masonry construction. Wood frame is the construction type for all or nearly all client homes in Cleveland (96.2 percent), Boston (95.1 percent), Hot Springs (96.6 percent), and San Francisco (100.0 percent). Greensboro has a sizeable minority (28.1 percent) of homes constructed from masonry, while homes in Cincinnati are split between wood frame and masonry types. Masonry is the predominant construction type only in Philadelphia, where 94.9 percent of the client housing stock has masonry construction.

The type of exterior surface used on client homes varies substantially among sites, reflecting regional building patterns and environmental factors. Brick exteriors are prominent in Philadelphia (87.8 percent), and also evident in Cincinnati (39.3 percent), and Greensboro (21.8 percent). While Philadelphia's brick

Exhibit 5-1

Characteristics of Client Homes:
Housing Unit Type, Construction Type, and Exterior Surface Type, by City)

(Absolute Frequency in Parantheses)

	Type of Unit			Construction Type			Exterior Surface Type				
Site	Detached	Row House	Semi-Detached	Wood frame	Masonry	Brick	Wood	Siding	Asbestos	Combi-nation	Other
Cincinnati	100.0% (122)	--	--	57.4 (70)	42.6 (52)	39.3 (48)	17.2 (21)	20.5 (25)	6.6 (8)	9.8 (12)	6.5 (8)
Cleveland	82.4% (112)	8.8 (12)	8.8 (12)	96.2 (128)	3.8 (5)	5.1 (7)	73.5 (100)	11.0 (15)	6.6 (9)	2.9 (4)	0.7 (1)
Boston	90.3% (112)	9.7 (12)	--	95.1 (117)	4.9 (6)	5.7 (7)	46.7 (57)	13.1 (16)	19.7 (24)	3.3 (4)	11.4 (14)
Greensboro	100.0% (146)	--	--	71.9 (105)	28.1 (41)	21.8 (32)	14.3 (21)	23.1 (34)	19.0 (28)	16.3 (24)	5.5 (8)
Hot Springs	99.2% (122)	--	0.8 (1)	96.6 (113)	3.4 (41)	7.6 (9)	42.4 (50)	23.7 (28)	11.9 (14)	4.2 (5)	10.2 (12)
Philadelphia	5.7 (7)	88.5 (108)	5.7 (7)	5.1 (6)	94.9 (112)	87.8 (108)	4.1 (5)	--	0.8 (1)	1.6 (2)	5.7 (7)
San Francisco	25.2% (34)	71.1 (96)	3.7 (5)	100.0 (135)	--	0.7 (1)	5.2 (7)	5.9 (8)	3.7 (5)	64.4 (87)	20.0 (27)
All Sites	72.1% (655)	25.1 (228)	2.8 (25)	75.4 (674)	24.6 (220)	23.5 (212)	28.9 (261)	14.0 (126)	9.9 (89)	15.3 (138)	8.5 (77)

Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

structures tend to be older, high density masonry row-houses, Greensboro's brick homes tend to be newer, lower density, detached single-family houses. Homes with wood exterior surfaces are common in Cleveland (73.5 percent), and to a lesser extent, Boston (46.7 percent) and Hot Springs (42.4 percent). Siding exteriors, typically aluminum and vinyl, are encountered in the two southern sites, Greensboro (23.1 percent) and Hot Springs (23.7 percent) and in Cincinnati (20.5 percent). Asbestos exteriors are utilized most frequently on client homes in Boston (19.7 percent) and Greensboro (19.0 percent). Stucco is an exterior surface type frequently used in San Francisco, either by itself (20.0 percent) or in some combination with wood, brick, or siding (64.4 percent).

5.2 Age of Client Homes

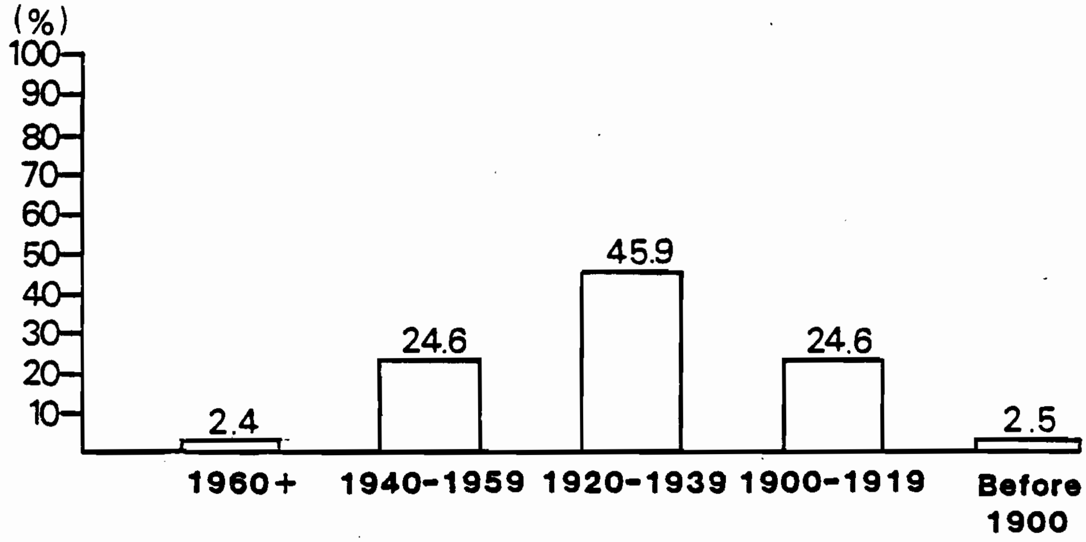
Overall, the age of client homes forms a fairly symmetric distribution, as shown in Exhibit 5-2. Across all sites, homes are most likely to have been built between 1920 and 1939 (38.5 percent) with increasingly fewer homes built either before or after this period. At the site level, there is considerable variation in the age of client homes. The oldest homes tend to be found in Boston (mean year built of 1906) and Philadelphia (mean year 1909), two mature, northeastern seaboard cities. In Boston, 68.9 percent of the client homes were built prior to 1920, while in Philadelphia, 59.3 percent were built before 1920. The newest housing stock is encountered in Greensboro (mean year 1943), where 69.6 percent of the client homes were built during or after 1940. The majority of Cleveland client homes (65.7 percent) were constructed during the period 1920 to 1939. In Hot Springs, a sizeable number of homes (16.3 percent) were built since 1960. The age of homes reflects, primarily, the historical growth patterns of each city and the targeted neighborhood areas.

Nonetheless, the homes of demonstration clients are older than those of all owner occupants in the demonstration cities. This is especially the case in Philadelphia where 92 percent of client homes were built before 1940 compared to 69 percent for all owner-occupied

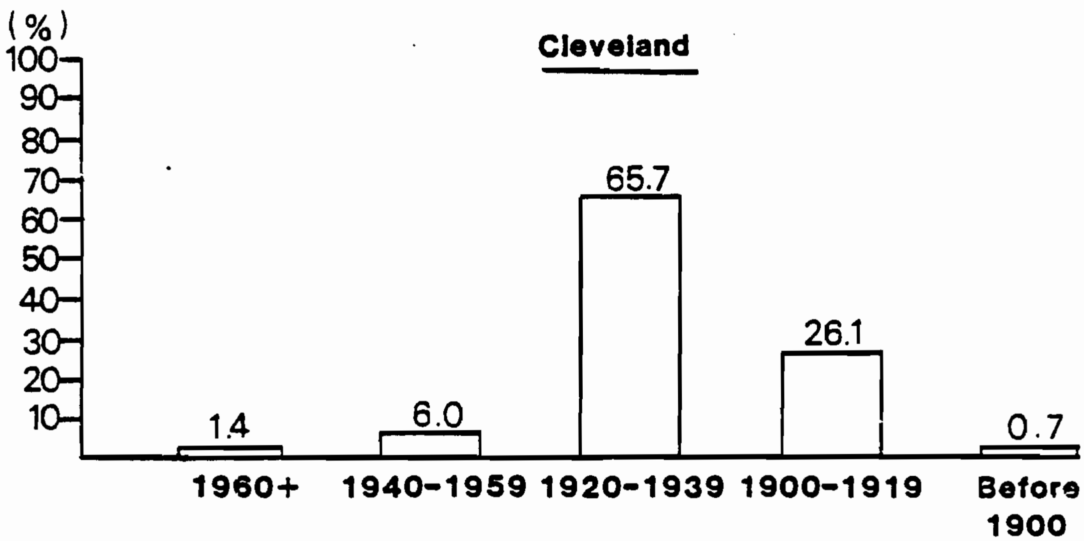
Exhibit 5-2

DISTRIBUTION OF ESTIMATED AGE OF CLIENT HOMES BY CITY

Cincinnati



Cleveland



Boston

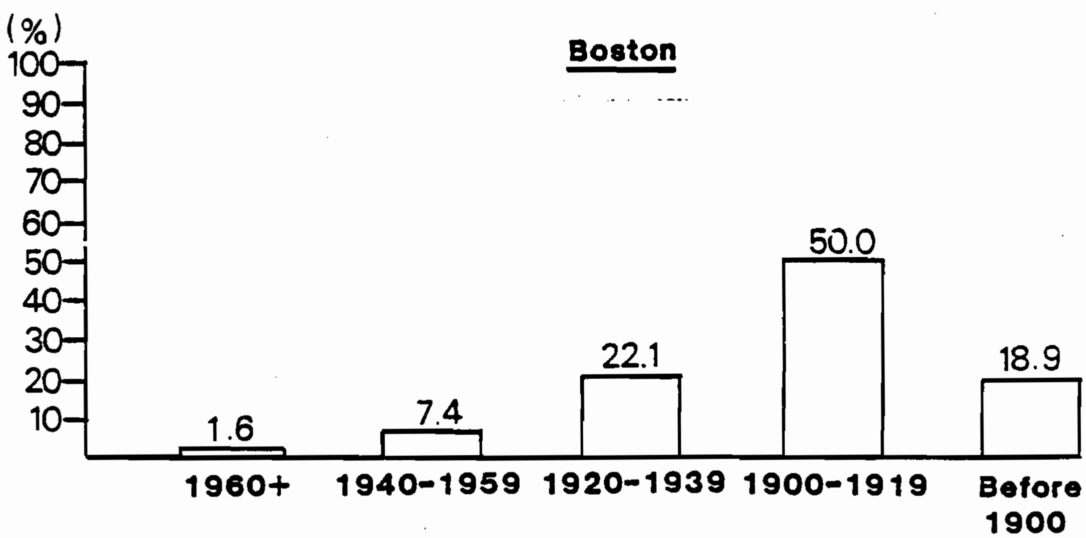
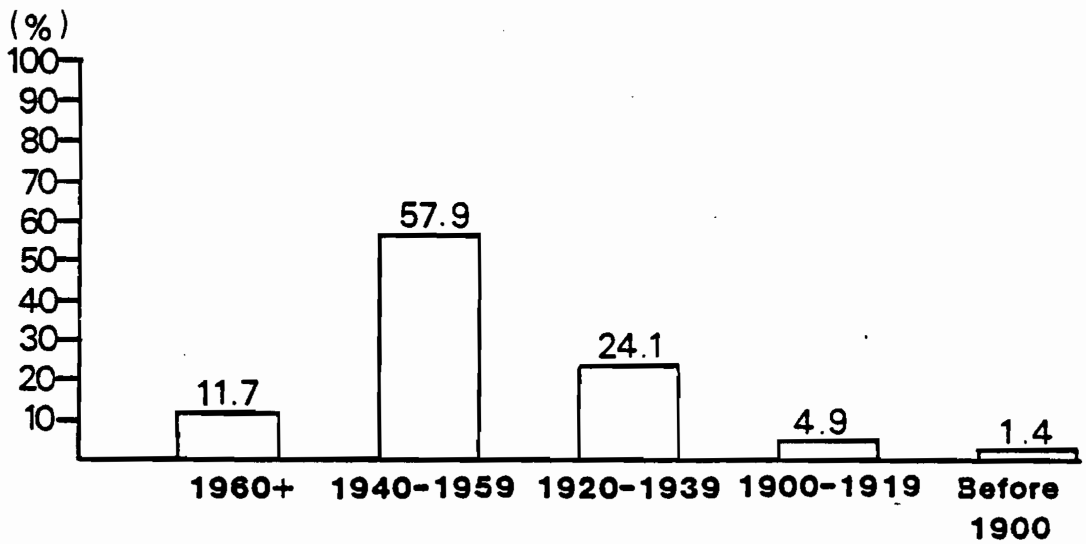


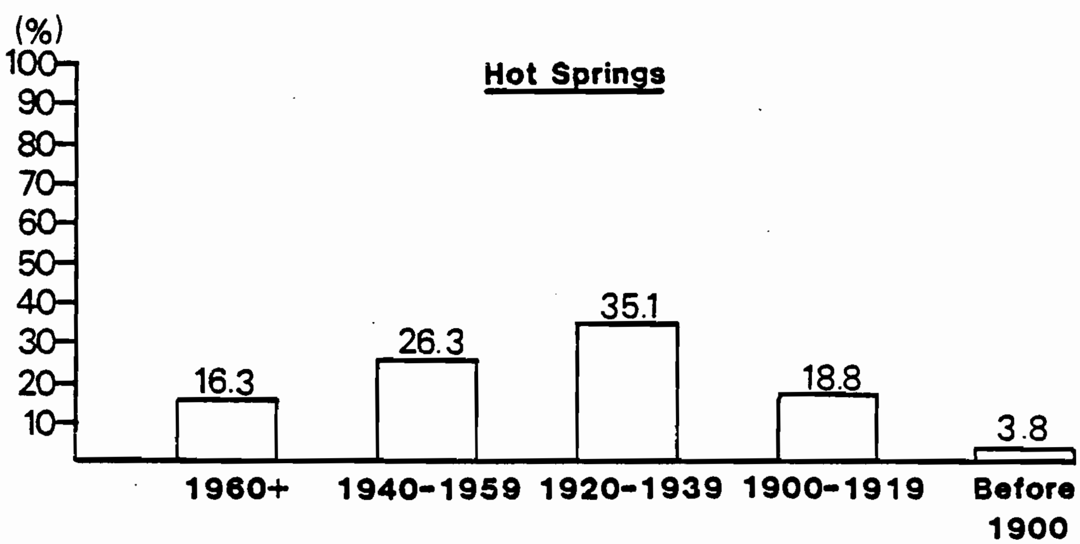
Exhibit 5-2

DISTRIBUTION OF ESTIMATED AGE OF CLIENT HOMES BY CITY (cont'd)

GREENSBORO



Hot Springs



Philadelphia

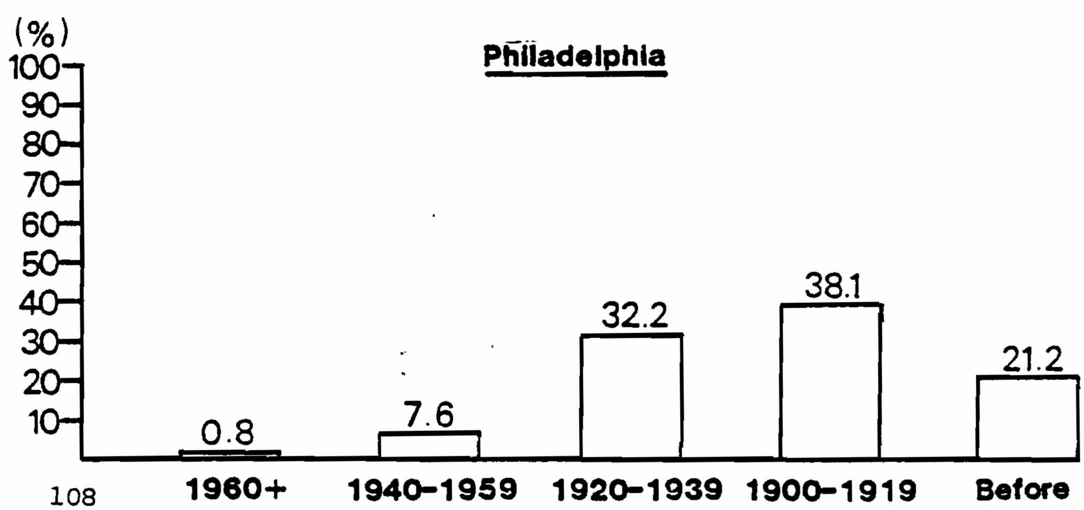
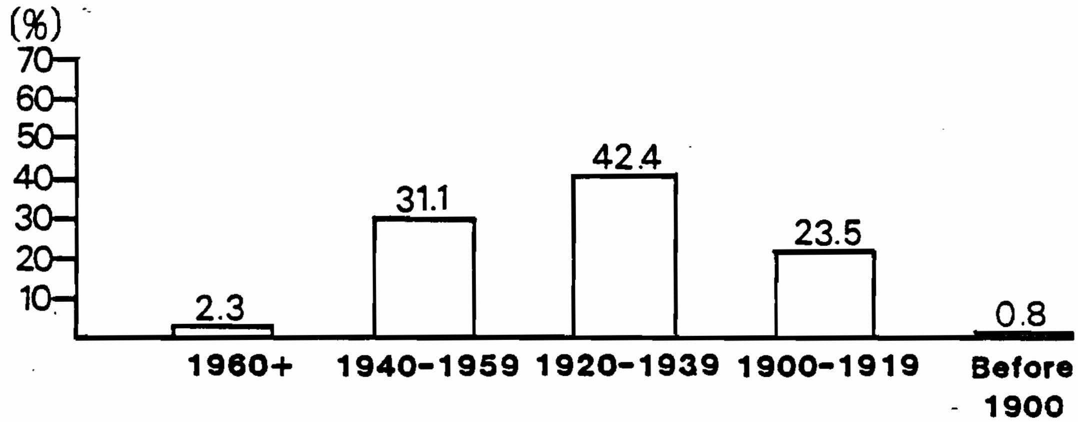


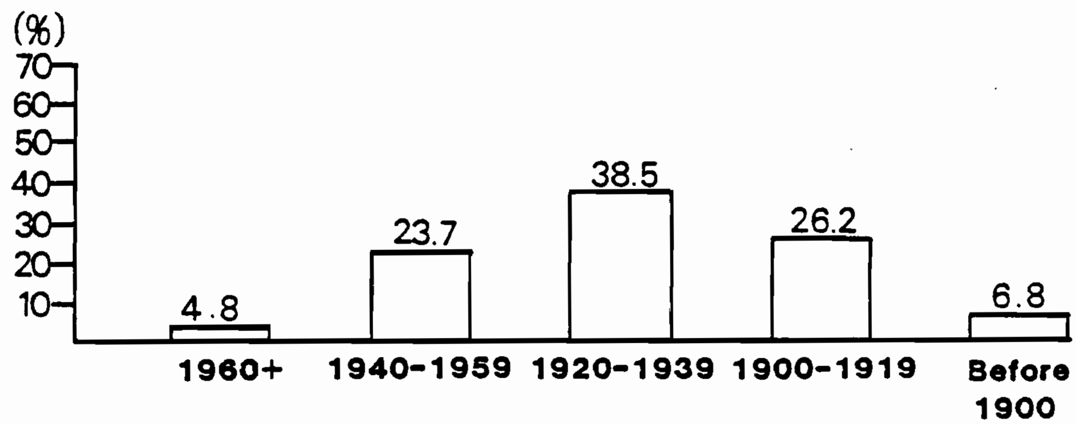
Exhibit 5-2

DISTIBUTION OF ESTIMATED AGE OF CLIENT HOMES, BY CITY (cont'd)

San Francisco



All Cities



Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

homes in this city. Client homes are also significantly older than those of other owner occupants in Boston and Cleveland, but they are only slightly older in San Francisco. See Exhibit 5-3.

The difference between the age of client homes in Hot Springs and those in the nonmetropolitan South probably overstates the difference between client homes and those of all owner occupants in the Hot Springs area. Our primary sources of data are the Annual Housing Surveys of selected metropolitan areas. Since Hot Springs is not in an SMSA, we are forced to use the nonmetropolitan South for our comparisons. The South, and especially the nonmetropolitan South, has benefitted from considerable industrial growth in the late 1960s and 1970s which has stimulated housing construction. When we compare Hot Springs with the other sites (Exhibit 5-3), it is apparent than Hot Springs has benefitted from some of this growth. However, this site is an old resort town, and the age of its housing stock is undoubtedly older than that of the entire nonmetropolitan South.

It is not surprising that client homes are older than those of other owner occupants, because clients are older and have lived in their homes longer than the general population. In Chapter 4 we noted that the average client has lived in her home from 25 to 30 years. In contrast, the average for the population of owner occupants in the U.S is about 10 to 12 years.*

5.3 Ancillary Housing Characteristics

Several ancillary housing attributes recorded on the demonstration inspection forms include the presence of garages, attics, and basements. These structural appendages provide sources of additional repair need and are summarized by site in Exhibit 5-4.

A majority of clients in only three sites, Cincinnati (57.0 percent), Cleveland (76.8 percent), and San Francisco (88.9 percent) have garages. Garages are not typically found among Boston,

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*U.S. Department of Commerce, U.S. Bureau of the Census. Current Housing Reports. Series H-150-77. General Housing Characteristics for the United States: 1977. Annual Housing Survey: 1977, Part A, Table A-1.

Exhibit 5-3

Year Housing Units Built

	Cincinnati		Cleveland		Boston		Greensboro
	Clients	Central City	Clients	Central City	Clients	Central City	Clients
Year Built							
1970* or later	0.8%	0.7%	0.7%	0.6%	0.0%	0.3%	4.1%
1960-1969*	1.6	6.9	0.7	3.8	1.6	6.2	7.6
1950-1959	9.0	12.7	3.0	12.5	2.5	7.2	30.3
1940-1949	15.6	13.9	3.0	12.1	4.9	5.1	27.6
1939 or earlier	73.0	65.9	92.5	71.0	91.1	81.2	30.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of Owner-Occupied Housing Units[1]	122	58,300	134	108,000	122	58,500	145

Exhibit 5-3

(continued)

	Hot Springs		Philadelphia		San Francisco		All Sites	U.S.
	Clients	Nonmetro South	Clients	Central City	Clients	Central City	Clients	SMSA
<u>Year Built</u>								
1970* or later	3.8%	33.2%	0.0%	2.3%	0.0%	3.0%	1.3%	21.7%
1960-1969*	12.5	23.7	0.8	8.3	2.3	7.3	3.5	21.9
1950-1959	13.8	15.4	3.4	12.6	11.4	9.8	10.8	22.0
1940-1949	12.5	10.0	4.2	7.6	19.7	18.5	12.9	9.8
1939 or earlier	57.5	17.7	91.5	69.1	66.7	61.4	71.5	24.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of Owner-Occupied Housing Units[1]	80	8,609,000	118	372,300	132	158,900	853	33,586,000

* The categories "1970 and later" and "1960-1969" correctly describe those for program clients. The corresponding categories for the Annual Housing Survey are "April 1970 or later" and "1960 to March 1970".

Sources: U.S. totals, data on cental cities, and those for the nometropolitan South are obtained from the Annual Housing Survey for the following years:

U.S., SMSA	1980
Nonmetropolitan South	1980
Cincinnati	1978
Cleveland	1976
Boston	1977
Philadelphia	1978
San Francisco-Oakland	1978

Client data are from the Elderly Home Maintenance Demonstration Inspection Forms, Year 1, 1980-81.

[1]The "Total Number Owner-Occupied Housing Units" refers to the number of participants in the elderly home maintenance demonstration under "Clients" and refers to the estimated population size under "Central Cities" and "Nonmetropolitan South".

Exhibit 5-4--

Distribution of Client Homes with Garages, Attics, and Basements, by City

(Absolute Frequency in Parantheses)

Site	Homes with Garages	Homes with Attics	Homes with Basements
Cincinnati	57.0 (69)	55.7 (68)	97.5 (118)
Cleveland	76.8 (96)	91.8 (123)	98.5 (130)
Boston	22.0 (27)	87.9 (109)	96.7 (119)
Greensboro	33.3 (49)	55.5 (81)	17.2 (25)
Hot Springs	11.6 (14)	17.9 (22)	14.6 (18)
Philadelphia	28.9 (35)	6.6 (8)	98.3 (119)
San Francisco	88.9 (120)	17.8 (24)	94.0 (125)
All Sites	45.9 (410)	48.0 (435)	72.8 (654)

Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

Greensboro, Philadelphia, and Hot Springs client homes. The presence of a garage can be attributed to such factors as weather conditions, age of homes, and local parking and sub-division ordinances. In Hot Springs, for example, the availability of on-street parking and favorable weather reduces the incentives for garages while in Boston and Philadelphia, the turn-of-the-century housing stock typically does not include ancillary garages.

The presence of attics varies substantially among the seven sites due, primarily, to local building practices influenced by weather conditions and the year the homes were built. Attics are present in nearly all client homes in Cleveland (91.8 percent) and Boston (87.9 percent) where severe winters dictate the need for sloped roofs. A slight majority of client homes in Cincinnati (55.7 percent) and Greensboro (55.5 percent) also have attics. Few client homes have attics in Hot Springs, San Francisco, and Philadelphia.

The incidence of basements in clients' homes varies according to region. Warmer climates in Greensboro and Hot Springs result in few basements; instead, less expensive cement slabs are often substituted. In the remaining northern sites, basements were present in nearly all client homes, reflecting the environment-based regional building practices. However, in San Francisco over half of the houses were built before 1940, and the vintage of the homes probably explains the existence of a basement more than the weather.

5.4 Size Characteristics of Client Homes

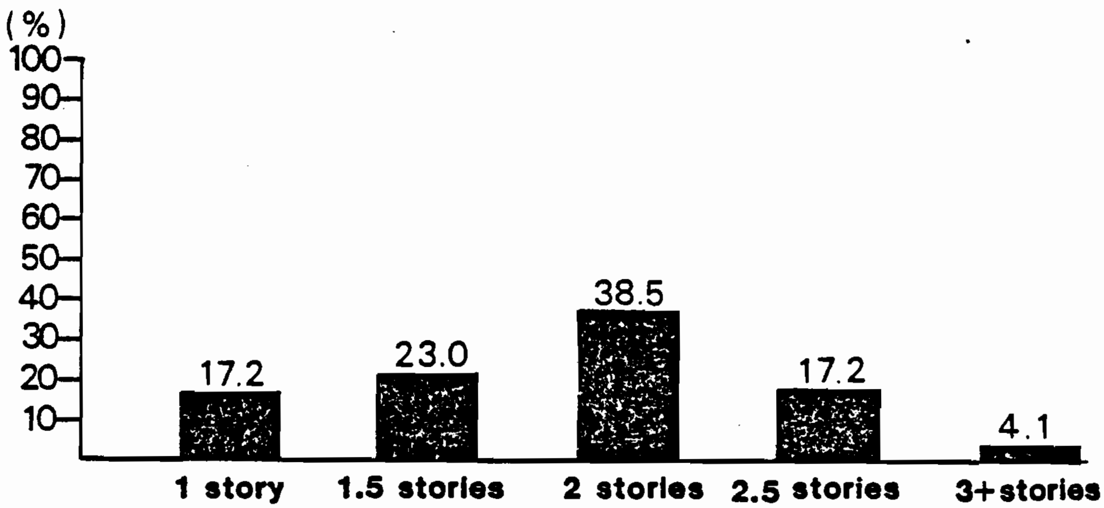
There are several characteristics which describe the size of client homes; the number of stories, the number of units, the number of total rooms, the number of bathrooms, and the number of bedrooms. Collectively, these attributes influence, in part, the level of repair need identified by the inspection visits.

Among all sites, one story client homes are most frequent (43.7 percent), as shown in Exhibit 5-5. A sizeable proportion of two story homes are served (29.7 percent), while a smaller number of two and a half and three story structures are included in the demonstration.

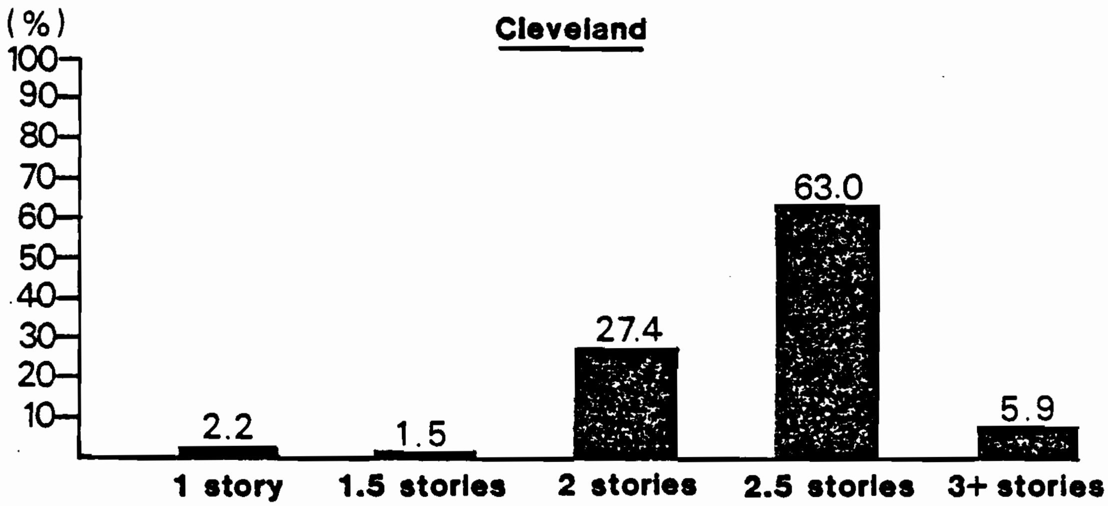
Exhibit 5-5

NUMBER OF STORIES IN CLIENT HOMES BY CITY

Cincinnati



Cleveland



Boston

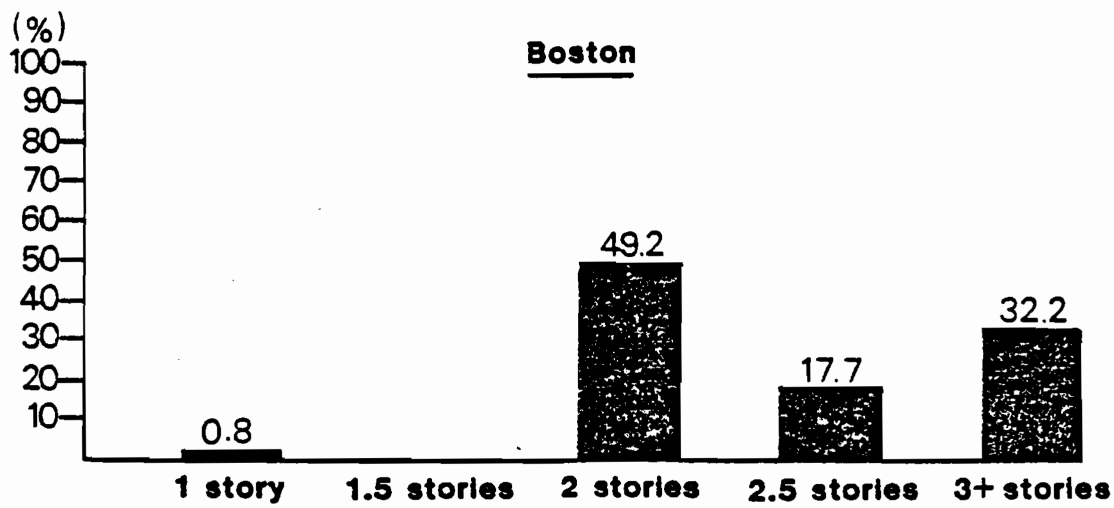
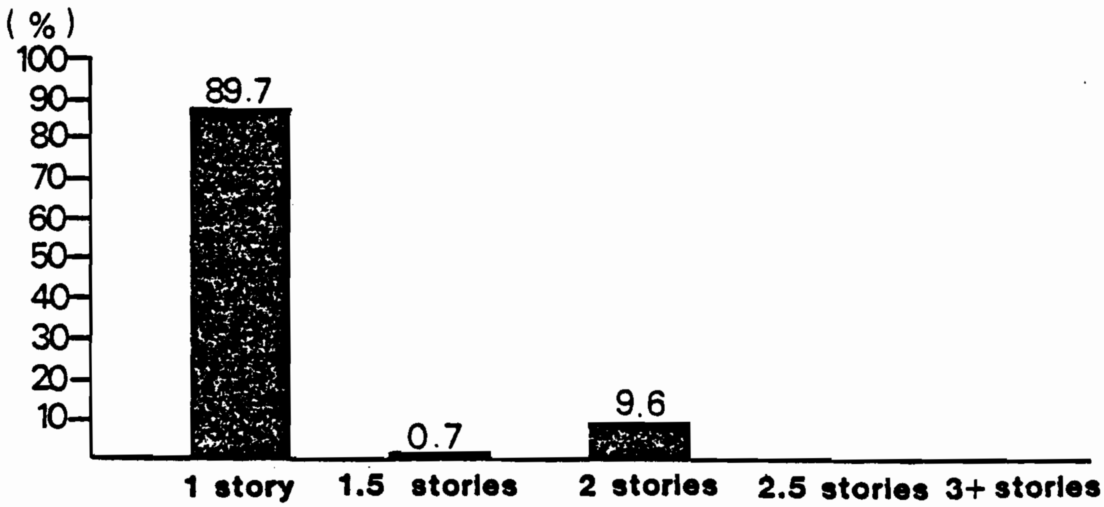


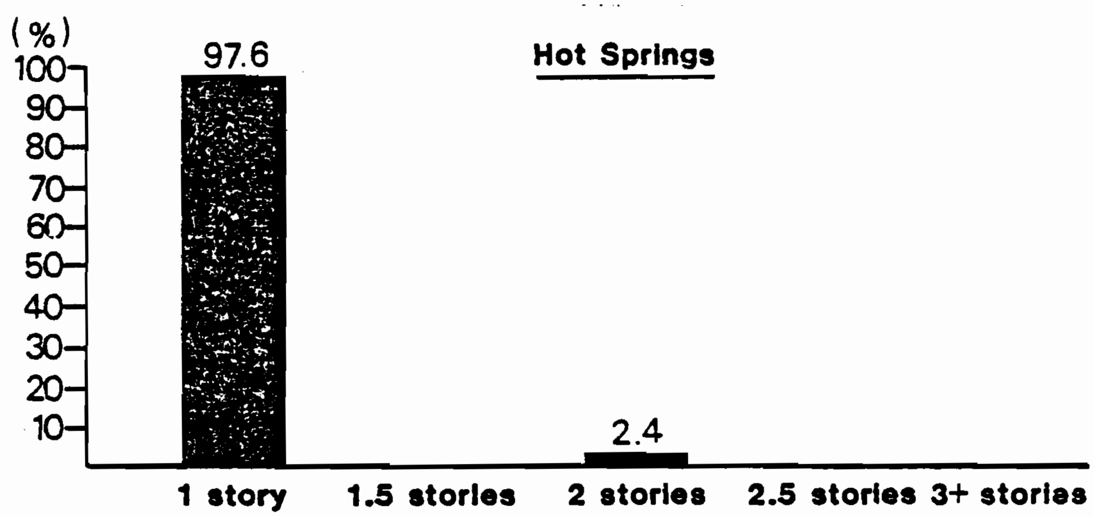
Exhibit 5-5

NUMBER OF STORIES IN CLIENT HOMES BY CITY (cont,d)

Greensboro



Hot Springs



Philadelphia

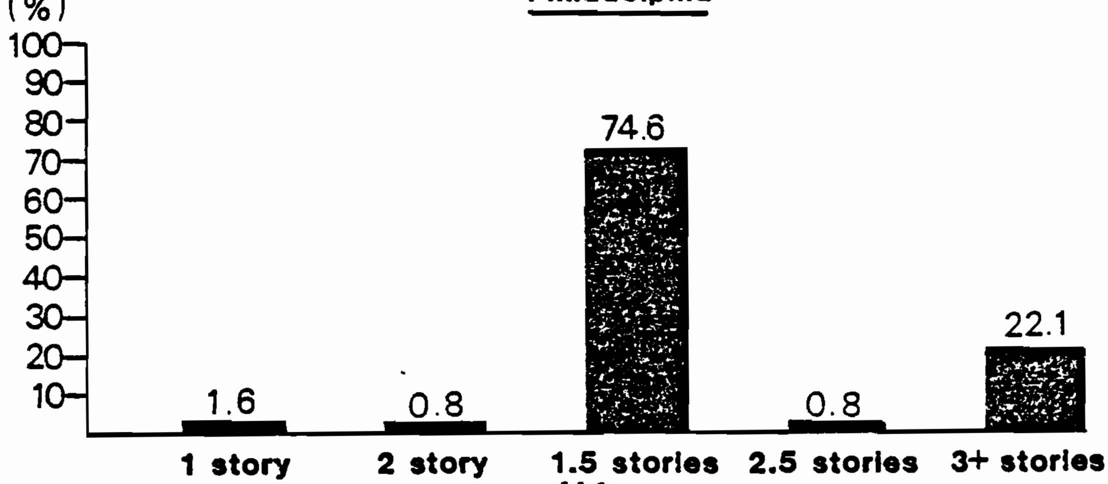
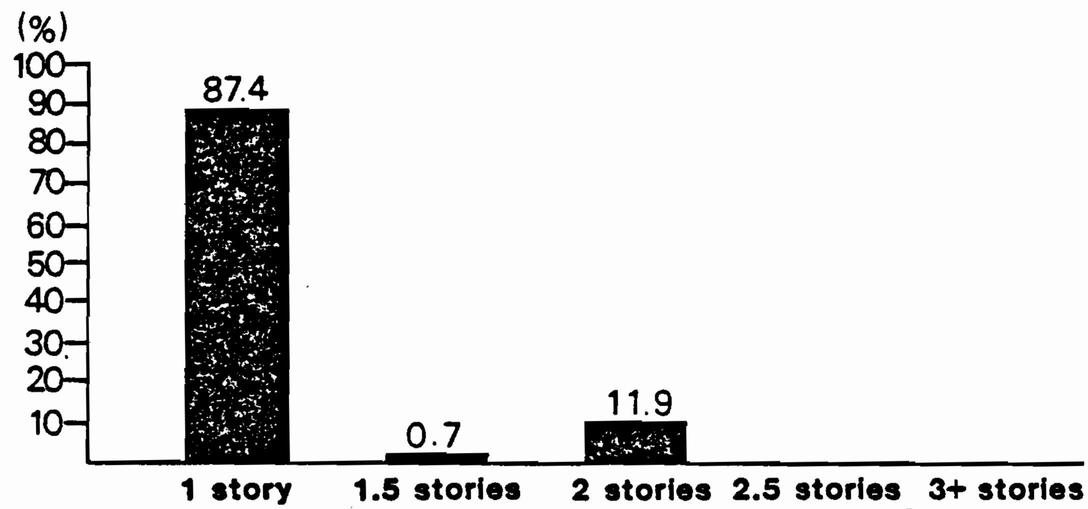


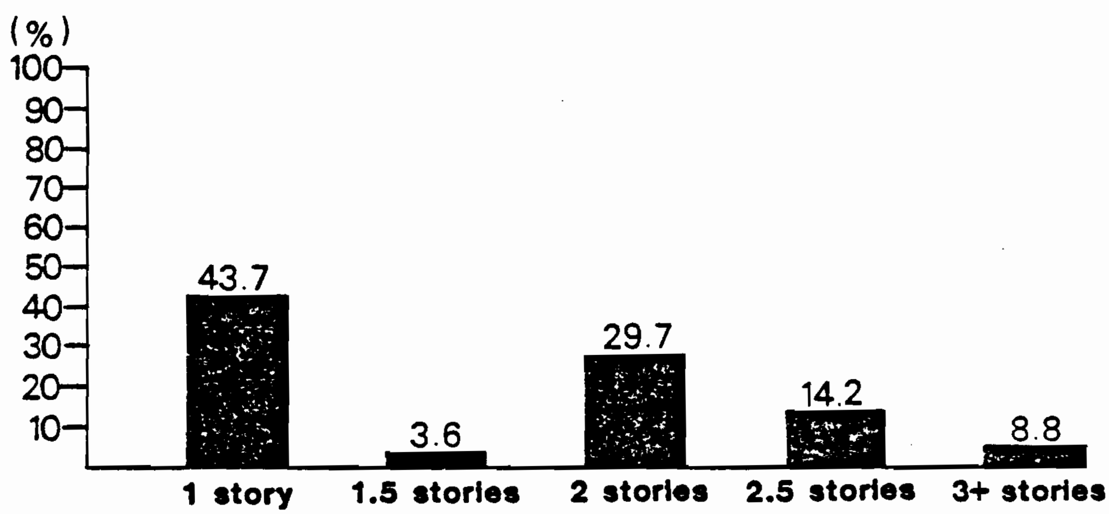
Exhibit 5-5

NUMBER OF STORIES IN CLIENT HOMES BY CITY (cont d)

San Francisco



All Sites



Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-1981.

The number of stories in client homes differ substantially by site, reflecting prevailing characteristics of the targeted neighborhoods or larger geographic areas. One story structures predominate in Hot Springs (97.6 percent) where lower housing density has encouraged one story homes, in Greensboro (89.7 percent), and in San Francisco (87.4 percent). Two story homes predominate in Philadelphia (74.6 percent), where structures tend to be two-floor, attached walk-up units. Homes in Cleveland's target areas are typically two and a half stories (63.0 percent) and, to a lesser degree, two stories (27.4 percent). Homes in the Jamaica Plain neighborhood of Boston are split between two, two and a half, and three story (triple decker) structures. Cincinnati's Price Hill area has a broad distribution of homes, although two story houses are most frequent (38.5 percent).

Client homes, in general, tend to contain a single residential unit. Overall, 79.5 percent of client homes have only one unit, as shown in Exhibit 5-6. While single unit homes comprise majorities in all seven sites, the proportions vary among sites. Nearly all client homes in Greensboro, Hot Springs, Philadelphia and San Francisco are single family structures, while slightly less than fifty percent of homes in Cleveland and Boston have single residence units. Two family structures were most common in Cleveland (47.0 percent), Boston (33.1 percent), and Cincinnati (19.8 percent). Boston's Jamaica Plain neighborhood had the only substantial proportion of three family, triple-decker structures (20.2 percent).

Perhaps the best measure of house size is the number of rooms per client home. Across all seven sites, 81.4 percent of client homes have between four and seven rooms. In general, the specific sites share this distribution, as shown in Exhibits 5-7 and 5-8. Homes tend to be noticeably smaller in Hot Springs and Greensboro and larger in Cleveland, Cincinnati, Boston, and Philadelphia. The smallest homes are found in Hot Springs; over seventy percent of the homes have five rooms or less, and the medium is 4.8. A surprising 13.7 percent of the client homes in Hot Springs have three rooms or

Exhibit 5-6-

Distribution of Client Homes by
Number of Units per Housing Structure, By City

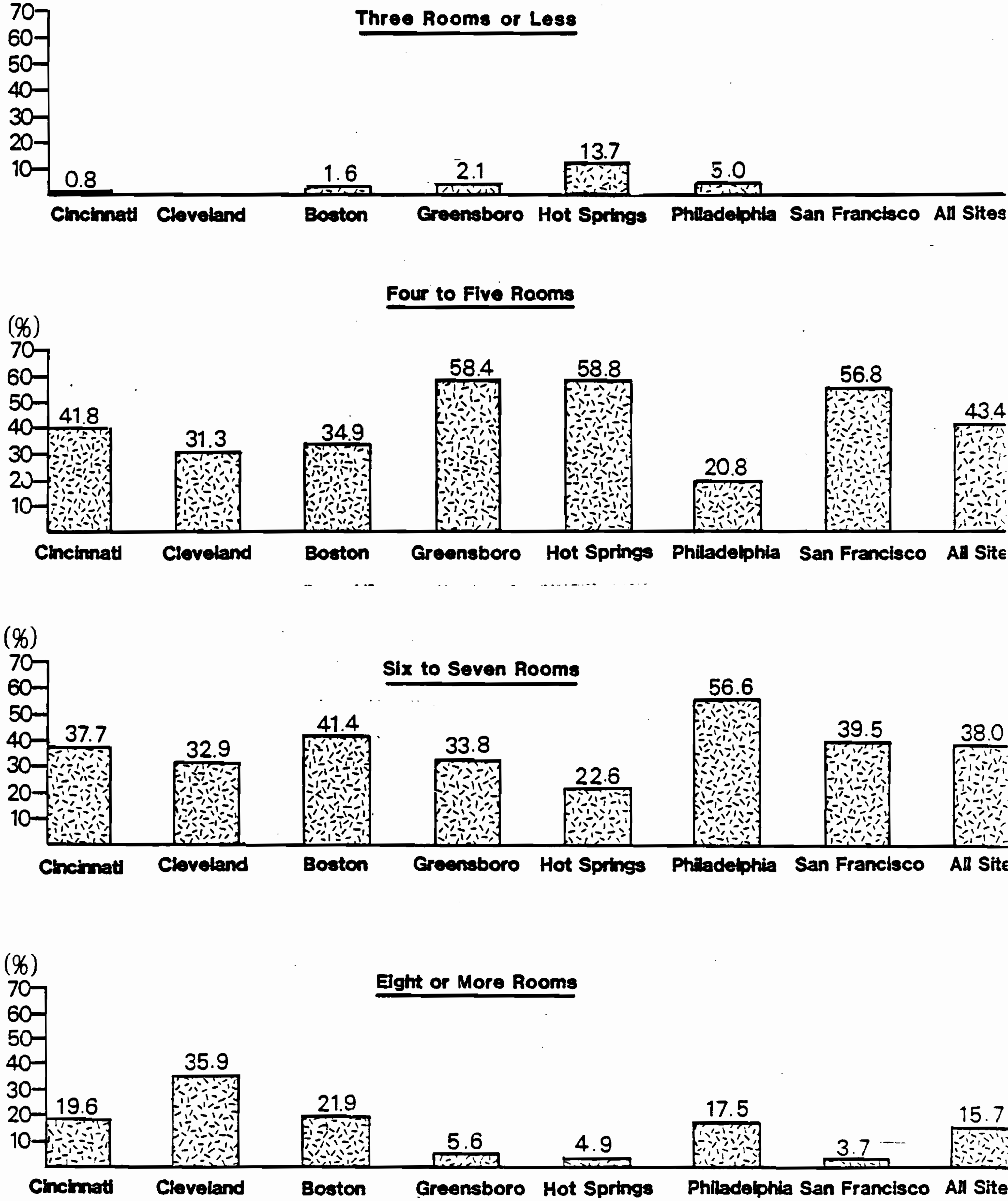
(Absolute Frequency in Parantheses)

Site	Number of Units/Structure		
	One	Two	Three or more
Cincinnati	79.3 (96)	19.8 (24)	0.8 (1)
Cleveland	48.5 (65)	47.0 (63)	4.5 (6)
Boston	46.8 (58)	33.1 (41)	20.2 (25)
Greensboro	99.3 (144)	0.7 (1)	--
Hot Springs	98.3 (118)	1.7 (2)	--
Philadelphia	90.8 (109)	5.8 (7)	3.3 (4)
San Francisco	92.6 (125)	6.7 (9)	0.7 (1)
All Sites	79.5 (715)	16.4 (147)	4.1 (37)

Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

Exhibit 5-7

DISTRIBUTION OF NUMBER OF ROOMS PER CLIENT HOME BY CITY



Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

Exhibit 5-8

Housing Unit Size. Number of Bathrooms, Bedrooms, and All Rooms.

	Cincinnati		Cleveland		Boston		Greensboro
Number of Bathrooms	Clients	Central City	Clients	Central City	Clients	Central City	Clients
None or Share	0.0%	1.2%	0.0%	0.3%	0.0%	1.2%	0.0%
1	51.6	45.3	56.4	61.1	81.1	63.9	84.4
1.5	27.0	29.8	15.0	23.3	10.7	21.5	7.5
2 or More	21.3	23.8	28.6	15.2	8.2	13.3	8.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Number Owner-Occupied Housing Units	122	58,300	133	108,000	122	58,500	147
Number of Bedrooms							
None	0.0%	0.0%	0.0%		0.0%		0.0%
1	5.7	8.2	1.5	3.5	5.6	6.3	4.2
1.5	50.8	35.3	28.8	31.8	29.0	28.5	48.3
3	24.6	36.2	34.8	46.9	39.5	42.2	42.7
4 or More	18.9	20.2	34.9	17.9	25.8	22.7	4.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Number Owner-Occupied Housing Units[1]	122	58,300	132	108,000	124	58,500	143
Median Number Of Rooms In Housing Unit	5.8	5.8	6.2	5.8	5.9	6.1	5.2

Exhibit 5-8

(continued)

	Hot Springs		Philadelphia		San Francisco		All Sites	U.S.
Number of Bathrooms	Clients	Nonmetro South	Clients	Central City	Clients	Central City	Clients	SMSA
None or Share	2.5%	4.7%	1.6%	0.8%	0.0%	2.2%	0.6%	0.8%
1	90.0	52.0	80.3	58.2	70.4	51.8	73.5	42.9
1.5	5.0	12.3	13.9	25.3	23.7	16.0	14.6	19.2
2 or More	2.5	30.9	4.1	15.7	5.9	30.0	11.3	37.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Number Owner-Occupied Housing Units[1]	120	8,609,000	122	372,000	135	158,900	901	33,586,000
Number of Bedrooms								
None	0.8	0.2	0.0	0.1	0.0	0.4	0.1	0.3
1	11.5	2.7	6.6	2.8	7.4	7.0	6.0	4.1
2	55.7	31.7	11.6	14.1	46.7	45.6	38.9	24.7
3	24.6	53.4	52.9	65.3	35.6	34.3	36.5	50.6
4 or More	7.4	12.1	28.9	17.7	10.3	12.7	18.4	20.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Number Owner-Occupied Housing Units[1]	122	8,609,000	121	372,000	135	158,900	899	33,586,000
Median Number Of Rooms in Housing Units	4.8	5.4	6.2	6.1	5.3	5.5	5.6	5.9

Sources: U.S. totals, data on cental cities, and those for the nometropolitan South are obtained from the Annual Housing Survey for the following years:

U.S., SMSA	1980
Nonmetropolitan South	1980
Cincinnati	1978
Cleveland	1976
Boston	1977
Philadelphia	1978
San Francisco-Oakland	1978

Client data are from the Elderly Home Maintenance Demonstration Inspection Forms, Year 1, 1980-81.

[1]The "Total Number Owner-Occupied Housing Units" refers to the number of participants in the elderly home maintenance demonstration under "Clients" and refers to the estimated population size under "Central Cities" and "Nonmetropolitan South".

less, including one home with only a single room. In the first year of the Demonstration, Cleveland has, on average, the largest client homes; 35.9 percent of homes have eight or more rooms and 18.4 percent have ten or more rooms, the medium is 6.2. Included in the Cleveland sample is a client home with 22 rooms. However, in the second year only 13 percent of client homes have eight or more rooms, and only three percent have 10 or more rooms. It appears that the attrition in Cleveland from the first to the second year was concentrated in clients with larger homes. But there is no apparent explanation for this.

When we compare the median number of rooms in client homes with that for all owner-occupied homes in the respective cities and towns, they are about the same at most sites. There are two exceptions. First, client homes in Hot Springs are smaller when these are compared to owner-occupied homes in the nonmetropolitan South. Second, the homes of first year enrollees in Cleveland are larger, but those of second year participants are about the same as the City of Cleveland as a whole. It appears that there was attrition in participants between the first and second years in Cleveland, and this was concentrated in the larger homes.

Overall, client homes tend to have a single bathroom. As shown in Exhibit 5-8, 73.5 percent of homes across all sites have one bathroom while 26.1 percent have more than one bathroom. Only two sites have smaller proportions of one bathroom homes than the overall, seven site mean proportion. In Cincinnati and in Cleveland in the number of bathrooms per client home are evenly split between one and more than one. The proportion having two or more bathrooms is 21.3 percent and 28.6 percnt, respectively, compared to 11.3 percent for all sites together. This pattern continues for second year participants in Cincinnati, but in Cleveland the number of bathrooms is about the same as that for all sites.

When the number of bathrooms in client homes are compared to that for all owner-occupied homes in the respective cities, client homes are generally smaller. The proportion of homes having just one bathroom is greater for clients in all cities except Cleveland, and the proportion having more than one is less. This is especially marked in Boston, Philadelphia and, to a lesser extent, San Francisco. As we discussed above, the comparison of Hot Springs clients with the nonmetropolitan South probably is not a reliable indication of how clients compare with other Hot Springs owner occupants.

Again, there is a significant difference between Year 1 and Year 2 for Cleveland. In Year 1, client homes have more bathrooms than all owner occupants in Cleveland, but the attrition in demonstration participants from Year 1 to Year 2 is concentrated in those with larger homes, and in this case in those with more bathrooms. In Year 2 the homes of Cleveland participants are much smaller thn those of other Cleveland residents in terms of the number of bathrooms.

Overall, the number of bedrooms per client home is typically two or three. As Exhibit 5-8 portrays, 75.4 percent of all demonstration homes have either two or three bedrooms. In several sites where homes tend to have more rooms, the number of bedrooms frequently exceeds four. Elderly client homes had four or more bedrooms most often in Cleveland (34.9 percent in Year 1), Philadelphia (28.9 percent) and Boston (25.8 percent). By contrast, 12.3 percent of client homes in Hot Springs have one or no bedrooms.

In terms of the number of bedrooms, client homes are smaller than those of other owner-occupied homes in Cincinnati and Hot Springs and about the same in Boston, Philadelphia, and San Francisco. Finally, client homes are larger than those in Cleveland as a whole.

5.5 Electrical and Heating System Characteristics

The type and capacity of home electrical systems represents an important indicator of the potential for repair or replacement. Fuse boxes are often regarded as providing a lower level of electrical service than circuit breaker systems. Homes with system average capacity less than 50 amps may be regarded as inadequate. Electrical system types and capacities are shown in Exhibit 5-9.

Overall, a high proportion of client homes are served by fuse box panels. Across all sites, 58.3 percent of homes have older fuse box systems. The highest proportion is found in rural Hot Springs

Exhibit 5-9

Electrical System Characteristics of Client Homes, by City

Site	Distribution of Homes by Electrical System Panel Type (Absolute Frequency)		Mean System Capacity, in Amps (Standard deviation in Parantheses)	Proportion of Homes with less than 50 Amp service (Absolute Freq. in Parantheses)
	Fuse Box	Circuit Breaker		
Cincinnati	59.5% (69)	40.5% (47)	96 Amps (37)	5.7 (7)
Cleveland	41.0 (55)	59.0 (79)	106 (29)	0.7 (1)
Boston	62.3 (76)	37.7 (46)	105 (54)	4.8 (6)
Greensboro	59.4 (85)	40.6 (58)	105 (44)	1.4 (2)
Hot Springs	78.0 (85)	22.0 (24)	78 (63)	34.9 (43)
Philadelphia	50.0 (58)	50.0 (58)	71 (33)	32.5 (40)
San Francisco	60.9 (81)	39.1 (52)	60 (27)	38.5 (52)
All Sites	58.3 (509)	41.7 (364)	89 (46)	17.5 (151)

Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

(78.0 percent), while the lowest proportion is reported in Cleveland (41.0 percent). In the other five sites, home electrical systems are divided between fuse box and circuit breaker systems.

A small proportion of homes are serviced by less than 50 amperage systems. Overall, 17.5 percent of client homes have potentially inadequate electrical system capacity rated at less than 50 amps. Potentially inadequate systems are most prevalent among client homes in San Francisco (38.5 percent), Hot Springs (35.0 percent), and Philadelphia (32.5 percent). Typically, these systems are rated at 30 amps, a capacity usually insufficient for major appliances or more than two circuits. There are sporadic cases in Boston, Greensboro, Hot Springs, and Philadelphia of 15 and 20 amps systems.

The characteristics of heating and air conditioning systems also determine the potential need for repairs or the need for additions or replacements. Basic heating/air conditioning system attributes include the presence of a central system, the heat delivery mode (air, hot water, or steam), and the type of primary fuel used for both heating and for water heaters. These attributes are summarized by site in Exhibits 5-10 and 5-11.

While central systems are found in 72.9 percent of all client homes, there is a sizeable proportion of houses without central heating systems (27.1 percent). These homes typically have room space heaters using gas, kerosine, or electricity. In the three northern cities of Cincinnati, Cleveland, and Boston nearly all client homes are equipped with central systems. Approximately three quarters of the client homes in Philadelphia and San Francisco have central systems. The use of space heaters is greatest in the two southern sites of Greensboro (40.4 percent) and Hot Springs (91.1 percent) reflecting, in part, moderate temperatures. In Hot Springs, the high proportion of space heaters may also be indicative of the rural, small town environment and the relative poverty in the target areas.

Exhibit 5-10

Characteristics of Client Home Heating Systems and Water Heaters by City

(Absolute Frequency in Parantheses)

	Presence of Central System		Water Heater Type		
Site	Yes	No	Gas	Oil	Electric
Cincinnati	99.2% (120)	1.8 (1)	100.0 (115)	--	--
Cleveland	94.7 (126)	5.3 (7)	100.0 (124)	--	--
Boston	96.8 (120)	3.2 (4)	34.7 (105)	15.3 (19)	--
Greensboro	59.6 (87)	40.4 (59)	14.4 (21)	1.4 (2)	84.2 (128)
Hot Springs	8.9 (11)	91.1 (112)	90.6 (106)	--	9.4 (11)
Philadelphia	73.3 (88)	26.7 (32)	92.3 (84)	5.5 (5)	2.2 (2)
San Francisco	78.4 (105)	21.6 (29)	98.5 (133)	0.7 (1)	0.7 (1)
All Sites	72.9 (657)	27.1 (244)	80.8 (688)	3.2 (17)	16.1 (137)

Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

Exhibit 5-11

Type of Space Heating Equipment and Fuel

	Cincinnati		Cleveland		Boston		Greensboro
	Clients	Central City	Clients	Central City	Clients	Central City	Clients
Type of Heating							
Air	90.2%	87.1%	94.9%	93.8%	27.6%	28.5%	96.6%
Hot Water or Steam	9.8	12.7	5.1	6.2	72.4	71.6	3.5
None	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Number Owner-Occupied Units[1]	122	58,300	136	108,000	123	58,500	145
Type of Heating Fuel							
Gas	95.9%	89.3%	99.3%	95.8%	27.7%	30.0%	39.3%
Oil	3.3	3.4	0.7	1.4	92.3	63.1	43.5
Electric	0.0	6.4	0.0	2.4	0.0	6.5	15.2
Other	0.8	0.9	0.0	0.4	0.0	0.4	2.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Number of Occupied Housing Units[1]	122	152,800	136	230,800	123	206,000	145

Exhibit 5-11

(continued)

	Hot Springs	Philadelphia		San Francisco		All Sites
	Clients	Clients	Central City	Clients	Central City	Clients
Type of Heating						
Air	93.5%	39.0%	45.9%	97.8%	96.7%	76.6%
Hot Water or Steam	16.5	61.0	54.1	2.3	2.8	23.4
None	0.0	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Total Number Owner-Occupied Housing Units[1]	121	123	372,000	133	158,900	903
Type of Heating Fuel						
Gas	91.7	59.4	64.9	99.3	88.5	
Oil	0.0	39.8	31.7	0.8	1.5	
Electric	3.3	0.8	2.3	0.0	8.2	
Other	5.0	0.0	1.1	0.0	1.8	
Total	100.0	100.0	100.0	100.0	100.0	
Total Number of Occupied Housing Units[1]	121	123	610,000	133	430,600	

Sources: Data on cental cities are obtained from the Annual Housing Survey for the following years:

Cincinnati	1978
Cleveland	1976
Boston	1977
Philadelphia	1978
San Francisco-Oakland	1978

[1]The "Total Number Owner-Occupied Housing Units" refers to the number of Year 1 participants in the elderly home maintenance demonstration under "Clients" and refers to the estimated population size under "Central Cities".

Across all sites, the heat delivery mode is predominantly forced hot air. Variations to this delivery mode occur primarily in the two older northeastern cities, Boston and Philadelphia, where hot water and, to a lesser degree, steam are common types of heating systems.

While the primary heating fuel tends to be gas, there are differences in fuel type used among the various sites. In four sites--Cincinnati, Cleveland, Hot Springs, and San Francisco--gas is used as a primary heating fuel by nearly all clients. The use of oil as a primary heating fuel is greatest in Boston (72.3 percent), but also frequent in Greensboro (43.5 percent) and Philadelphia (39.8 percent). Electricity is encountered most frequently in Greensboro (15.2 percent), while other fuel sources, primarily wood, are encountered in several homes in Hot Springs.

Water heaters are also typically fueled by gas in all sites except one. In Greensboro, 84.2 percent of all water heaters are electric. Oil water heaters are encountered in a small number of cases.

Comparisons of client space heating equipment and fuels with those of all owner occupants at the respective sites are made only for Cincinnati, Cleveland, Boston, Philadelphia, and San Francisco. We use the Annual Housing Survey reports for selected metropolitan areas, and Greensboro and Hot Springs are not covered. Comparisons of clients at these sites with owner occupants of larger geographic areas are probably less appropriate for heating fuel because fuel use tends to vary significantly across the larger geographic areas that can be used for these comparisons.

For all sites except Philadelphia the types of heating systems in client homes are the same as those of all owner occupants in the corresponding cities. In Philadelphia, clients are more likely to have hot water or steam heating systems and less likely to have hot air systems. This is explained by the fact that client homes are much older than the general housing stock in Philadelphia, and older homes are more likely to have hot water or steam systems.

In all cities for which comparisons can be made, client homes are much less likely to be heated with electricity than those of all owner occupants. Again, this is due to the greater age of client homes compared to the total stock of owner-occupied housing. Electric heating is found primarily in homes that were built in the last 20 to 30 years, whereas most client homes were built before 1940. In Boston and Philadelphia client homes are more likely to use oil for space heating, and this is again due to their greater age.

5.6 Weatherization Characteristics

The incidence of weatherization related attributes is governed, primarily, by climatic need and the availability of homeowner weatherization assistance programs. Weatherization related attributes consist of two types of home improvement: storm doors or windows and insulation. Exhibit 5-12 shows the distribution of weatherization related improvements by city.

Less than one half of all demonstration client homes have storm doors and windows on all doors and windows. Approximately two thirds of client homes have storm doors and windows on all exterior doors and windows in Cincinnati, Greensboro, and Boston. Hot Springs and San Francisco homes are least likely to have storm doors or windows; 62.6 percent of all Hot Springs client homes have no storm doors and 75.4 percent have no storm windows, while nearly all client homes in San Francisco have no storm doors or windows. In spite of harsh winters, a sizeable proportion of client homes in Boston and Cleveland do not have complete sets of storm doors and windows. In Boston, 34.7 percent of all clients' homes need some or all storm doors and 30.6 percent need some or all storm windows. In Cleveland the proportion of homes with storm door and window inadequacies is even greater; 52.7 percent need some or all storm doors and 58.4 percent require some or all storm windows.

In general, client homes are not well insulated. Overall, only 25.6 percent of all demonstration homes have attic or ceiling insulation while less than ten percent have either wall or

Exhibit 5-12

Presence of Weatherization Related Improvements in Client Homes, by City

(Absolute Frequency in Parantheses)

Site	Storm Doors: All Doors	Storm Doors: Some Doors	Storm Doors: None	Storm Windows: All Windows	Storm Windows: Some Windows	Storm Windows: None	Insulation: Basement/Floor	Insulation: Attic/Ceiling	Insulation: Walls
Cincinnati	68.6% (81)	26.3 (31)	5.1 (6)	61.9 (73)	20.3 (24)	17.8 (21)	0.8 (1)	18.0 (22)	2.5 (3)
Cleveland	47.4% (63)	44.4 (59)	8.3 (11)	41.7 (55)	45.5 (60)	12.9 (17)	5.9 (8)	14.8 (20)	11.1 (15)
Boston	65.3% (81)	28.2 (35)	6.5 (8)	69.4 (86)	26.6 (33)	4.0 (5)	0.8 (1)	13.8 (17)	0.8 (1)
Greensboro	68.0% (100)	21.8 (32)	10.2 (15)	58.2 (85)	19.9 (29)	21.9 (32)	29.3 (43)	70.1 (103)	18.6 (27)
Hot Springs	13.0% (16)	24.4 (30)	62.6 (77)	10.7 (13)	13.9 (17)	75.4 (92)	8.3 (10)	42.3 (52)	22.1 (27)
Philadelphia	53.9% (62)	29.6 (34)	16.5 (19)	50.9 (58)	39.6 (45)	9.6 (11)	20.2 (24)	3.1 (3)	7.5 (8)
San Francisco	--	--	100.0% (133)	--	0.8 (1)	99.2 (132)	0.7 (1)	6.7 (9)	0.7 (1)
All Sites	45.1% (403)	24.7 (221)	30.1 (269)	41.6 (370)	23.5 (209)	34.9 (310)	9.8 (88)	25.6 (226)	9.3 (82)

Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

basement/floor insulation. The low proportion of insulated homes is particularly acute in northern sites. Surprisingly, Hot Springs and Greensboro client homes are most likely to be insulated. In Greensboro, 70.1 percent of the client homes have attic or ceiling insulation and 29.3 percent have basement or floor insulation. In Hot Springs, 42.3 percent of the client homes have attic or ceiling insulation and 22.1 percent have wall insulation. The high proportions of insulated homes in Greensboro and Hot Springs may reflect the age of the homes; newer homes may be more likely to have been built with insulation.

5.7 Estimated Property Value of Client Homes

There is a wide range of property values of client homes among and within the seven demonstration sites. San Francisco homes have the highest values; property values in San Francisco average $91,551. By contrast, property values in rural Hot Springs average $16,107, while those in Philadelphia are even lower, at $15,732 per home. Mean property values for all sites are shown in Exhibit 5-13.

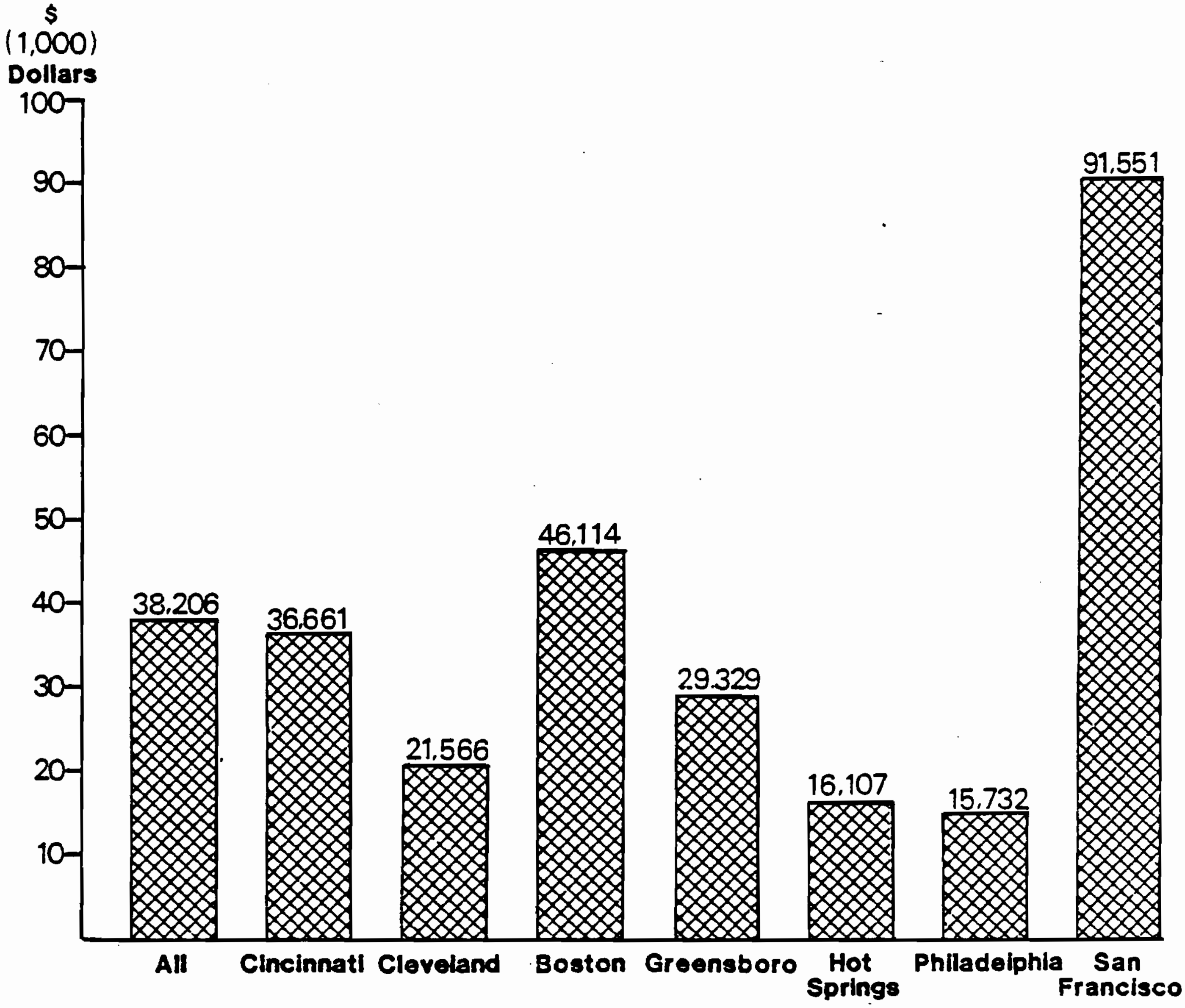
Estimated values of individual homes ranged from lows of $1,000 in Hot Springs and $2,000 in Philadelphia to a high of $250,000 in San Francisco. Within sites, the variation of property values is also pronounced; in Cincinnati, from $18,000 to $59,000, in Boston, from $10,000 to $100,000, in Philadelphia, from $2,000 to $63,000, and in San Francisco, from $36,000 to $250,000. This wide variation in property values reflects the housing market constraints and cost of living factors particular to each city. The range also indicates that it is difficult to stereotype the homes of elderly demonstration clients according to estimated value or accrued equity.

5.8 Summary

When considered across all sites, a typical client home tends to have the following characteristics:

Exhibit 5-13

ESTIMATED PROPERTY VALUES OF CLIENT HOMES



Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

- Most homes are detached structures (72.1 percent);
- Most homes are of wood frame construction (75.4 percent);
- Home exteriors are most likely to be wood (28.9 percent) or brick (23.5 percent);
- Less than a majority of homes have garages (45.9 percent);
- Less than a majority of homes have attics (48.0 percent);
- Most homes have basements (72.8 percent);
- Homes are most likely to be one story (43.7 percent). Most homes have either one or two stories (72.4 percent);
- Most home structures consist of a single unit (79.5 percent);
- Homes typically have from four to seven rooms; 43.4 percent have four to five rooms while 38.0 percent have six to seven rooms;
- Most homes have a single bathroom (73.5 percent);
- Homes tend to have two or three bedrooms; 38.9 percent have two bedrooms while 36.5 percent have three;
- A majority of homes are still served by a fuse box electrical system (58.3 percent);
- The mean electrical system capacity is 89 amps; however, 17.5 percent of the homes are served by less than 50 amp capacity systems;
- Most homes are served by central heating systems (72.9 percent). These systems are typically forced hot air systems (76.6 percent) and fueled primarily by natural gas (73.0 percent);
- Most clients have gas hot water heaters (80.8 percent);
- A majority of homes do not have complete sets of storm doors (54.8 percent) and storm windows (58.4 percent);
- Most homes are not equipped with wall (90.7 percent), basement/floor (90.2 percent), or attic/ceiling (74.4 percent) insulation;
- Homes are most likely to have been built between 1920 and 1939 (38.5 percent). Most homes have been built between 1900 and 1959 (88.4 percent);
- The estimated mean property value for a home is $38,206.

These average client housing characteristics mask the range of housing types served by the demonstration. This range is notable and suggests that housing owned by the elderly cannot be easily stereotyped. Instead, regional and even neighborhood characteristics appear to affect the type of housing maintained by elderly clients. For example, while large homes were commonplace in Cleveland, smaller homes were more likely to be found among the elderly in Hot Springs.

When client homes are compared with those of other owner occupants in the same city, several differences emerge:

- Client homes are older, and this reflects the fact that the clients are older and have lived in their homes longer than the general population;

- By three measures of housing size, client homes are either the same size or smaller than the housing of all owner occupants in the corresponding cities. Client homes on average have the same number of rooms and fewer bathrooms; Boston, Philadelphia, and San Francisco clients have the same number of bedrooms, whereas those in Cincinnati have fewer. The exception is Cleveland. Clients in Cleveland have more rooms, including more bathrooms and bedrooms;

- The Cleveland site experienced attrition in demonstration participants from Year 1 to Year 2, and this occurred primarily among clients with the largest houses. However, there is no apparent reason why this occurred in Cleveland, but not at other sites;

- Clients generally use the same type of space heating equipment as other owner occupants in the same cities. The one exception is Philadelphia where clients are more likely to have hot water or steam systems because of the age of the housing; and

- Because of the greater age of the housing units, clients are much less likely to heat their homes with electricity.

Chapter 6

Repair Needs

The seven Demonstration programs followed detailed procedures to elicit home deficiencies and repair priorities from clients, identify both major and minor repair needs through home inspections, and reconcile the two sets of needs into a mutually acceptable package of repair services. An analysis of this needs identification process serves two useful purposes. First, knowledge of identified home deficiencies provides a context for interpreting program repair data. In particular, are the repairs performed responsive to the needs expressed by clients or the deficiencies identified by inspectors? Second, these repair needs begin to indicate the potential demand for program services.

This chapter has been divided into five sections. In Section 6.1 the repair needs identified by program inspectors are described and issues of inspector bias examined. The home deficiency priorities expressed by clients are presented in Section 6.2. In Section 6.3 determinants of housing condition are analyzed in an effort to explain what clients and housing characteristics affect the number of needed repairs. Finally, the impact of identified home deficiencies on the market valuation of housing is asessed in Section 6.4. Findings are summarized in Section 6.5.

6.1 Identifying Repair Needs: Program Inspectors

The Demonstration provided a minimal framework for the inspection process. Each program was required to conduct documented inspection visits to all enrolled client homes. Housing condition findings were to be reported on standardized inspection forms.

Prior to initial client enrollment, each program received training on inspection procedures and completion of the inspection form.

The inspection form used by all seven program sites has been formatted to serve as a checklist of house conditions. Inspectors were required to assess the condition of 32 house and systems variables. Exterior conditions were assessed for the front, side, and rear of homes. Interior conditions were inspected on a room by room basis. For each variable inspectors indicated whether or not a deficiency existed. If a problem was identified, the inspector estimated the total cost of repair in one of three cost code categories: less than $100, $100 to $300, and over $300.

Beyond this limited framework, however, inspections tended to reflect program specific characteristics. Each program assigned home inspection responsibilities according to its organizational structure and staffing capabilities. Hence, despite initial training, inspections were performed by persons with varying backgrounds and experience in assessing home conditions. While San Francisco utilized the services of two retired FHA appraisers/inspectors, Hot Springs' inspections were performed by the program secretary who had no prior inspection experience. Likewise, several Demonstration inspectors had carpentry backgrounds while others were experienced in plumbing and general contracting. These program-based variations are particularly important for assessing the repair needs identified by inspectors.

While Demonstration guidelines specified that enrolled homes be in basically sound condition, the seven programs adopted broad interpretations of what consitutes basically sound housing. Program interpretations were influenced by the condition of the local housing stock. The poor quality of much of the rural housing stock in Garland County was reflected in the inclusion of a number of homes which, while dilapidated, were not abnormal cases for the area. Likewise, the age and condition of client homes in Philadelphia in no way resemble the newer single family detached homes served in Cincinnati, Greensboro, or San Francisco. This wide variation in housing stock receiving Demonstration resources is also likely to affect the type and quantity of identified repair needs.

The following analysis of repair need should be interpreted with caution. The different inspection approaches limit the extent to which the data can be construed to represent actual housing condition. Hence, the discussion in Section 6.1 focuses on inspector identified needs, and avoids equating repair needs with home condition. Instead, the inspector data provide a baseline of needs from which the programs select repairs to be performed.

The data presented in Chapter 6 has been limited to Year One inspection data. While reinspection visits were conducted in Year Two, the procedures used by many sites to complete the inspection forms call into question the quality if the data.*

To facilitate analysis and presentation, the 32 original condition variables have been grouped and collapsed to create fourteen descriptive repair need categories.** The fourteen repair need categories are the following:

- Exterior Repair Needs: exterior walls, foundation, and exterior surfaces;
- Door Repair Needs: exterior doors, including locks and other security devices;
- Porch Repair Needs: porches, steps, stoops, and railings;
- Roof Repair Needs: roof, flashing, caulking, gutters, downspouts, and drain systems;
- Window Repair Needs: exterior and interior window problems;

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*Year Two inspections were generally considered formalities by the sites. Several sites attempted to up date Year One forms; most did not perform the same comprehensive inspection conducted in Year One. Hence, we limit our discussion of repair needs to the initial findings reported in Year One.

**See Appendix E for a copy of the inspection form used in the demonstration and the 32 housing condition variables used by the program staff.

- Weatherization Repair Needs: storm doors, storm windows, attic/ceiling insulation, wall insulation, basement insulation, weatherstripping;

- Interior Repair Needs: interior walls, ceilings, floors, doors, and other interior problems;

- Kitchen Plumbing Repair Needs: piping, fittings, drain traps, vents, waste, hot/cold water, and kitchen sink;

- Bathroom Plumbing Repair Needs: piping, fittings, drain traps, waste, vents, hot/cold water, toilet, sink, and tub/shower;

- Electrical Repair Needs: minor and major repairs to systems and room related repairs;

- Stairway Repair Needs: stairs and handrails in living areas, basement, and attic;

- Heating Repair Needs: piping, ducts, major and minor equipment, water heater, space heater, and air conditioner;

- Structural Repair Needs: structure of basement or attic/major structural supports; and

- Other Repair Needs: moisture in living areas, basement or attic, termites, ants, rodents in living area, basement, or attic.

6.1.1 Inspector Findings

Overall, 10,810 home deficiencies were identified by Demonstration inspectors during the initial Year One inspections, an average of 11.9 repair needs per client home. Demonstration averages, however, do not reflect the wide range in the number of repair needs identified on a program by program basis. These repair needs were unevenly distributed among the seven sites; San Francisco and Greensboro accounted for nearly half of all identified needs. San Francisco alone had 32.3 percent of all inspector identified needs. In contrast, Hot Springs had only 7.1 percent of all home deficiencies identified by inspectors. Exhibit 6-1 shows the distribution of repair needs per client on a program by program bases.

When compared to the housing characteristics presented in Chapter Five, the program total repair needs per client appear unrelated to housing characteristics. It might be reasonable to expect that

Exhibit 6-1

Distribution of Year One Repair Needs Among Fourteen Repair Types, by City

Repair Type Needed	CITY							
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Exterior Repairs	8.9	5.9	6.1	4.5	5.9	4.4	6.1	6.0
Door Repairs	3.8	7.9	6.1	13.8	15.9	8.9	6.1	8.3
Porch Repairs	6.6	7.0	7.8	3.9	7.7	3.4	2.5	4.7
Roof Repairs	10.9	3.8	6.9	1.9	2.4	3.6	2.8	4.2
Window Repairs	16.0	22.7	25.4	26.7	14.4	21.3	14.8	19.5
Weatherization Repairs	2.0	2.3	6.0	3.9	0.1	1.7	2.3	2.7
Interior Repairs	21.1	26.6	22.4	28.1	26.1	32.7	33.9	28.8
Kitchen Plumbing Repairs	9.4	2.8	3.1	5.8	9.6	3.6	5.5	5.6
Bathroom Plumbing Repairs	8.4	4.2	3.5	7.1	8.9	6.0	5.1	5.9

Exhibit 6-1

(continued)

Repair Type Needed	CITY							
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Electrical Repairs	6.8	7.6	6.1	2.2	7.7	6.2	14.0	8.4
Stairway Repairs	0.9	6.1	3.1	0.6	--	7.3	2.0	2.7
Heating Repairs	0.9	1.3	0.5	0.3	0.3	0.3	3.5	1.5
Structural Repairs	0.2	0.4	1.5	0.3	0.4	0.1	0.5	0.5
Other Repairs	3.9	1.3	1.5	0.7	0.7	0.5	0.9	1.3
Total Repairs	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sample Size of Repair Needs	1279	1301	1014	1785	763	1171	3497	10,810

Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

older housing stock would require more repairs than more recently constructed structures. The inspector generated data did not concur. The programs with the oldest housing stock, Boston and Philadelphia, were among the sites with the lowest number of identified repair needs per client. In contrast, the most recently constructed housing was found in San Francisco, where inspectors identified an average of 25.9 deficiencies per house. San Francisco inspectors found more interior repair needs (8.8/home) than Hot Springs inspectors found for all repair types.

This variation in needs identification among program inspectors confounds efforts to compare repair needs across sites and the ability of programs to address these needs. This difficulty is highlighted by Exhibit 6-2. While it is possible to examine the distribution of home deficiencies among the fourteen repair types on a program by program basis, the relative nature of the data makes comparison of proportions between programs uncertain. Several important findings, however, can be extracted from the data:

- Inspectors at all sites reported interior and window deficiencies as the most prevalent repair needs;
- All program inspectors, with the exception of Boston, identified very small numbers of weatherization related problems;
- San Francisco inspectors identified a relatively high proportion of electrical deficiencies;
- Philadelphia and Cleveland identified a relatively high proportion of stairway (typically bar and railing) deficiencies;
- Hot Springs and Greensboro inspectors found a relatively high proportion of door (including lock) deficiencies;
- Cincinnati and Hot Springs inspectors found a relatively high proportion of plumbing (both kitchen and bathroom) deficiencies; and
- Cincinnati inspectors found a relatively high proportion of roof deficiencies.

Exhibit 6-2

Number of Year One Repair Needs Per Client Home
According to Repair Type, by City

Repair Type Needed	CITY							
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Exterior Repairs	0.9	0.6	0.5	0.5	0.4	0.4	1.6	0.7
Door Repairs	0.4	0.8	0.5	1.7	1.0	0.8	1.6	1.0
Porch Repairs	0.7	0.7	0.6	0.5	0.5	0.3	0.7	0.6
Roof Repairs	1.1	0.4	0.6	0.2	0.1	0.3	0.7	0.5
Window Repairs	1.7	2.2	2.1	3.2	0.9	2.0	3.8	2.3
Weatherization Repairs	0.2	0.2	0.5	0.5	**	0.2	0.6	0.3
Interior Repairs	2.2	2.5	1.8	3.4	1.6	3.1	8.8	3.4
Kitchen Plumbing Repairs	1.0	0.3	0.3	0.7	0.6	0.3	1.4	0.7
Bathroom Plumbing Repairs	0.9	0.4	0.3	0.9	0.6	0.6	1.3	0.7

Exhibit 6-2

(continued)

Repair Type Needed	CITY							
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Electrical Repairs	0.7	0.7	0.5	0.3	0.5	0.6	3.6	1.0
Stairway Repairs	0.1	0.6	0.3	0.1	--	0.7	0.5	0.3
Heating Repairs	0.1	0.1	**	**	**	**	0.9	0.2
Structural Repairs	**	**	0.1	**	**	**	0.1	0.1
Other Repairs	0.4	0.1	0.1	0.1	**	**	0.2	0.1
All Repairs	10.5	9.6	8.2	12.1	6.2	9.5	25.9	11.9
Sample Size	(122)	(136)	(124)	(147)	(123)	(123)	(135)	(910)

**Less than 0.1

Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

While it is incorrect to infer from this data that certain sites had greater or fewer specific types of repair needs, it is possible to construct a site by site distribution of perceived needs. While these needs may not constitute all home deficiencies (and the large discrepancy between San Francisco and the other sites suggest they do not), they represent the pool of problems likely to be addressed by the programs. Problems overlooked due to inspector bias or orientation were not to be addressed by the Demonstration.

The repair needs identification patterns of the inspectors are examined in more detail in Exhibit 6-3, which shows the proportion of client homes with at least one inspector identified need. This analysis controls for particular homes with similar multiple problems which skew the overall patterns of needs identification. The following patterns emerge on a site by site basis:

- Insepctors in Cleveland, Greensboro, Hot Springs, and Philadelphia were most likely to identify interior deficiencies at any given home;
- Inspectors in Boston were most likely to identify window problems at any given home;
- The inspector in Cincinnati was most likely to identify roof deficiencies at any given home; and
- The inspectors in San Francisco were most likely to identify door repair needs at any given home.

In certain cases, the inspector patterns were striking. Greensboro inspectors almost always found interior problems in the homes they examined; 92.5 percent of all Greensboro client homes had at least one interior deficiency identified. While interior repair needs were the most prevalent type in Hot Springs, the program inspectors only reported deficient interior conditions in 52.8 percent of the homes examined. The thoroughness of the San Francisco inspectors is evidenced in the large number of repair need types which were found

Exhibit 6-3

Proportion of Client Homes with at Least One Inspector Identified Need
By Repair Type and City

Repair Type Needed	CITY							
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Exterior Repairs	43.4	27.2	30.6	29.3	16.3	28.5	61.5	34.0
Door Repairs	31.1	46.3	35.5	87.8	60.2	59.3	87.4	59.2
Porch Repairs	51.6	54.4	51.6	38.8	40.7	26.0	51.9	45.1
Roof Repairs	70.5	33.1	46.8	19.0	13.8	29.3	54.1	37.7
Window Repairs	56.6	61.0	62.1	76.9	36.6	74.8	85.9	65.4
Weatherization Repairs	15.6	14.0	33.1	39.5	0.8	13.0	51.9	24.6
Interior Repairs	56.6	71.3	58.9	92.5	52.8	85.4	83.7	72.3
Kitchen Plumbing Repairs	64.8	22.1	21.0	52.4	44.7	26.0	66.7	42.7
Bathroom Plumbing Repairs	60.7	28.7	25.0	63.3	41.5	45.5	64.4	47.4

Exhibit 6-3

(continued)

Repair Type Needed	CITY							
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Electrical Repairs	31.1	41.2	28.2	18.4	30.1	33.3	85.2	38.4
Stairway Repairs	7.4	39.7	16.1	6.1	--	48.0	34.1	21.6
Heating Repairs	9.0	10.3	4.0	4.1	1.6	2.4	52.6	12.3
Structural Repairs	2.5	3.7	12.1	3.4	1.6	0.8	12.6	5.3
Other Repairs	36.9	11.8	11.3	7.5	4.1	4.9	14.1	12.7
Total Number of Clients	(122)	(136)	(124)	(147)	(123)	(123)	(135)	(910)

Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

in at least 50 percent of the homes examined. The HCI inspectors found deficiencies in at least one half of their client homes for exterior, door, porch, roof, window, weatherization, interior, kitchen, plumbing, bathroom, electrical and heating repair types.

6.1.2 Estimated Cost of Repair Needs

Program inspectors were also charged with estimating the cost of correcting any identified home deficiencies. Whenever inspectors determine a housing condition to be unsatisfactory, they were required to estimate the total cost (materials and labor) of repair by assigning one of three cost designations: less than $100, $100 to $300, or more than $300. In general, minor repairs are defined as those costing $300 or less. In this analysis minor repair needs are subdivided into inexpensive and medium cost needs. Any conditions costing more than $300 for correction are considered to be major repair needs.

Inexpensive Minor Repair Needs

Repair needs costing less than $100 to correct comprise the vast majority of identified home deficiency problems, as shown in Exhibit 6-4. Overall, 75.6 percent of all inspector reported repair needs can be remedied for less than $100. With the exception of San Francisco, the proportion of inexpensive minor repair needs is at least 80 percent in individual program sites. Greensboro has the highest proportion; 94.1 percent of all identified problems in Greensboro are categorized as inexpensive. In San Francisco, only 51.0 percent are inexpensive. Based on the housing characteristic data presented in Section 5.1, it is unlikely that client homes in San Francisco are substantially worse off than their counterparts in other cities. Instead, the background and experience of the HCI inspectors may have resulted in the identification of a proportionally higher number of more expensive repair needs.

Exhibit 6-4

Distribution of Repair Needs According to Cost-Category, by City*

		CITY							
		Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Repair Needs Less Than $100	n	1,115	1,134	807	1,680	619	1,030	1,782	8,167
	%	87.2	87.4	79.6	94.1	81.1	88.0	51.0	75.6
Repair Needs Between $100 and $300	n	54	85	106	76	85	72	817	1,295
	%	4.2	6.5	10.5	4.3	11.1	6.1	23.4	12.0
Repair Needs Greater than $300	n	110	82	101	29	59	69	898	1,348
	%	8.6	6.3	10.0	1.6	7.7	5.9	25.7	12.5
All Repair Needs	n	1,279	1,301	1,014	1,785	763	1,171	3,497	10,810
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*Column may not add up to exactly 100.0 due to rounding error.

Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

A large proportion of low cost repair needs for all sites are found in San Francisco and Greensboro. These two sites account for over 40 percent of all identified inexpensive needs. Again, the reason for this disproportionate distribution of repair needs is more likely a function of inspector backgrounds and experience, rather than stock condition. This explanation is supported by the low propoprtion of inexpensive needs identified in Hot Springs relative to other sites. While Hot Springs housing stock is in poorer condition than most other sites, the number of lowest cost problems encountered is also low.

The problems most frequently encountered at this cost level are interior and window repairs. As shown in Exhibit 6-5, inspectors found at least one interior deficiency in over two-thirds of the homes examine and at least one window problem in 62 percent of all homes inspected. These problems might include such inexpensive repairs as repainting, plastering, minor carpentry, reglazing, caulking, and window pane replacement. Overall, inspectors found an average of 8.95 inexpensive minor repair needs per home visited.

Medium Cost Minor Repair Needs

Repair needs costing between $100 and $300 comprise 12.0 percent of all problems identified by inspectors. In San Francisco medium cost repairs accounted for 23.4 percent of all encountered home deficiencies. At the other program sites repair needs at this cost level were encountered far less frequently. Medium cost repairs comprise 11.1 percent of all problems identified in Hot Springs and 10.5 percent in Boston. Cincinnati reported the lowest proportion of medium cost needs; only 4.2 percent of identified problems in Cincinnati could be remedied for $100 to $300.

Interior and window repairs accounted for a substantial proportion of medium cost needs, approximately 40 percent. Electrical repairs were also more likely to cost from $100 to $300; 15.1 percent of all medium cost repairs involved electrical problems. Across all sites, inspectors found an average 1.44 medium cost deficiencies per home.

Exhibit 6-5

Cost Level of Client Home Repair Needs,
by Repair Type; All Sites

(Sample Size = 910)

Repair Type Needed	Less than $100		$100 to $300		More than $300	
	% of homes	mean repairs/ home	% of homes	mean repairs/ home	% of homes	mean repairs/ home
Exterior Repairs	19.5	0.29	7.9	0.13	13.1	0.29
Door Repairs (including locks)	52.0	0.83	8.1	0.10	4.5	0.06
Porch Repairs	28.0	0.34	10.0	0.11	10.0	0.11
Roof Repairs	24.5	0.31	5.6	0.06	9.8	0.12
Window Repairs	62.3	2.05	8.7	0.15	4.9	0.11
Weatherization Repairs	15.3	0.15	2.5	0.03	13.7	0.14
Interior Repairs	68.1	2.81	17.7	0.42	9.2	0.19
Kitchen Plumbing Repairs	37.4	0.49	4.4	0.06	6.0	0.11

Exhibit 6-5

(continued)

Repair Type Needed	Less than $100		$100 to $300		More than $300	
	% of homes	mean repairs/ home	% of homes	mean repairs/ home	% of homes	mean repairs/ home
Bathroom Plumbing Repairs	41.9	0.54	4.1	0.06	5.8	0.11
Electrical Repairs	34.6	0.68	9.1	0.22	7.1	0.11
Stairway Repairs	19.3	0.27	2.3	0.02	1.5	0.02
Heating Repairs	8.5	0.10	3.7	0.05	2.7	0.03
Structural Repairs	2.1	0.02	0.7	0.01	2.5	0.03
Other Repairs	6.6	0.07	2.4	0.02	4.4	0.05
All Repair Types	--	8.95	--	1.44	--	1.48

Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

Major Cost Repair Needs

Repair needs costing in excess of $300 comprised 12.5 percent of all identified housing problems. San Francisco had the highest proportion of major repair needs; 25.7 percent of all San Francisco identified home deficiencies required over $300 to correct. At the other program sites, major repair deficiencies occurred infrequently. Major repair needs in Boston comprised 10.0 percent of all problems encountered. The lowest proportion of major repair needs was found in Greensboro, where only 1.6 percent of all problems cost more than $300 to remedy. Approximately two-thirds of all major repair problems were attributable to client homes in San Francisco.

Identified exterior problems were more likely to require major costs to correct. Weatherization and roof repairs were also frequently estimated to cost more than $300. Across all sites, inspectors found an average 1.48 major repair needs per client home.

6.2 Client Perception of Repair Needs

Client perceptions of repair needs are important for several reasons. The repair priorities identified by clients assisted programs to select repairs which were important to the mental and emotional well-being of the clients. For evaluation purposes, client perceptions can be compared with inspector findings and actual repairs performed to determine how well client priorities were addressed. By comparing client perceptions with inspector findings, it is also possible to ascertain if client priorities were realistic, given identified housing conditions.

Client perceptions of home condition and repair needs are derived from three parts of the enrollment form. (A sample enrollment form is contained in Appendix E.) Early in the enrollment interview prospective clients were asked to identify what in their home was most in need of repair. Up to six responses were retained for this analysis.* Following this initial question, clients were then asked about the repair status of specific portions

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*In cases where clients offered more than six need types, the first six repair needs mentioned have been accepted. The responses were limited to six due to data processing constraints.

of their homes. These questions served as probes, stimulating client recall and resulting in higher proportions of identified need. Toward the end of the home repair needs part of the interview, clients were requested to select their highest priority housing problem, the repair they would most like to see done first. By positioning this question at the end of the interview, clients could re-identify priorities based on their initial reactions and the system by system recall process.

In this section, client perceptions were examined in two ways. First, client responses to the system specific questions were reviewed and compared to inspector findings. Second, identified client priorities were ranked, overall and by city, and compared with inspector findings. The responses from the <u>initial</u> "what repair needs are most important" question are not separately examined since, with only scattered exceptions, there is general correspondence between these responses and the priority rankings.* Comparison between client priority and inspector identified repair needs is accomplished using simple comparative rankings.

<u>Specific Housing Problem and System Needs</u>

Client responses to questions reqarding the repair status of seven specific housing problems and systems show substantial variation from inspector generated findings. In general, clients cite problems more frequently than are reported by inspectors. This finding, shown in Exhibit 6-6, is substantiated for individual cities and the Demonstration as a whole. Several explanations are

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*Overall, the proportion of client homes with repair needs is substantially greater using inspector data. This is due, primarily, to the procedures used. Inspectors were asked to provide condition judgments for all repair categories; clients were limited to specific questions with a finite number of possible responses accepted. Hence, client responses, while representative, tend to be more diluted.

Exhibit 6-6

Clients Perceiving Specific Housing Problems and Repair Needs, by City

Repair Type Needed	CITY							
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Cold Areas in House?	32.2	68.8	71.0	57.2	70.6	85.4	61.3	63.8
Heating System in need of repair?	8.3	33.8	12.1	18.4	29.4	28.7	39.4	24.6
Plumbing in need of repair?	62.3	67.6	36.6	63.3	55.2	61.8	67.9	59.6
Electrical system in need of repair?	28.9	53.2	18.5	27.9	37.3	47.5	37.5	36.0
Other inside work needed?	69.2	67.4	25.8	61.2	49.2	69.7	81.6	60.9
Other outside work needed?	91.8	93.6	73.4	78.2	78.6	80.2	80.3	82.3
Any water leak/moisture problems?	54.1	58.3	37.9	36.1	27.4	49.2	52.6	45.1

Source: USR&E Enrollment Form File, 1980-81.

possible for this observation. First, clients may not have accurate perceptions of their housing condition and repair needs. Second, affirmative responses may have been provided as a matter of routine to insure that the home would receive attention. Third, inspectors may have differing perceptions of what constitutes satisfactory housing conditions. It is likely that all three explanations contribute to the disparity between client and inspector perceptions of repair need. Client responses are compared to inspector findings for specific housing problems.

- Interior Repair Needs: Overall, 60.9 percent of clients indicate that their homes have interior repair needs, compared to 72.3 percent of client homes identified by inspectors as having at least one interior problem. In general, clients perceive their homes as needing interior repairs; a majority of clients cite interior problems at all sites except Boston and Hot Springs. San Francisco clients identify interior needs most frequently; 81.6 percent of clients in San Francisco claim their homes have interior repair needs. In contrast, only 25.8 percent of clients in Boston report that their homes have interior problems. The largest discrepancies between client responses and inspector findings exist in Boston and Greensboro, where inspectors found interior problems in 30 percent more homes than did clients.

- Plumbing Repair Needs: Of all clients, 59.6 percent consider their homes in need of plumbing repairs. A majority of clients at all program sites except Boston identify a need for plumbing repairs. In Boston, only 36.6 percent of the clients perceive their homes as needing plumbing repair assistance. In contrast, twothirds of the clients in San Francisco and Cleveland report plumbing problems. In general, client perceptions of plumbing repair needs are close to inspector findings. In Cleveland, however, about 40 percent more clients claim plumbing needs than are reported by inspectors.

• Weatherization-Related Repair Needs: Overall, 63.8 percent of all clients report that their homes have cold or drafty areas, problems which could be alleviated with weatherization related improvements. In contrast, only 24.6 percent of all homes are found by inspectors to have at least one weatherization-related deficiency. A majority of clients in all but Cincinnati cite existing cold areas in their homes. High proportions of clients indicating cold areas are found in Philadelphia, Boston, Hot Springs, and Cleveland. Cold, drafty areas are reported by slightly less than one-third of the clients in Cincinnati. At all program sites except San Francisco and to a lesser extent Greensboro, wide discrepancies exist between client responses and inspector findings for weatherization-related repair needs. The variation is particularly acute in Hot Springs, where 70.6 percent of clients complain of cold areas in their homes, while inspectors identified only 0.8 percent of the homes as having weatherization-related needs.

• Exterior Repair Needs: Overall and within individual sites, clients consider their homes in need of exterior repair work.* Across all sites, 82.3 percent of all clients indicate their homes require exterior repair work, compared to only 34.0 percent of homes identified by inspectors as having at least one exterior repair need. At each site approximately three fourths or more clients claimed exterior repair needs, ranging from 91.8 percent of clients in Cincinnati to 73.4 percent of clients in Boston. Except for San Francisco and Cincinnati, exterior needs identified by clients far exceed inspector findings. In San Francisco, client and inspector results converge, while in Cincinnati inspector findings exceed client perceptions by 11 percent.

• Electrical Repair Needs: Thirty-six percent of all clients consider their electrical systems in need of repair, compared to 38.4 percent of homes identified by inspectors as having at least

*Exterior repair work was not precisely defined for clients and may also include nonstructure related work such as yard, fence, garage, or sidewalk needs.

one electrical problem. Within sites, client perception of electrical need ranges from a high of 53.2 percent in Cleveland to a low of 18.5 percent in Boston; Cleveland is the only city in which a majority of clients claim to need electrical repair work. In general, there is reasonable correspondence between client perceptions and inspector findings at all sites except one. In San Francisco inspectors identify electrical needs twice as often as clients.

- Heating Repair Needs: Approximately one-quarter of all clients indicate that their heating system is in need of repair, compared to 12.3 percent of homes identified by inspectors as having at least one heating deficiency. Clients in San Francisco (39.4 percent) are most likely to claim heating system needs, while clients in Cincinnati (8.3 percent) and Boston (12.1 percent) are least likely to indicate heating problems. In Cincinnati, client perceptions and inspector findings match closely, while in San Francisco inspector findings exceed client perceptions. In the remaining sites, client perceptions are greater than inspector findings.

- Moisture/Water Repair Needs: Across all sites, 45.1 percent of all clients indicate that their homes have water leaks or moisture problems, a proportion substantially greater than found by inspectors. Within sites, claims of water problems range from slightly over 50 percent in Cleveland, Cincinnati, and San Francisco to 27.4 percent in Hot Springs. With the possible exception of Cincinnati, there is wide disparity between client perceptions of water problems and inspector findings, classified in Section 5.2.1 under "other" repair needs.

Highest Priority Client Needs

The highest priority repair needs identified by clients typically coincide with the findings of the program home inspectors. When responses for clients across all sites are aggregated, the pressing, highest ranking priority needs are interior problems

(14.8 percent of all clients), plumbing problems (13.8 percent), porch problems (12.3 percent), window problems (11.4 percent), and roof problems (9.8 percent). Client priorities are shown for all sites and individual cities in Exhibit 6-7. These priorities overlap fairly consistently with the types of needs most likely to be identified by inspectors. Of the five priorities cited by clients only roof problems do not coincide with the five inspector identified needs most likely to occur at least once in a client home. Instead, inspectors identify door repair needs, particularly lock related needs, as frequently occurring problems.

Considerable variation exists between client priorities and proportions of inspector identified repair needs within individual program sites. By focusing on the five highest ranking client priorities and inspector identified needs, it is possible to make the following observations at the site level:

- In Cincinnati, roof and plumbing repair needs receive the highest priority rankings from clients. Over one third of the clients in Cincinnati cite either roof or plumbing problems as their most important priority need. Porch and window repair needs received the third and fourth rankings, with interior needs ranked fifth. These priorities coincide with the five highest incidence repair needs identified by inspectors.

Cincinnati Repair Need Rankings

Client Priorities	Inspector Findings
Roof	Roof
Plumbing	Kitchen Plumbing
Porch	Bathroom Plumbing
Windows	Interior
Interior	Windows

- In Cleveland, clients identify porch repairs as their highest ranking priority need, followed by door, plumbing, interior, and roof problems. About one third of the clients in Cleveland identify either porch or door repairs as their most important

Exhibit 6-7

Proportion of Clients Identifying Higest Priority Repair Needs, by City

Repair Type Needed	CITY							
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Exterior Repairs	4.1	5.6	4.0	8.8	5.6	3.3	5.8	5.4
Door Repairs (including locks	3.3	13.4	3.2	10.9	6.3	11.4	6.6	8.0
Porch Repairs	14.8	19.7	13.7	10.9	12.7	8.1	5.8	12.3
Roof Repairs	18.0	9.2	15.3	0.7	8.7	4.1	13.9	9.8
Window Repairs	10.7	7.7	16.1	10.9	7.9	18.7	8.8	11.4
Weatherization Repairs	2.5	7.0	8.9	18.4	12.7	9.8	3.6	9.1
Interior Repairs	8.2	9.9	21.0	15.6	22.2	8.9	17.5	14.8
Plumbing Repairs	18.0	11.3	4.8	15.6	9.5	14.6	21.9	13.8
Other External Repairs	6.6	2.8	0.8	--	0.8	4.1	1.5	2.3

Exhibit 6-7

(continued)

Repair Type Needed	CITY							
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Electrical Repairs	6.6	7.7	3.2	0.7	5.6	5.7	5.8	5.0
Stairway Repairs	--	1.4	4.8	1.4	--	4.1	--	1.6
Heating Repairs	2.5	1.4	2.4	0.7	4.8	1.6	3,6	2.4
Structural Repairs	0.8	--	--	--	--	--	--	0.1
Other Repairs	1.6	2.8	0.0	--	0.8	3.3	4.4	2.0
Total Number of Clients	(122)	(142)	(124)	(147)	(126)	(123)	(137)	(921)

Source: USR&E Enrollment Form File, 1980-81.

priority problems. Inspectors find that a high proportion of client homes have window and electrical needs; client priorities do not coincide with these repair needs.

Cleveland Repair Need Rankings

Client Priorities	Inspector Findings
Porch	Interior
Door	Windows
Plumbing	Porch
Interior	Door
Roof	Electrical

- In Boston, clients identify interior problems most frequently as their highest priority repair need, followed by window, roof, porch, and weatherization related needs. These priorities mirror the repair needs inspectors encounter most often in client homes, with the exception of door needs, which are not frequently cited by clients as priority problems.

Boston Repair Need Rankings

Client Priorities	Inspector Findings
Interior	Windows
Window	Interior
Roof	Porch
Porch	Roof
Weatherization	Door

- In Greensboro, clients perceive weatherization-related problems to be their most frequently cited priority repair need, followed by interior, plumbing, door, porch, and window needs. While weatherization is mentioned most often by clients as a priority need, it is not identified by inspectors in a high proportion of client homes.

Greensboro Repair Need Rankings

Client Priorities	Inspector Findings
Weatherization	Interior
Interior	Door
Plumbing	Windows
Door	Bathroom Plumbing
Porch	Kitchen Plumbing
Windows	

- In <u>Hot Springs</u>, interior repair needs are often identified by clients as highest repair priorities, followed by porch, weatherization, plumbing, and roof repair needs. The high ranking accorded weatherization by clients is not matched by inspector identified repair needs. The inspection process identified only one home in need of weatherization related repairs. Instead, inspectors encountered a high proportion of door problems, a repair need not frequently cited by clients as a highest priority.

<u>Hot Springs Repair Need Rankings</u>

<u>Client Priorities</u>	<u>Inspector Findings</u>
Interior	Door
Porch	Interior
Weatherization	Kitchen Plumbing
Plumbing	Bathroom Plumbing
Roof	Porch

- In <u>Philadelphia</u>, window repairs are identified most frequently by clients as their highest priority need, followed by plumbing, door, weatherization, and interior repair needs. Clients cited weatherization as a frequent priority need, while inspectors did not. Conversely, inspectors encountered a high proportion of stairway problems, while clients did not.

<u>Philadelphia Repair Need Rankings</u>

<u>Client Priorities</u>	<u>Inspector Findings</u>
Windows	Interior
Plumbing	Windows
Door	Door
Weatherization	Stairway
Interior	Bathroom Plumbing

- In <u>San Francisco</u>, plumbing is most frequently cited by clients as a highest priority repair need, followed by interior, roof, window, and door problems. While door repair needs are the most frequently encountered problem by inspectors, it is only the fifth ranking priority need identified by clients. The high ranking of roof repairs among clients is not matched by the proportion of roof problems encountered by inspectors. Instead, inspectors are more likely to identify electrical repair needs than roof needs.

San Francisco Repair Need Rankings

Client Priorities	Inspector Findings
Plumbing	Door
Interior	Windows
Roof	Electrical
Window	Interior
Door	Kitchen Plumbing

In summary, clients identify many of the same repair needs reported by the program home inspectors. Interior repair needs, plumbing deficiencies, and window problems, the needs most frequently identified by inspectors, are also priority concerns of clients. Clients appear to emphasize weatherization related repair needs more than inspectors and are less apt to perceive door repairs as a high priority need. When clients are asked to respond to specific housing or system problems, they are more likely to identify these as repair needs than are the inspectors.

6.3 Determinants of Housing Condition

When considered on a program by program basis, the repair needs identified by inspectors represent a measure of housing condition.* In this section we seek to determine the causes of housing condition. In particular, we want to identify the extent to which the characteristics of elderly clients and their homes are related to home deficiencies.

Isolating determinants of housing condition can be important for policy decisions related to prolonging independent living status among elderly households. By understanding any significant relationships between such characteristics as income, health, and social isolation, policymakers can more readily target resources to homes with the greatest need. Similarly, social service organizations

*Cross site comparisons of housing conditions are confounded by the inconsistency in inspection technique among the different program inspectors. Inspection procedures within sites, however, were consistent.

tracking client households may be better able to assess when changes in health, family composition, or income will affect housing condition.

Housing condition, defined in terms of unmet repair needs, is assumed to be affected by shelter related consumption decisions made by elderly households. In the short term, such decisions as the choice of house size, age, location, and style are given and fixed. Short term decisions regarding the level of maintenance and repair activity, however, are dynamic and must still be made. Therefore, for any household, the condition or quality of housing in the short term is determined by its repair and maintenance effort and by the given, more durable characteristics of the housing unit. Some types of houses may require more repair and maintenance than others, and as a result the quality of housing services can vary across homes for any given level of maintenance and repair. For example, homes with wood exteriors require periodic painting and repair while homes with brick exteriors do not.

Our approach is to explain the variation in the repair needs of elderly clients by variations in their observed characteristics obtained from the enrollment form and by variations in observed characteristics of the home from the inspection forms. Client characteristics of interest include household income, the proportion spent on housing and related services, size of household, age of head, the health status of members of the household, and race, among others. Housing unit characteristics include its age, size, and type of construction, to name a few.

Multiple regression analysis is used to explain repair needs. For each city in the demonstration total repair needs identified by program inspectors are regressed on client and housing characteristics.* The resulting regression coefficients, their

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*This is done for four different measures of repair needs: total repairs, repairs costing less than $100, repairs costing from $100 to $300, and repairs costing more than $300. Here we present the results only for the total number of repairs identified by inspectors. These are fairly representative of the results for repairs broken down by cost category.

standard errors, goodness of fit statistics, and variable definitions are presented in Appendix G.

The effects of client and housing characteristic explanatory variables on the total number of needed repairs are presented in Exhibit 6-8. Likely changes in the number of unmet repair needs have been generated by calculating the impact of an increase of one standard deviation for continuous variables, such as income and household size, holding constant the effects of the variables.* (Means and standard deviations of these variables are presented in Appendix G). We illustrate the use of Exhibit 6-8 with two examples. In Cincinnati, one standard deviation for <u>relative housing expenditures</u> is 26 percentage points (0.26 in Appendix G). Assume that two clients in Cincinnati are identical with respect to all their characteristics and those of their homes except for the proportion of income spent on housing and related services. If one spends 26 percentage points more of his or her income on housing, then we would expect this client to have between four and five more needed repairs. In Cleveland, if two client households are identical in all respects except that one is composed of a married couple and the other is not, then we would predict that the married couple would require about five fewer repairs than the other client.

The regressions often explain the overall variation in needed repairs fairly well, but few individual explanatory variables are significant. In four of the regressions the adjusted R^2 are 0.30 or above, in one it is 0.24, and in the remaining two they are very low.

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*If an explanatory variable is distributed normally in the population, the probability that it will increase one standard deviation or more from its mean is about 17 percent. For categorical variables such as marital status, type of electrical service, exterior surface type, or structure type, the change in repair needs reflects the effect of an increase in the variable value from zero to one.

Exhibit 6-8

The Effects of Client and Housing Characteristics on Changes in the Total Number of Needed Repairs, By City*

(Except for 0-1 Dummy Variables)[§]

Explanation of Variables Client Characteristics	CITY						
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco
INCOME	1.0	0.4	0.8	-0.3	1.5	-0.3	-1.4
RELATIVE HOUSING EXPENDITURES	4.8*	-0.5	0.2	-0.8	0.4	-0.1325	0.5
MARRIED[1]	-2.8	-5.1*	-2.2	2.6	-2.5	-2.5**	1.8
AGE	-1.4	0.0	-0.3	0.9	-2.5*	-0.5	0.9
SEX[1]	-0.3	-2.1	-1.0	2.6	-2.8	-0.3	6.1
HOUSEHOLD SIZE	1.6**	1.1	-0.5	0.6	-0.1	0.4	8.5*
YEAR MOVED IN	-0.8	0.0	-0.7	0.1	-1.9	-0.9	0.8
EDUCATION	-1.3**	0.3	-0.9	0.0	0.6	-0.1	1.6
MOBILITY PROBLEMS	1.9	3.2**	0.2	0.3	2.1	-0.0	5.9

Exhibit 6-8

(continued)

Explanation of Variables Client Characteristics	CITY						
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco
HEALTH PROBLEMS[1]	-2.5	-0.4	3.4*	-0.3	-1.2	-1.5	-8.6*
BLIND[1]	-0.5	0.8	—	0.6	--	1.7	-3.5
DEAF[1]	-30.7*	7.3	-3.1	2.1	9.5*	-5.0	-10.3
HEALTH AID[1]	-0.9	-1.2	-4.9*	3.4	5.8*	-0.2	-0.3
RELATIVES	0.5	1.5*	-0.1	0.1	-0.3	0.8	-1.5
BLACK[1]	--	4.0	2.3	0.1	1.4	-1.3	3.2
HISPANIC[1]	--	6.7	-3.7	--	--	--	-2.0
ROOMS	2.5*	4.0*	-0.2	1.1**	-1.1	1.9*	-0.4
YEAR BUILT	0.7	-2.0*	-0.1	0.3	-1.3	-0.9**	-6.6*
UNIT TYPE[1]	--	-0.5	-0.6	--	--	0.2	1.5
CONSTRUCTION TYPE[1]	-0.5	5.3	0.6	-3.0	-9.4**	3.3**	--

Exhibit 6-8

(continued)

Explanation of Variables Client Characteristics	CITY						
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco
NUMBER OF UNITS	-0.7	0.4	-0.7	-0.7	--1	2.2*	-0.5
PANEL TYPE[1]	0.2	0.0	-0.8	0.0	-1.2	1.8**	8.2*
NUMBER OF STORIES	-0.0	0.7	0.2	-0.9	0.0	-0.9	-0.8
SURFACE BRICK[1,2]	-3.9	-8.0	2.2	1.1	5.4	-8.7	52.0*
SURFACE SIDING[1,2]	-3.0	1.4	4.0*	-2.7	2.8	--	14.9
SURFACE MASONRY[1,2]	-4.6	-4.5	1.0	8.6	8.9	-8.4	--
SURFACE ASBESTOS[1,2]	-2.1	-2.6	4.4*	-1.5	3.4	1.3	29.5*
SURFACE OTHER[1,2]	-2.9	-0.9	1.2	2.1	0.4	-5.2	17.3*
SAMPLE SIZE	104	100	110	114	50	78	96
MEAN NUMBER OF REPAIRS	10.1	9.3	8.1	12.2	6.8	9.6	24.6

Footnotes for Exhibit 6-8

[a]Figures represent effects of a one standard deviation increase in continuous variables. They represent the effect of increasing zero-one variables from zero to one. See Exhibit 6-6 for variable definitions. For complete regression results, see Exhibit 1- in Appendix G .

[1]Zero-one dummy variable.

[2]Wood exterior surface supressed.

*Significance level $\leq$ 0.05.

**0.05 < Significance level $\leq$ 0.10.

Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

One consistent problem in assessing determinants of housing condition is the existence of multi-collinearity between explanatory variables; that is, the precision of our statistical estimates is decreased because our explanatory variables are related to each other. For example, total monthly income and the proportion of income spent on housing, utilities, and other services (relative housing expenditures) are strongly related when measured by their simple correlation; this varies from -0.38 to -0.563, depending on the site.* Also, the existence of mobility problems, health problems, and the use of a health aid are correlated with each other as are the sex of the head of the household, marital status, and household size. Finally, in several activities the sex of the head of the household and total household monthly income are negatively correlated indicating lower incomes for female headed households.

When we compare our findings for the different sites, few results prevail across all sites, and often variables have effects opposite from what we would expect. In three out of seven cases the effect of total household income is negative; that is, households with higher incomes tend to need more repairs. However, it is never statistically significant, and the absolute magnitude of the affect is always small--recall that Exhibit 6-8 contains the effects of a one standard deviation increase in income.

We expect that the proportion of income spent on housing and related services (Relative Housing Expenditures) would have a positive effect on needed repairs. These expenditures are relatively fixed except, perhaps, for utility expenditures, and the greater the proportion spent on them, the less left over for other purposes

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*Note that the simple correlation between variables is not the correct measure of multicollinearity in regression analysis. Multicollinearity is measured by the partial correlation taking into account other explanatory variables used in the regression. However, the simple correlation is often a reasonable indicator.

The effect of the use of a health aid such as a cane, wheelchair, or braces is also opposite from our expectations, and in the two cases in which it is statistically significant, the direction of the effects are opposite from each other. A blind or deaf respondent decreases the number of expected repair needs as often as it increases them. The large and statistically significant effect of a deaf respondent in Cincinnati is not believable; it represents the effect on one respondent and should be considered atypical.

The total number of rooms in the house (RMS) is associated with larger number of needed repairs at four of seven sites, and its effect is statistically significant at three of these. This represents the effect of size or scale. More rooms are associated with more interior repairs that tend to be inexpensive. It is interesting to note that the influence of the number of rooms diminishes as the seriousness or cost of repairs increases. The effect of RMS on the total number of needed repairs costing less than $100 to remedy is also significant from a statistical point of view at the same four sites as it is for total repairs. However, the number of rooms has a significant effect on repairs costing from $100 to $300 at only two of these sites, and at no site does it have a significant effect on repairs costing over $300. This finding is reasonable because major repairs tend to be structural or related to systems in the home, the number of which does not vary with the size of the house.

Another consistent finding is that newer houses have fewer needed repairs. The effect of the year a house is built is negative for five of the seven sites, and it is statistically significant at three sites; Cleveland, Phiadelphia, and San Francisco. The difference in the magnitudes of the effects at these three sites can be explained by the difference in the average number of repair needs identified. In San Francisco the average is almost three times that in Cleveland and Philadelphia. This is the difference in the effect including maintenance and repair. Relative Housing Expenditures has a positive effect in only about half of the cases (four out of seven), and it is statistically significant in only one case (Cincinnati). In this case, a one standard deviation increase in the proportion of income spent on housing and related services increases the expected number of repairs by about five. This is a fifty percent increase from the overall mean number of needed repairs in Cincinnati.

Households in which the elderly members are married tend to have fewer needed repairs. The effect is negative at five of the seven sites, it is statistically significant at two, and its magnitude is fairly large ranging from two to five fewer repairs.

The effects of the age and sex of the head of the household and household size vary in direction and are seldom significant. However, in the two cases in which household size is significant, larger households are associated with more needed repairs. One explanation is that a larger household for a given level of income and housing expendituees has lower income remaining for other purposes. This suggests that households with dependents other than the homeowner and spouse have a more difficult time maintaining their homes.

If the head of the household has difficulty getting into or around the house (Mobility Problem), the number of needed repairs is still greater at all sites but one. This influence is only statistically significant for Cleveland, and the magnitude of its effect is important in Cleveland, Cincinnati, and San Francisco. At these sites from two to six more needed repairs are expected when mobility problems exist.

The existence of a serious health problem in a member of the household has the opposite effect on needed repairs from what we would expect. At six of the seven sites health problems are associated with fewer repair needs. It is statistically significant in only two cases; in one it is associated with more repairs and in the other less repairs.

of a one standard deviation increase in the year built (or decrease in the age of the house) between San Francisco and Cleveland, but it is much less than the difference between Phiadelphia and San Francisco.

Besides housing age and size there are few consistent findings across sites, and the variables often represent housing characteristics peculiar to the site. For example, having a fuse box instead of circuit breakers is related to more repair needs in San Francisco and Philadelphia, but this does not have an effect at the other sites.

Also, the external surface variables appear to represent different housing qualities at different sites. In San Francisco any external surface other than wood implies higher repair needs, and the magnitudes are very large. The effect of a brick exterior on repair needs is very large, probably too large to represent only the relationship between exterior materials and repairs. In Boston, siding and asbestos are associated with more needed repairs. This is understandable because siding can be used to cover up housing defects, and asbestos is associated with lower housing quality. At other sites the exterior surface does not have a statistically significant effect, and the direction of the effects vary.

Finally, comparing the effect of construction type on repair needs in Hot Springs and Philadelphia clearly illustrates the local conditions represented by housing characteristic variables. In Hot Springs masonry instead of wood frame construction is associated with an average of nine fewer needed repairs, while in Philadelphia masonry construction is associated with an average of nine more needed repairs.

At five of the seven sites the characteristics of program clients and the characteristics of housing explain total repair needs fairly well; from one-quarter to almost 40 percent of the variation in repair need is explained by variations in these characteristics. Very little of total repair needs are explained by client and housing characteristics in Boston and Greensboro.

Although the precision of our estimated coefficients is diminished by the existence of multicollinearity, we can draw two general conclusions from our analysis. First, there is no strong and consistent relationship between repair needs and the characteristics of clients. This is indicated primarily by the variation in the direction of the effects of client characteristics on repairs. For example, it is somewhat surprising that the direction of the effects of the household income and health variables are not more consistent. Second, there is also no strong and consistent relationship between housing characteristics and repair needs with the exception of the size and age of the house. At most sites larger houses, measured by the number of rooms, need more repairs, and newer houses require fewer repairs. Otherwise, the different sites have particular housing characteristics that affect the number of needed repairs, but these vary across sites.

6.4 Repair Needs and Housing Value

The objective of this section is to determine the effects of needed repairs on the value of the homes surveyed in this demonstration. This serves several purposes. The effects of repair needs on value is an indication of their effects on the quality of housing consumed. The number of unmet repair needs should be reflected in market value. A client home with many defects should have lower value than housing without such defects. It also provides a test of the extent to which the number of defects themselves and the costs of their remedy are a good indication of their impact on housing quality. For example, if two houses appear to be identical except that one has three needed repairs each costing \$300, then we would expect that the one that needs the repairs would sell for \$900 less than the one that does not. However, if this is not the case, it indicates that consumer perceptions of the relationship between needed repairs as identified by housing inspectors and housing quality is more complex than our example suggests. Finally, the extent to which needed repairs decrease the market value of the home indicates the extent to which the inability or lack of desire to maintain the home decreases the value of the major asset possessed by most elderly households.

Our approach is to estimate an hedonic price index based on program housing inspection data. In effect, we estimate an equation that explains variation in the value of demonstration houses by variation in housing characteristics including needed repairs. Housing value was estimated by inspectors when they made their home inspections. Housing characteristics are those identifed in the inspection; most of these were used above in the analysis of repair needs. In addition to housing characteristics we use three repair variables; the number of needed repairs costing less than $100 to remedy, the number costing between $100 and $300, and the number costing more than $300.

The definitions, means, and standard deviations of the variables used and the complete regression results are presented in Appendix G. Here we present only the results indicating the effects of repair needs on house value. Exhibit 6-9 contains sample means and standard deviations for the number of repairs by cost category, and Exhibit 6-10 contains the regression coefficients and their standard errors for the repair variables.

From the latter table we conclude that the number of needed repairs must represent determinants of housing quality and value other than just the repair costs involved. Eight of the 21 coefficients of repairs by cost category have positive signs, and one in San Francisco is statistically significant. Also, the coefficients for the different cost categories bear little relationship to the repair costs themselves. For example, the coefficient on repairs costing less than $100 for Boston implies that one more such needed repair decreases housing value by about $600.

As one final indication of the effect of housing deficiencies on housing quality and value, we calculate the net effect of needed repairs in all cost categories on housing value. This is done by

Exhibit 6-9

Sample Means for the Number of Repairs by Repair Cost.*
(Sample Standard Deviations in Parantheses)

	CITY						
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco
Repairs less than $100	9.10 (5.2)	8.23 (6.82)	6.52 (5.03)	11.30 (5.44)	5.90 (5.17)	8.10 (4.00)	13.49 (10.14)
Repairs $100-$300	0.43 (1.78)	0.50 (0.90)	0.80 (1.09)	0.56 (1.18)	0.87 (1.26)	0.62 (1.14)	6.18 (4.48)
Reapairs Greater than $300	0.89 (1.96)	0.54 (1.08)	0.78 (1.17)	0.13 (0.57)	0.35 (1.02)	0.51 (1.03)	6.86 (6.90)
Sample Size	110	105	112	116	31	96	119

Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

Exhibit 6-10

Regression Coefficients for Repair Variables in House Value Regressions. (Standard errors in Parantheses)[1]

	CITY						
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco
Repairs less than $100	127.49 (131.62)	-224.60** (127.24)	-602.02** (337.37)	82.23 (138.29)	-885.35 (665.27)	-855.61 (265.98)	-618.77** (235.92)
Repairs $100-$300	-77.49 (396.01)	69.60 (858.21)	-1,582.02 (1,580.87)	-1,429.60** (760.57)	-632.08 (2,017.41)	790.97 (930.66)	1,176.86* (562.88)
Repairs Greater than $300	-1,171.83* (347.58)	1,393.83** (724.22)	-1,329.82 (1,492.97)	1,858.65 (1,379.97)	-3,110.47 (3,148.80)	39.13 (1,156.77)	-1,883.71* (420.65)

* Significance level ≤ 0.05

**0.05 < Significance level ≤ 0.10

[1] For complete regression results, see Appendix G.

Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

multiplying the coefficient of each repair variable by its (sample) average for each city, and totaling the results for the three cost categories. The result is the difference between the value of a house with the average number of needed repairs and its value if it needs no repairs at all.

The results are presented in Exhibit 6-11. In almost all cities, unmet repair needs decrease the value of client homes, but the magnitude of this effect varies across the sites. For the average client home in Philadelphia, repair needs decrease housing values only 4.5 percent, but 38 percent in Hot Springs.

These results should be interpreted with caution. As we mentioned above, the magnitudes of the coefficients indicate that the repair need variables represent something more about housing quality. Therefore, the change in housing value that would result if there were no repair needs is probably overstated. These value changes would probably require other quality changes that we cannot account for in our analysis. However, the relative magnitudes are suggestive.

Several conclusions can be drawn from this analysis. Needed repairs as identified by program inspectors represent aspects of the home other than the repair itself and the implied cost for its remedy. Whatever they represent, their existence constitutes a significant decrease in the quality of housing consumed by elderly program clients if the market test is any indication. In addition, these repair needs and the implied lack of maintenance significantly decrease the value of the primary asset in most household portfolios, the family home.

6.5 Summary

At every site there is ample evidence of need for minor repair services for the elderly. For all sites there is an average of 12 repair needs per client, and the average varies from six repairs per client in Hot Springs to 26 in San Francisco. However, cross-site comparisons are not good indications of relative need. The number and type of needed repairs identified is undoubtedly influenced by

Exhibit 6-11

The Effect of Needed Repairs on House Value for Each City[1] (Dollars)

	CITY						
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco
Net Effect of Repair Needs on House Value	$ 83	-$1,057	-$6,228	$ 369	-$6,881	-$747	-$13,984
Mean House Value	$36,545	$21,190	$45,554	$28,784	$18,258	$16,448	$91,748

1 The net effect of the number of needed repairs on house value is calculated by multiplying the sample mean number of repairs in each cost category in Table 6-10 by its corresponding regression coefficient in Table 6-11 and totaling. This is done for each site. See Appendix G.

Source: Elderly Home Maintenance Demonstration Inspection Forms, Year One, 1980-81.

the experience of the inspectors. San Francisco's inspectors are retired FHA personnel with years of experience in inspection and appraisal. In contrast, the director of Hot Springs had little previous inspection experience. In Boston clients have the second lowest average number of repair needs; at this site inspectors tended to look only for repairs eligible for program services.

Most repair needs are minor, costing less than $300 to fix, and most were repairs to the interior of the home. Generally, clients stated that they had more repair needs than were identified by inspectors. But client and inspector priorities agreed quite closely. The one exception was in the area of weatherization; clients expressed greater need for weatherization work than was identified by inspectors. One explanation is that the repair programs attempted to remain differentiated from weatherization programs administered by other agencies because these have a bad image in many areas.

Although client and housing characteristics explain repair needs at the sites, it is difficult to identify the impact of single characteristics because of the existence of multicollinearity. Also, housing value is significantly affected by repair needs, but these represent aspects of housing quality more complex than just the implied repair cost. Finally, both the analysis of the determinants of the number of needed repairs and the effect of these on housing value indicate that housing characteristics represent different aspects of housing services and quality at different sites.

Chapter 7

Repair Services and Repair Costs

There are two major dimensions to evaluating the administrative feasibility of an elderly home maintenance program, the services provided and the program costs. In this chapter we deal with repair services provided and the resulting costs.

In Section 7.1 we present the numbers and types of repairs made, compare those made by the different sites, and compare those made in the first and second years of the Demonstration. We also compare the types of repairs made with repair needs as determined by program inspectors and by the clients themselves.

In Section 7.2 we analyze repair costs. This includes identifying the average costs of repairs and determining why they vary across the sites. One explanation for variations in average costs is variations in the real magnitudes of the repairs. In Section 7.3 nominal costs are adjusted to obtain measures of the real magnitudes of the repairs made by the different sites.

In Section 7.4 we present and analyze the real level of services provided to the clients of the Demonstration. In Section 7.5 we present cost functions which are used to explain variations in the expenditure per client by variations in the numbers and types of repairs, the characteristics of the home, and the characteristics of the clients. These cost functions are used to determine what expenditures per client would be at the different sites if exactly the same number and types of repairs were provided to identical clients in identical houses. Finally, in Section 7.6, we summarize our fundings and present our conclusions.

7.1 Repairs Made Compared to Repairs Needed

In this section we describe the services delivered under the Demonstration, the repair needs addressed, and changes in service delivery from the first to the second year of the Demonstration.

7.1.1 The Number of Repairs Made

Over the two years of the Demonstration about 8,400 repairs were made to about 900 homes, or about 600 repairs per site per year. This is the result of a rather fast start by the sites, but a much slower finish: approximately 4,500 repairs were made in the first year, or 643 per site, while only 3,900 were made in the second year, or 557 per site.

The seven sites differ significantly in the number of repairs made. Greensboro made the most with 1,256 per year, while Hot Springs made the fewest with 279 per year. Cleveland made almost 800 repairs per year, Cincinnati and Philadelphia about 550 and 600, respectively, and Boston and San Francisco slightly over 350 per year. The number of repairs does not necessarily reflect the level of repair services provided, because it does not reflect their magnitude. We shall see that among the sites there is an inverse relationship between the number of repairs made and the cost per repair, and this cost reflects the magnitude of the repairs.

Five of the seven programs made fewer repairs in the second than in the first year of the Demonstration. Repairs decreased by 16 percent for the Philadelphia program, from 28 to 36 percent for Cincinnati, Boston and Hot Springs, and 57 percent for the Cleveland program. The number of repairs increased from the first to the second year for the Greensboro and San Francisco programs, and the increase for Greensboro was substantial, 53 percent. These data are presented in Exhibit 7-1.

There are three possible reasons for the decrease in repair activity as measured by the number of repairs. First, the expenditures on repairs in the first year may have been too high, and overspending in the first year leaves less money for the second

Exhibit 7-1

Total Repairs by Year and by City

City	Year 1	Year 2	Total
Cincinnati	651	471	1,122
Cleveland	1,102	470	1,572
Boston	418	284	702
Greensboro	993	1,627	2,620
Hot Springs	340	218	558
Philadelphia	657	551	1,208
San Francisco	345	378	723
All Cities	4,506	3,991	8,497

year, requiring cutbacks. This can happen because, although funds were allocated to the sites on a year by year basis, the Demonstration programs typically ran late in the first year due to start-up problems. As a consequence, second year funds were available before the first round of repairs was completed, and if a site overspent early in the first round, it could use second year funds to complete this round. Then less money remained for the second round of repairs.

We know for sure that this happened in Cleveland, and it may also have occurred at other sites. This is undoubtedly the result of inexperience and is one of the startup costs in the first year of the program. However, it is less likely to occur in subsequent years of on ongoing program.

The second possible reason for the decrease in the number of repairs is that sites may have changed their repair strategies to stress fewer, more extensive repairs. The extent to which this occured will become evident when we discuss repair costs below. Finally, a third reason is that resources may have been diverted to other services including counseling, searching for funding for the year following the Demonstration, or planning for dismantling the program at the end of the Demonstration. It appears that resources were diverted to other services at at least one or two sites, but we cannot determine whether this is the case for phasing out the program.

The increase from the first to the second year in Greensboro is partly explained by competing demands on the Greensboro repair staff. This program is run by the Greensboro Housing Authority, and in the first year the repair staff was diverted to do repair work on the Authority's housing. This caused delays in the completion of the first cycle of repairs, and in all likelihood decreased the number of repairs. Greensboro then made up for this by increasing the number of repairs by over fifty percent in the next year.

A similar problem arose in Cleveland where the program is run by the Lutheran Housing Corporation (LHC). LHC also owns and operates its own housing, and in the first year it diverted repair staff to work on this housing. The major impact on the Cleveland program was to delay the first cycle of repairs. However, Cleveland did not scale back its repair effort to speed up the first year cycle.

The increase in the number of repairs was modest for the San Francisco program, about ten percent. This resulted in part from cutting the staff by one inspector. In the second year the director also did inspections, thereby releasing resources for repairs (it should be remembered that all repairs were subcontracted out in San Francisco). Finally, some of the increase may have resulted from increased efficiency as a result of the first year's experience.

7.1.2 The Types of Repairs Made and Repair Need

Overall, repairs to the interior of the home and plumbing repairs are the most frequent. These are followed in frequency by repairs to doors and windows and weatherization repairs. See Exhibit 7-2 and 7-3. Although program repairs are summarized in 14 broad categories, the raw data do provide more detailed descriptions of the work done.

Interior repairs are the most frequent because this category encompasses such a broad range of activity. These include repairs to interior walls, ceilings, floors, doors, cabinets and closets, and miscellaneous ("other") interior repairs. Among interior repairs those in the miscellaneous category are the most frequent, and the most prevalent within this category is the installation of smoke alarms and grab bars. In the first year of the Demonstration Cleveland was the most active in installing smoke alarms, and in the second year Greensboro and Philadelphia were. Among all sites, Greensboro installed the most grab bars in both years; over the two year Demonstration it installed 83 percent of all grab bars for all sites together, and it installed 93 percent of all grab bars over the seven sites in the second year. This was also a relatively frequent activity for Philadelphia in the first year. Other than these safety related repairs, no single interior repair stands out in terms of its relative frequency.

Exhibit 7-2

Distribution of Repairs Done by Type. All Sites
Year 1 and Year 2 Combined

Type	Percent
1. Exterior	3.1%
2. Door	12.3
3. Porch	7.8
4. Roof	6.2
5. Window	12.9
6. Weatherization	11.2
7. Interior	20.0
8. Plumbing	14.6
9. Other External	1.4
10. Electrical	5.7
11. Stairway	3.4
12. Heating	1.4
13. Structural	0.1
14. Other	0.1
TOTAL	100.0%

Sample Size 8,067 Repairs

Exhibit 7-3

Distribution of Repairs Done by Type of Repair and City (%). Year 1 and Year 2

CITY/YEAR	CINCINNATI		CLEVELAND		BOSTON		GREENSBORO	
TYPE OF REPAIR	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
1. Exterior	4.1%	6.4%	3.3%	7.7%	3.1%	4.6%	1.4%	3.0%
2. Door	4.9	5.7	8.0	8.7	8.1	7.4	15.2	13.1
3. Porch	8.5	8.3	7.8	7.4	13.5	8.1	5.3	11.3
4. Roof	20.8	19.3	3.7	4.9	9.4	10.2	1.2	2.5
5. Window	11.1	9.1	14.9	14.5	17.7	12.7	11.6	12.9
6. Weatherization	6.8	11.0	5.3	10.0	4.2	16.9	18.2	13.8
7. Interior	7.0	9.6	20.2	15.5	24.0	22.5	22.7	30.4
8. Plumbing	24.6	16.6	13.3	14.3	7.6	6.7	21.1	10.8
9. Other External	1.5	3.6	0.5	2.3	1.0	1.1	0.2	0.5
10. Electrical	6.2	3.6	13.7	9.4	7.3	6.3	1.2	0.5
11. Stairway	0.8	1.9	7.7	3.0	2.6	2.8	1.2	0.5
12. Heating	2.0	4.7	1.0	2.3	0.8	0.7	0.5	0.5
13. Structural	0	0	0	0	0.8	0	0.1	0
14. Other	0.2	0.2	0.5	0	0	0	0	0.1
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Sample Size	614	471	983	470	384	284	916	1,518

Exhibit 7-3

Distribution of Repairs Done by Type of Repair and City (%).
Year 1 and Year 2 (Cont'd.)

CITY/YEAR	HOT SPRINGS		PHILADELPHIA		SAN FRANCISCO		ALL CITIES	
TYPE OF REPAIR	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
1. Exterior	1.3%	0.9%	1.0%	1.3%	1.4%	2.4%	2.6%	3.7%
2. Door	29.9	16.5	13.8	11.4	22.6	16.9	12.9	11.6
3. Porch	7.0	12.8	3.2	2.7	6.4	6.3	7.0	8.6
4. Roof	1.0	6.4	2.2	1.5	8.4	9.0	6.2	6.1
5. Window	7.0	13.8	13.4	12.5	13.0	14.6	12.9	12.8
6. Weatherization	14.0	24.8	10.6	16.2	2.0	3.2	9.4	13.2
7. Interior	6.7	8.3	17.4	31.2	10.1	19.0	16.9	23.3
8. Plumbing	22.9	10.6	14.0	9.3	18.8	13.5	17.4	11.6
9. Other External	0.3	0.5	2.1	0.5	3.5	6.9	1.1	1.7
10. Electrical	8.0	3.7	8.4	7.1	6.4	3.4	7.4	3.8
11. Stairway	0	0	13.7	5.8	3.5	1.9	4.8	2.0
12. Heating	1.9	1.8	0.2	0.5	3.8	2.9	1.2	1.6
13. Structural	0	0	0	0	0	0	0.1	0
14. Other	0	0	0	0	0	0	0.1	0.1
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Sample Size	314	218	621	551	345	378	4,177	3,890

Over two-thirds of the plumbing repairs are minor repairs to fixtures such as replacing washers and stopping leaks. Over half of all window repairs involve replacing broken glass and fixing sash cords and chains. About fifty percent of all repairs to doors involve replacing and fixing locks; the installation of locks is 65 percent of door repairs in the fist year and declines to 31 percent in the second year. Finally, over 90 percent of all weatherization repairs fall into three categories: the repair and installation of storm doors (38 percent), the repair and installation of storm windows (21 percent), and weatherstripping and caulking (34 percent).

The distribution of repairs can be compared to the distribution of repair needs as identified by inspectors (Exhibit 7-4, which is Exhibit 6-2 repeated). Several patterns occur consistently across the sites. The categories of repairs most frequently needed are also those most frequently made; examples are interior, window and plumbing repairs. But the relative frequencies are by no means the same. Interior, window and plumbing repairs together account for about 60 percent of needed repairs, but only 48 percent of actual repairs. This is also true for interior and window repairs individually, but plumbing repairs are relatively more prevalent than needed plumbing repairs as identified by inspectors. Repairs to doors, porches and roofs are also relatively more prevalent than their respective needs.

At all sites the relative number of weatherization repairs exceeds the relative number of those needed, and in most cases by a considerable margin. This indicates that the sites are responsive to client priorities; we noted in Chapter 6 that weatherization is the one significant divergence between client perceived needs and those identified by program inspectors.

Finally, the absolute number of needed repairs far exceeds those done at each site, and this is also true for almost all of the individual categories of repairs. Despite the wide variation in the comprehensiveness and quality of inspections across the sites, it is extremely unlikely that more needed repairs are identified than

Exhibit 7-4

Distribution of Repair Needs Among Fourteen Repair Types, by City

Repair Type	CITY							
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
1. Exterior	8.9	5.9	6.1	4.5	5.9	4.4	6.1	6.0
2. Door	3.8	7.9	6.1	13.8	15.9	8.9	6.1	8.3
3. Porch	6.6	7.0	7.8	3.9	7.7	3.4	2.5	4.7
4. Roof	10.9	3.8	6.9	1.9	2.4	3.6	2.8	4.2
5. Window	16.0	22.7	25.4	26.7	14.4	21.3	14.8	19.5
6. Weatherization	2.0	2.3	6.0	3.9	0.1	1.7	2.3	2.7
7. Interior	21.1	26.6	22.4	28.1	26.1	32.7	33.9	28.8
8. Plumbing	17.8	7.0	6.6	12.9	18.5	9.6	10.6	11.5
9. Electrical	6.8	7.6	6.1	2.2	7.7	6.2	14.0	8.4

Exhibit 7-4

Distribution of Repair Needs Among Fourteen
Repair Types, by City
(continued)

Repair Type	CITY							
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
10. Stairway	0.9	6.1	3.1	0.6	--	7.3	2.0	2.7
11. Heating	0.9	1.3	0.5	0.3	0.3	0.3	3.5	1.5
12. Structural	0.2	0.4	1.5	0.3	0.4	0.1	0.5	0.5
13. Other	3.9	1.3	1.5	0.7	0.7	0.5	0.9	1.3
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sample Size Number of Repairs	1,279	1,301	1,014	1,785	763	1,171	3,497	10,810

actually exist. On the contrary, if any bias exists, it is probably an understatement of repair needs. Therefore, the conculsion that can be drawn is that due to its limited resources, the Demonstration has addressed only a portion of need, and much remains to be done.

7.1.3 Types of and Reasons for Callback and Emergency Repairs

The incidence of Emergency and Callback Repairs. Although most repair activity involves repairs planned as a result of the inspections, a significant amount of activity involves emergency and callback repairs. Originally, callbacks were to involve work associated with rectifying shortcomings of original repair activity, but we shall see that there are several other reasons for them. Emergency repairs are those in response to problems that must be dealt with immediately and which are not originally in the planned scope of work for a client.

Across the seven sites six percent of all repair activity involves emergency or callback repairs. They are 4.1 percent in the first year and are evenly split between callback and emergency repairs. There is a marked increase from the first to the second year of the Demonstration in both the absolute and relative number of repairs due to emergencies and callbacks. They are eight percent of all repair activity in the second year, 59 percent of which are callbacks and 41 percent of which are emergencies. See Exhibit 7-5.

Emergency and callback repairs vary from a low of three percent of all repair activity in the first year for Hot Springs and Philadelphia to a high of 25 percent for Hot Springs in the second year. There are no callbacks and only two emergency repairs in Greensboro over both years of the Demonstration because return visits to client homes were considered regular repairs to be recorded on work orders, and the definition of an emergency was extremely rigorous. An emergency repair was considered necessary only in instances of life threatening health or safety problems.

Most emergency repairs and callbacks are accounted for by only a few sites. In the first year over 60 percent of both types across all sites is due to Cincinnati and Cleveland, and they account for

Exhibit 7-5

The Distribution of Callbacks and Emergencies (%)

	Cincinnati		Cleveland		Boston		Greensboro	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
A. Percent of All Repairs, Callbacks and Emergencies								
Callbacks	3.3%	10.9%	4.2%	5.6%	1.6%	5.7%	--	--
Emergencies	3.4	6.0	2.3	6.9	1.8	8.7	0.2	--
Total*	6.7	16.9	6.5	12.5	3.5	14.5	0.2	--
B. Relative Importance of Emergencies and Callbacks (%)								
Callbacks	48.9%	64.6%	64.9%	44.8%	46.7%	39.6%	0.0%	--
Emergencies	51.1	35.4	35.1	55.2	53.3	60.4	100.0	--
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	--
Sample Size	47	96	77	67	15	48	2	0

* Totals may not agree with sum of Emergencies and Callbacks due to rounding.

Source: Exhibit 7-1 and USR&E Emergency/Callback File.

Exhibit 7-5

(continued)

	Hot Springs		Philadelphia		San Francisco		All Cities	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
A. Percent of All Repairs, Callbacks and Emergencies								
Callbacks	1.4%	18.9%	1.8%	4.1%	1.4%	3.7%	2.2%	4.7%
Emergencies	1.7	6.2	1.5	2.4	3.8	2.0	1.9	3.2
Total*	3.1	25.1	3.2	6.5	5.2	5.7	4.1	8.0
B. Relative Importance of Emergencies and Callbacks (%)								
Callbacks	45.5%	75.3%	54.5%	63.2%	26.3%	65.6%	52.8%	59.4%
Emergencies	54.5	24.7	45.5	36.8	73.7	34.8	47.2	40.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	--
Sample Size	11	73	22	38	19	23	193	345

* Totals may not agree with sum of Emergencies and Callbacks due to rounding.

Source: Exhibit 7-1 and USR&E Emergency/Callback File.

over 70 percent of callbacks and 56 percent of emergency repairs. In the second year Cincinnati, Cleveland, and Hot Springs account for 68 percent of emergency and callback repairs, and this entails 72 percent of all callbacks and 63 percent of all emergency repairs.

Excluding Greensboro, five of the remaining six sites increased the number of emergencies and callbacks from the first to the second year. Over all sites, there is a 79 percent increase in these extended services involving a 25 percent increase in the number of emergency repairs and 53 percent increase in callbacks. Increases are particularly large for Cincinnati, Boston, and Hot Springs; emergency and callback repairs more than double in Cincinnati, more than triple in Boston, and increase by over six times in Hot Springs. Only in Cleveland is there a decrease; emergency and callback repairs together decrease 13 percent while the number of emergency repairs actually increases.

Emergency and Callback Repair Types. The distribution of callbacks is similar to that of general repairs except that there are relatively more plumbing repairs. This is understandable since malfunctioning plumbing is more inconvenient and therefore more noticeable than problems associated with most other repairs. Emergency repairs are concentrated in systems of the home the malfunction of which can cause immediate danger and discomfort and further damage. By far the largest proportion of emergency repairs involve plumbing, and higher proportions also involve roofs and heating than is the case for normally scheduled repairs. Conversely, the incidence of other types of repairs is less among emergencies than for general repairs. See Exhibit 7-6 and 7-7 for the distributions of emergency and callback repairs for all sites. Those for the individual sites are presented in the appendices.

Reasons for Callback Repairs. The distribution of callbacks by reason is presented in Exhibit 7-8. The program staff can give one of six reasons for a callback repair. Three involve a failure in some aspect of the original repair process: defective material,

Exhibit 7-6

The Distribution of Callbacks by Repair Type (%)

	All Cities	
	Year 1	Year 2
1. Exterior	2.0%	2.0
2. Door	15.7	9.3
3. Porch	2.9	8.3
4. Roof	5.9	11.7
5. Window	10.8	10.2
6. Weatherization	1.0	14.6
7. Interior	18.6	9.8
8. Plumbing	29.4	25.4
9. Other External	0.0	2.4
10. Electrical	7.8	4.4
11. Stairway	5.9	1.0
12. Heating	0.0	1.0
13. Structural	0.0	0.0
14. Other	0.0	0.0
Total	100.0	100.0
Sample Size	102	205

Exhibit 7-7

The Distribution of Emergencies by Repair Type (%)

	All Cities	
	Year 1	Year 2
1. Exterior	1.1%	0.7
2. Door	8.8	10.0
3. Porch	4.4	2.1
4. Roof	7.7	7.1
5. Window	4.4	7.1
6. Weatherization	1.1	5.0
7. Interior	6.6	5.0
8. Plumbing	50.0	50.7
9. Other External	0.0	0.7
10. Electrical	5.5	5.7
11. Stairway	0.0	0.7
12. Heating	9.9	5.0
13. Structural	0.0	0.0
14. Other	0.0	0.0
Total	100.0	100.0
Sample Size	91	140

Exhibit 7-8

The Reasons for Callbacks. (%)

	Cincinnati		Cleveland		Boston		Greensboro	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
Reasons for Callbacks								
Defective Material	9.1%	6.5%	4.1%	4.8%	14.3%	0.0%	--	--
Original Work Unsatisfactory	31.8	9.7	28.6	9.5	28.6	7.1	--	--
Original Work Incomplete	18.2	16.1	18.4	28.6	0.0	28.6	--	--
Owner Did Not Maintain Property	4.5	6.5	0.0	0.0	0.0	7.1	--	--
Cause of Repair Uncertain	18.2	9.7	30.6	57.1	14.3	7.1	--	--
New Problem	18.2	51.6	18.4	0.0	42.9	50.0	--	--
Total	100.0	100.0	100.0	100.0	100.0	100.0	--	--
Sample Size	22	62	49	21	7	14	--	--

Exhibit 7-8

(continued)

	Hot Springs		Philadelphia		San Francisco		All Cities	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
Reasons for Callbacks								
Defective Material	20.0%	3.7%	0.0%	5.6%	0.0%	6.7%	6.0%	4.9%
Original Work Unsatisfactory	40.0	11.1	8.3	11.1	20.0	20.0	27.0	10.9
Original Work Incomplete	0.0	18.5	50.0	44.4	40.0	33.3	21.0	23.4
Owner Did Not Maintain Property	0.0	7.4	16.7	0.0	0.0	6.7	3.0	5.4
Cause of Repair Uncertain	0.0	20.4	8.3	16.7	0.0	13.3	21.0	19.0
New Problem	40.0	38.9	16.7	22.2	40.0	20.0	22.0	36.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sample Size	5	54	12	18	5	15	100	184

original work unsatisfactory, and original work incomplete. The other three are "Owner did not maintain properly," "Cause of repair uncertain," and "New problem."

In the first year of the Demonstration the most frequent reason is that the original work was unsatisfactory, and the next most frequent is a "New Problem". In the second year "New Problem" is the most frequent, accounting for 36 percent of all callbacks, and the next most frequent is incomplete original work (23 percent). The three reasons indicating a shortcoming in the original repair process together account for 54 percent of all callbacks in the first year, but only 39 percent in the second.

One indication of the quality of work and the burden of callbacks is the proportion of all repairs which are callbacks due to a failure in the original repairs, that is, the proportion due to the three reasons indicating an original repair shortcoming. Exhibit 7-9 contains the relative number of repairs for all reasons due to these shortcomings. In the first year 1.5 percent and in the second 3.0 percent of all repairs for all sites except Greensboro are due to rectifying poor work. For each site this involves two percent or less in the first year, but for all sites except Cleveland there is a large increase from the first to the second year. Cleveland's increase is a modest 14 percent. For all sites (excluding Greensboro) the proportion of all repairs involving callbacks for redoing original work is more than two percent, and it is over six percent for Hot Springs.

7.1.4 Comparing Sites: Thumbnail Sketches

In addition to the overall patterns discussed above, there are several similarities in, and differences between, the sites. In general, repairs are responsive to needs. But the repairs made often reflect local priorities, and we have no additional explanation for the observed patterns. An example is the relatively large number of weatherization repairs, especially the insulation of hot water heaters in Philadelphia. In any event the thumbnail sketches provide a brief overview of the repair activities of the different sites.

Exhibit 7-9

Callbacks for Defective Material, Original Unsatisfactory Work, or Original Work Incomplete as a Percent of All Repairs, Callbacks and Emergencies

	Year 1	Year 2
Cincinnati	2.0%	3.5%
Cleveland	2.1	2.4
Boston	0.7	2.0
Greensboro	0.0	0.0
Hot Springs	0.8	6.3
Philadelphia	1.0	2.5
San Francisco	0.8	2.2
All Cities	1.2	1.8
All Cities Except Greensboro	1.5	3.0

Cincinnati. In Cincinnati repairs to plumbing and roofs are the most frequent, followed by those to windows. This site has the highest relative and absolute numbers of roof repairs, most of which involve repairs to gutters and downspouts. The latter are twothirds of all roofing repairs in the first year and 84 percent in the second year. This is consistent with repair needs which were identified by inspectors; out of all sites, Cincinnati had one of the highest proportions of repairs which were needed for plumbing and roofing (see Chapter 6).

From the first to the second year there is a marked increase in the absolute number and relative importance of repairs due to callbacks and emergencies. In the second year Cincinnati had the second highest proportion of all repairs due to callbacks and emergencies, although in both years this site is only slightly above average in the proportion of all repairs due to callbacks to rectify inadequacies in original repairs done.

Cleveland. In Cleveland, interior repairs are the most frequent, followed by window, plumbing, and electrical repairs. Over twenty percent of interior repairs are the installation of smoke alarms. Almost all electrical repairs involved work on light switches, outlets, and fixtures.

Emergency and callback repairs decrease absolutely, but increase as a proportion of all repairs from the first to the second year. This results from the large decrease in the total number of repairs done over the two years. Although callbacks decrease absolutely, emergency repairs increase.

Boston. In Boston, interior repairs are the most frequent. In the first year of the Demonstration there are a large number of repairs to porches, but these decline in the second year.

From the first to the second year there is a large increase in emergency and callback repairs both absolutely and as a proportion of total repair activity. Of all sites, Boston has the highest proportion of repairs due to emergencies. Callbacks due to inadequacies in original repairs increase from the first to the second year, but as a proportion of total repairs they are less than average and they are few in absolute number.

Greensboro. Again, interior repairs are the most frequent, followed by weatherization repairs. In the first year weather-stripping and caulking are the most frequent type of weatherization activity followed by the installation of storm doors. In the second year, their relative importance reverses. Repairs to external doors involving the installation of locks is also relatively important.

Hot Springs. The most prevalent repair is the installation of locks to exterior doors, especially in the first year. These are followed in relative importance by plumbing and weatherization repairs.

Hot Springs has the lowest proportion of all repairs due to emergencies and callbacks in the first year, but the highest in the second. The same pattern occurs with respect to the proportion of all repairs due to callbacks to rectify previous shortcomings in repair work; in the first year this is less than one percent, but in the second it is over six percent.

Philadelphia. Interior repairs are the most prevalent, and these increase from the first to the second year. This includes a marked increase in the installation of smoke alarms. Door, window, and weatherization repairs are the next most frequent. There is a marked increase in weatherization activity from the first to the second year, and this involves a large number of jobs insulating water heaters in the second year.

Philadelphia is below average in both years in the proportion of repairs due to callbacks and emergencies and in the proportion due to callbacks to rectify inadequate work.

San Francisco. The most prevalent type of repair in San Francisco is to exterior doors. In the first year installing locks is the most important, but in the second year it is the replacement of exterior doors. The next most frequent repairs are those to plumbing and windows. In the first year window repairs involve replacing broken glass and fixing sash cords and chains, but in the second year the installation of security grates over windows is as frequent.

Although the proportion of repairs due to callbacks and emergencies is relatively stable over the two years of the Demonstration, their relative importance changes. In the first year about 75 percent of the combined total are emergencies, while in the second about two-thirds are callbacks. San Francisco is below average in both years in the relative number of repairs that are callbacks to correct previous mistakes.

7.2 Repair Costs

In this section we discuss the costs of the repairs made by the seven programs, and we attempt to answer the following questions:

- How does the cost per repair vary with the type of repairs made? What are the expensive repairs?
- How do the costs per repair vary across the sites and why?

The source of data for this analysis are the work orders and emergency/callback forms filled out by the repair staff when repairs were made. These have a description of each repair, the amount of labor used in hours, the cost of the labor, and the cost of materials used. In most cases the work orders contain the base cost of the labor and materials used. They do not include the cost of fringe benefits, taxes, insurance, travel to and from client homes, the cost of supervision of the repair process and inspection of the repairs.

The exception is work done by subcontractors. Costs are broken down into labor and materials costs, but they are the costs which are billed by the subcontractor. These include the base costs of materials and labor to the subcontractor plus charges for overhead, profit, taxes, insurance and fringe benefits. As a result, the costs recorded on work orders of work done by the program staff are not directly comparable to that done by subcontractors.

This directly affects the comparability of our cost data for San Francisco with that for the other sites. San Francisco subcontracted all repair work, while other sites used primarily their own staff. It is true that other sites used subcontractors, but only sparingly. The one exception which we can identify is Boston. In its cost reports it distinguishes repair costs paid to subcontractors from those due to its own staff, and over the two-year Demonstration approximately forty percent of direct repair costs are paid to subcontractors, most in the first year. This is complicated by the fact that Boston's subcontractor was a non-profit organization. But they, in turn, hired private contractors to do much of the work.

In the next section we describe the costs of repairs by the type of repair done. This is followed by an analysis of the variation in average repair costs across sites. In that section we adjust costs for Boston and San Francisco for their use of subcontractors, and we decompose the differences in repair costs across all sites into components due to the use of different amounts of labor and materials, different wage rates, and, for Boston and San Francisco, components due to subcontractor markups.

7.2.1 Variation in Repair Costs by Type of Repair

Over all sites, the most expensive repairs are those to porches, the exterior of the house such as to walls and siding, roofs, and "Other External" repairs such as those to garages, sheds, fences, walks, driveways, and yard work. See Exhibit 7-10. Porch repairs require extensive carpentry work and materials. Work to the exterior of the house is primarily to the foundation, followed in number by repairs in a catchall category, "Other."

Most sites follow these cost patterns with a few exceptions: interior repairs are relatively expensive in Cincinnati; weatherization repairs in Hot Springs; electrical repairs in Philadelphia; and repairs to doors are relatively expensive in both years and those to stairs are in the first year in San Francisco.

7.2.2 Variations in Repair Costs Across Sites

General Repairs. Over all sites the average cost per repair for all repairs is stable or increases slightly from the first to the second year of the program. See Exhibits 7-10 and 7-11; the

Exhibit 7-10

Mean Cost Per Repair by Type of Repair and City ($)
Year 1 and Year 2

CITY/YEAR	CINCINNATI		CLEVELAND		BOSTON		GREENSBORO	
TYPE OF REPAIR	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
1. Exterior	$38	$33	$80	$95	$232	$93	$15	$14
2. Door	27	41	27	37	49	49	31	18
3. Porch	54	110	58	98	199	191	55	52
4. Roof	33	34	41	50	178	103	19	42
5. Window	36	35	26	34	81	46	18	21
6. Weatherization	24	42	25	25	139	110	17	12
7. Interior	57	53	23	39	89	107	25	22
8. Plumbing	33	37	23	33	58	69	5	11
9. Other External	25	79	57	88	204	114	88	15
10. Electrical	28	39	20	28	77	25	1	3
11. Stairway	28	29	23	33	101	64	17	26
12. Heating	20	9	27	49	76	16	14	9
13. Structural	0	0	0	0	118	0	3	0
14. Other	103	7	30	0	0	0	0	3
All Repairs	$36	$45	$29	$46	$113	$92	$20	$21
All Repairs, Both Years	$40		$34		$104		$21	

Exhibit 7-10

(continued)

CITY/YEAR TYPE OF REPAIR	HOT SPRINGS		PHILADELPHIA		SAN FRANCISCO		ALL CITIES	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
1. Exterior	$37	$12	$74	$22	$109	$272	$75	$65
2. Door	42	32	54	30	159	183	55	50
3. Porch	55	63	61	78	174	258	90	91
4. Roof	17	18	17	13	111	213	62	72
5. Window	42	45	30	37	109	159	41	46
6. Weatherization	43	63	21	18	79	92	28	35
7. Interior	44	20	30	29	106	157	40	44
8. Plumbing	41	36	25	27	119	131	32	39
9. Other External	9	12	37	52	107	210	72	129
10. Electrical	19	12	66	12	77	229	29	42
11. Stairway	0	0	31	28	149	143	38	45
12. Heating	19	11	6	29	111	161	47	47
13. Structural	0	0	0	0	0	0	89	0
14. Other	0	0	0	0	0	0	42	5
All Repairs	$40	$42	$32	$28	$125	$176	$50	$50
All Repairs, Both Years	$41		$30		$152		$50	

Exhibit 7-11

Summary of Costs Per Repair

Year 1 and Year 2

CITY/YEAR	CINCINNATI		CLEVELAND		BOSTON		GREENSBORO	
REPAIR COSTS	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
Total Costs per Repair*	$34	$44	$29	$46	$109	$93	$22	$21
Labor Costs per Repair*	$21	$29	$15	$25	$66	$61	$8	$9
Material Costs per Repair*	$14	$15	$15	$22	$42	$32	$14	$12
Labor Hours per Repair	3.3 (4.3) n=612	4.2 (5.2) n=467	2.2 (4.3) n=970	3.7 (6.6) n=470	8.8 (10.8) n=377	7.5 (9.0) n=283	1.4 (1.8) n=837	1.4 (1.8) n=1,627

*Calculated from Exhibit 7-X by dividing the corresponding cost per client by the number of repairs per client.

Exhibit 7-11

(continued)

CITY/YEAR	HOT SPRINGS		PHILADELPHIA		SAN FRANCISCO		ALL CITIES	
REPAIR COSTS	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
Total Costs per Repair*	$42	$43	$30	$28	$117	$175	$45	$50
Labor Costs per Repair*	$16	$19	$20	$14	$78	$109	$26	$28
Material Costs per Repair*	$26	$25	$10	$14	$38	$65	$19	$22
Labor Hours per Repair	3.2 (3.9) n=296	3.3 (3.0) n=218	3.0 (3.9) n=621	2.0 (3.1) n=548	4.0 (3.5) n=344	5.5 (5.6) n=378	3.2 (4.9) n=4,057	3.0 (4.9) n=3,991

*Calculated from Exhibit 7-X by dividing the corresponding cost per client by the number of repairs per client.

figures differ somewhat between the two exhibits because the sample of clients differs due to missing data. In any event, the average cost per repair is about fifty dollars. However, the stability (or increase) from the first to the second year is due to the marked increase in San Francisco; excluding San Francisco, the average cost per repair decreases slightly from about 38 dollars to 36 dollars.

This stability masks wide variations across sites and from the first to the second year for several individual sites. The average cost per repair ranges from a low of about 21 dollars for Greensboro in both years to a high for San Francisco of 120 dollars in the first year and 175 dollars in the second. The site with the next highest expenditures is Boston, with about 110 dollars per repair in the first and 93 dollars in the second year.

In addition to San Francisco, Cincinnati and Cleveland experience marked increases in average repair costs from the first to the second year. The Cincinnati program increased its expenditures about a third, from 34 to 44 dollars, and Cleveland by almost 60 percent, from 29 to 46 dollars per repair.

Emergency and Callback Repairs. Over all sites the average costs per repair for emergency and callback repairs together are less than equal than that for general, or scheduled, repairs. With a few exceptions, callbacks and emergencies also cost about the same or less than general repairs for each site. Two of these exceptions are Boston in both years of the program and San Francisco in the first year; in these cases the average cost of callbacks and emergencies are less than that of general repairs. These data are presented in Exhibit 7-12.

Average expenditures on callbacks and emergencies increase about 50 percent for all sites together, but the increases vary somewhat for the individual sites. The one exception is Philadelphia where average expenditures decrease 41 percent. The increased expenditures represent increases in the magnitudes of the callback and emergency repairs, and these increases are undoubtedly explained in part in the same way as the increase in the number of callbacks and emergency repairs from the first to the second year.

Exhibit 7-12

Mean Total, Labor, and Materials Costs Per Repair
For Callbacks and Emergencies
Year 1 and Year 2

CITY/YEAR	CINCINNATI		CLEVELAND		BOSTON		GREENSBORO	
PER REPAIR	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
Callback Repairs								
Total Cost	$29	$36	$17	$25	$40	$41	--	--
Labor Cost	$22	$28	$13	$16	$34	$26	--	--
Material Cost	$7	$8	$4	$9	$6	$15	--	--
Sample Size	23	62	50	30	7	19	0	0
Emergency Repairs								
Total Cost	$28	$59	$33	$32	$16	$24	$12	--
Labor Cost	$18	$42	$19	$19	$13	$20	$12	--
Materials Cost	$10	$17	$14	$13	$3	$4	--	--
Sample Size	24	34	27	37	8	29	2	0
Callback and Emergency Repairs								
Total Cost	$28	$44	$22	$29	$27	$31	$12	--
Labor Cost	$20	$33	$15	$18	$23	$23	$12	--
Materials Cost	$8	$11	$7	$11	$4	$8	0	--
Sample Size	47	96	77	67	15	48	2	0

Exhibit 7-12

(continued)

CITY/YEAR PER REPAIR	HOT SPRINGS Year 1	HOT SPRINGS Year 2	PHILADELPHIA Year 1	PHILADELPHIA Year 2	SAN FRANCISCO Year 1	SAN FRANCISCO Year 2	ALL CITIES Year 1	ALL CITIES Year 2
<u>Callback Repairs</u>								
Total Cost	$11	$35	$48	$23	$46	$127	$26	$40
Labor Cost	$9	$22	$39	$14	$40	$82	$21	$28
Material Cost	$2	$13	$9	$10	$6	$45	$5	$13
Sample Size	5	55	12	24	5	15	102	205
<u>Emergency Repairs</u>								
Total Cost	$22	$41	$34	$24	$64	$256	$34	$50
Labor Cost	$10	$24	$31	$17	$41	$198	$22	$35
Materials Cost	$12	$17	$3	$8	$23	$58	$12	$15
Sample Size	6	18	10	14	14	8	91	140
<u>Callback and Emergency Repairs</u>								
Total Cost	$17	$36	$41	$24	$60	$172	$29	$44
Labor Cost	$10	$22	$35	$15	$41	$123	$21	$30
Materials Cost	$7	$14	$6	$9	$19	$49	$8	$14
Sample Size	11	73	22	38	19	23	193	345

In the first year of the Demonstration most sites experienced start-up problems, and as a result they rushed to complete the first cycle of repairs. This left them with little time for callbacks and emergencies, and it appears that several did not make known that these services were available. However, in the second year their schedule was less hectic, clients became aware of the opportunity to call agencies for various reasons, and it appears that they took greater advantage of this opportunity.

Over all sites the average cost of emergency repairs is about 25 to 50 percent greater than that of callbacks, and emergency repairs cost more than callbacks in seven of the twelve cases--six sites for each of the two years.* One explanation is that emergencies are new repairs and therefore take a full complement of labor and materials. In contrast, from one-third to 60 percent of callbacks are work to rectify shortcomings in original repairs, and these may not require as much effort. In this context, emergency repairs are closer in cost to general repairs than are callbacks.

Sources of Average Cost Variations for General Repairs

There are several sources of the variations in average repair costs across sites. First, the types, or composition, of the repairs done vary across the sites. Second, the magnitude of the repairs differ, and this is reflected in the real amount of labor and materials used in the repairs. Finally, the unit costs of inputs differ; that is, the cost per unit of materials and the wage rates differ. As we shall see, there are two sources of variation in unit input costs. First, there are regional variations, and this is especially true for wages. Second, unit costs can vary depending on the extent to which sites use subcontractors as opposed to their own staff to do repairs. As we discussed above, the reported costs of repairs done by program staff will differ from those done by subcontractors because of the markups included in the latter's costs.

*Greensboro is omitted because it does not record callbacks and emergencies as a matter of policy.

To determine the effect of the composition of repairs on average repair cost, we estimate what each site's average repair cost would be if the composition of repairs were the same for all sites. This is done for each year by using the distribution of repairs for all sites together (Exhibit 7-3) with each site's average cost per repair for the 14 repair categories in Exhibit 7-10. The results are presented in Exhibit 7-13 along with the actual costs.

In almost all cases hypothetical average repair costs are about the same as the actual costs. The major exception is Hot Springs in the second year where the hypothetical cost is about twenty percent less than the actual. The primary reason for this underestimate is that the all-site distribution has a much smaller proportiuon of weatherization repairs in the second year than does Hot Springs, and these are Hot Springs' most expensive repairs in that year.

The upshot of this exercise is that variations in the types of repairs made across sites do not explain the marked differences observed in average repair costs. It should be noted that although we hold the composition of repairs constant, other possible influences can vary, such as the types of houses worked on. This is dealt with below.

If the composition of repairs does not affect the variations in average repair costs, then how important are the other influences? To answer this we compare average repair costs for each site with a benchmark, and then break down the difference into parts due to wage differences, differences in the use of materials and in the use of labor. For San Francisco and Boston we also decompose wage and material cost differences into parts due to the use of subcontractors and a remainder.*

As the benchmark we use the average cost per repair across all sites except San Francisco. San Francisco is excluded because in many regards it is an outlier; average cost per repair, labor cost per repair, and the average wage are much higher than those of other sites. To demonstrate how cost variations are broken down, let

*All this is essentially decomposing the between-site variance in average repair costs.

Exhibit 7-13

Average Repair Costs Holding the Composition of Repairs Constant, Compared to Actual Average Repair Costs
($ per Repair)*

CITY	YEAR 1		YEAR 2	
	Actual	Constant Repair Composition	Actual	Constant Repair Composition
Cincinnati	$36	$37	$45	$48
Cleveland	29	29	46	44
Boston	113	100	92	90
Greensboro	20	20	21	21
Hot Springs	40	37	42	34
Philadelphia	32	36	28	31
San Francisco	125	118	176	168

*Actual average costs are from Exhibit 7-11, distributions are from Exhibit 7-3, and average repair costs by repair type for each site are from Exhibit 7-10.

T = average total repair cost for a site,

M = average materials cost per repair for a site,

L = average labor cost per repair for a site,

W = average wage rate for a site,

H = average number of hours of labor per repair for a site, and,

$\overline{T}, \overline{M}, \overline{L}, \overline{W}, \overline{H}$ = the corresponding values for the benchmark, or standard of comparison.

Then $T = M + L$

$L = WH$, and similarly for the benchmark.*

For any site the difference between its average total repair cost and that of the standard of comparison is

$$(T - \overline{T}) = (M - \overline{M}) + (L - \overline{L}),$$

and $$(L - \overline{L}) = (W - \overline{W})\overline{H} + \overline{W}(H - \overline{H}) + (W - \overline{W})(H - \overline{H}).$$

Therefore, the deviation of average total repair cost from the standard of comparision is the sum of the deviation in materials cost and the deviation in labor costs. The difference between a site's average labor cost per repair and that of the benchmark can be broken down into three components. The first on the right hand side of the equal sign is that part due to the difference in wage rates, the second is the part due to the difference in the number of labor hours used, and the third is an interaction term resulting from deviations in both wages and hours from that of the standard of comparison. The results are presented in Exhibit 7-14, and illustrated in Exhibit 7-15, and the values for the standard of comparison are presented in the footnote to the former.

Except for San Francisco and Boston, the absolute deviations of average total repair costs from the standard of comparison are

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*Note that the mean of a product is not usually the product of two means, but in this case the average wage is calculated as the ratio of L to H.

Exhibit 7-14

Relative Importance of Sources of Differences
Between Mean Costs of Repairs Across Sites (%)
Year 1 and Year 2

CITY/YEAR	CINCINNATI		CLEVELAND		BOSTON		GREENSBORO	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
A. Breakdown Average Total Cost Differences								
Difference Due to Materials Cost (M-M)	100.0%	-25.0%	33.3%	45.5%	35.2%	26.3%	18.8%	33.3%
Difference Due to Labor Costs (L-L)	0	125.0%	66.7%	54.5%	64.8%	73.7%	81.2%	66.7%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Absolute Total Cost Difference	$-4	$8	$9	$11	$71	$57	$-16	$-15
B. Breakdown of Average Labor Cost Difference								
Difference Due to Wages [(W-W)H]	-94.8%*	-6.4%	-2.0%	-17.4%	5.0%	6.5%	25.5%	18.4%
Difference Due to Hours [W(H-H)]	100.0%*	109.9%	101.3%	123.8%	85.9%	82.0%	88.5%	90.4%
Interaction [(W-W)(H-H)]	-6.0%*	-3.5%	0.7%	-6.4%	9.1%	11.5%	-14.0%	-8.9%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Absolute Labor Cost Difference	$0	$10	$-6	$6	$45	$42	$-13	$-10

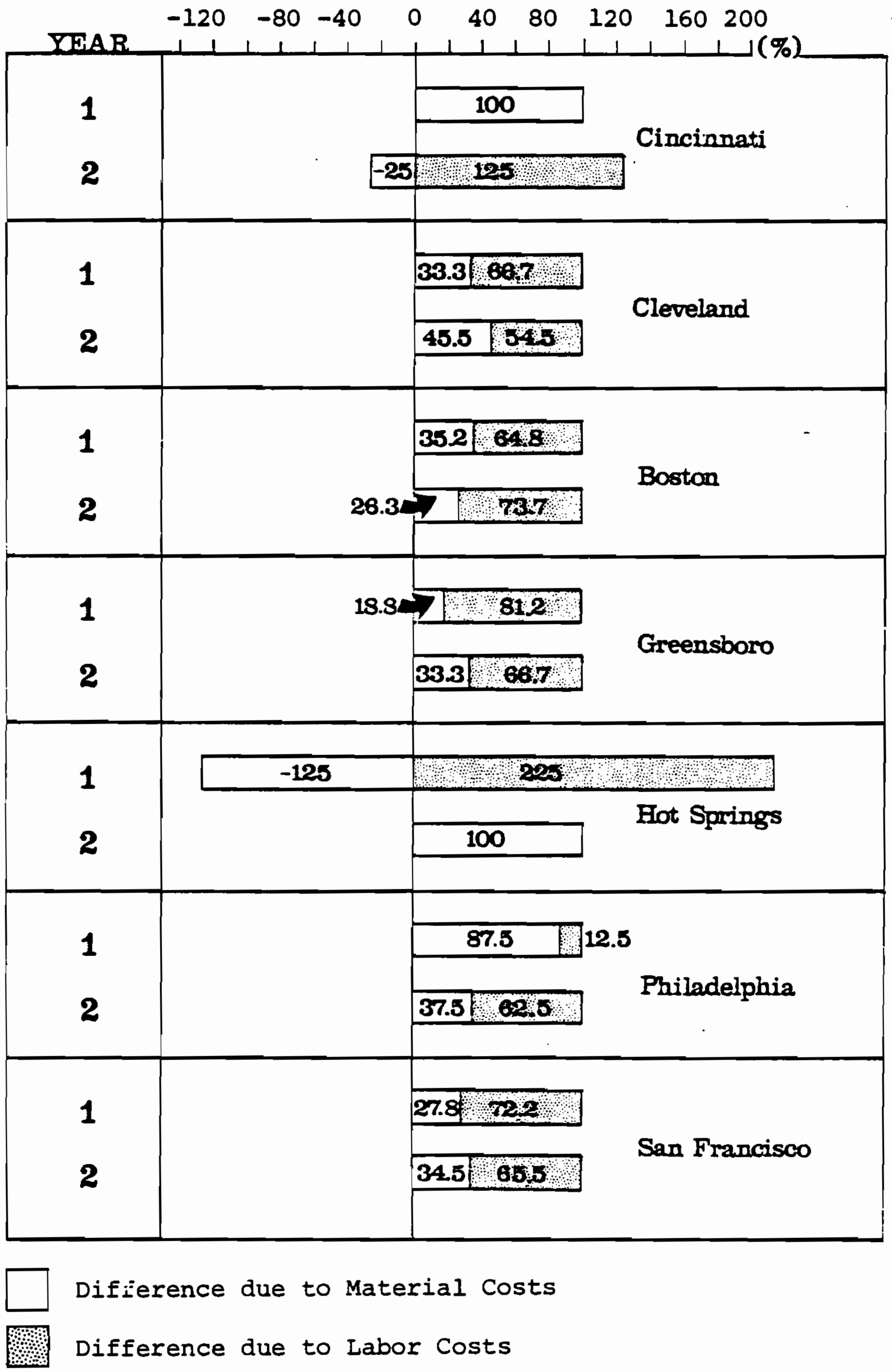
Exhibit 7-14

(continued)

CITY/YEAR	HOT SPRINGS		PHILADELPHIA		SAN FRANCISCO	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
A. Breakdown Average Total Cost Differences						
Difference Due to Materials Cost (M-M)	225.0%	100.0%	87.5%	37.5%	27.8%	34.5%
Difference Due to Labor Costs (L-L)	-125.0%	0	12.5%	62.5%	72.2%	65.5%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Absolute Total Cost Difference	$4	$7	$-8	$-8	$79	$139
B. Breakdown of Average Labor Cost Difference						
Difference Due to Wages [(W-W)H]	110.0%	-81.9%*	33.7%	6.7%	69.2%	38.2%
Difference Due to Hours [W(H-H)]	-13.5%	100.0%*	67.3%	95.0%	10.7%	22.2%
Interaction [(W-W)(H-H)]	3.6%	-18.1%*	-1.0%	-1.7%	20.1%	39.6%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Absolute Labor Cost Difference	$-5	$0	$-1	$-5	$57	$90

Exhibit 7-15

The Contributions of Labor and Materials Costs Variations to Average Repair Cost Variations



small. They range from twenty to thirty percent of the benchmark (or average), and Greensboro's average repair costs are slightly under two thirds of the average. In contrast, the absolute difference for Boston and San Francisco is from 1.5 to 4 times the average repair cost level of the benchmark; equivalently, the level of Boston and San Francisco's average repair costs are from 2.5 to almost 5 times the standard of comparison.

In Part A of Exhibit 7-14 the differences are decomposed into the portions due to deviations in expenditures on materials and labor. For Boston and San Francisco from two-thirds to over 70 percent of their higher average costs are due to above average expenditures on labor. In the first year 80 percent and in the second twothirds of Greensboro's lower average repair costs are due to lower than average expenditures on labor, and in Cleveland about twothirds in the first year and slightly over half of the higher costs in the second year are due to above average expenditures on labor.

In Cincinnati and Philadelphia the relative importance of materials and labor in explaining average cost differences switch from the first to the second year of the Demonstration. In the first year materials costs are the most important component of cost differences. In Cincinnati, there is no contribution to the difference from labor expenditures, and all of this site's lower costs were due to lower than average expenditures on materials. In Philadelphia seven-eighths of the lower costs are due to lower materials costs.

In the second year labor costs are the most important component of the difference for both sites. In Cincinnati higher expenditures on labor more than compensate for below average expenditures on materials. In Philadelphia about two-thirds of the difference is due to below average labor expenditures.

In Hot Springs above average materials costs account for at least 100 percent of the higher average cost. In the first year of the Demonstration these higher materials expenditures more than compensate for lower than average labor expenditures.

In ten of the fourteen cases--seven sites for two separate years--deviations of the sites' labor expenditures from the average account for more than half of the deviations of total average costs. However, there are two influences on labor expenditures, the hourly wage rate paid and the number of labor hours hired. The deviation of average labor costs per repair from that for the benchmark can be decomposed into three components as we discussed above: a pure wage effect $[(W - \bar{W})\bar{H}]$, a pure labor effect $[\bar{W}(H - \bar{H})]$, and an interaction effect $[(W - \bar{W})(H - \bar{H})]$. The relative importance of these in explaining differences in labor expenditures is presented in Part B of Exhibit 7-14.

In Cincinnati in the first year and Hot Springs in the second year of the Demonstration, there is no difference between the sites' labor expenditures and that of the standard of comparison. In both cases lower than average wage rates exactly offset higher than average use of labor, that is, the number of labors hours per repair. In Boston and San Francisco labor expenditures are much larger than average. The <u>differences</u> are about twice the benchmark <u>level</u> of labor expenditures for Boston and from three to over four times the benchmark for San Francisco. Differences for the other sites are much smaller.

In almost all cases where deviations in labor costs from the standard of comparison exist, from two-thirds to over 100 percent is accounted for by differences in the amounts of labor hired compared to the average. Exceptions are Hot Springs in the first year and San Francisco in both years of the Demonstration. In Hot Springs over 100 percent of the lower labor costs are due to below average wages; these more than compensate for the above average use of labor per repair.

In discussing San Francisco it is useful to contrast this site with Boston. Both have labor expenditures per repair that are much larger than average, but the similarity ends there. Over 80 percent of the difference in Boston is explained by a pure labor effect; that is, above average hours of labor per repair explain over 80 percent of the higher labor costs excluding the interaction effect. In contrast, the majority of the difference in San Francisco is due to above average wage rates. In the first year the pure wage effect explains about 70 percent of the difference excluding the interaction effect. In the second year the wage and interaction effects are about the same, each explaining approximately 40 percent of the difference.

The interaction effect between above average wage rates and labor usage cannot be allocated to either unambiguously. However, it is fair to say that although the greater use of labor compared to the standard of comparison is a strong factor influencing higher labor expenditures per repair, the lion's share is due to the high wages paid in San Francisco in both the first and second years of the Demonstration. In the first year the pure wage effect accounts for almost 70 percent of the deviation in labor costs, and this amounts to half of the deviation in average total costs from the standard of comparison. In the second year the pure wage effect accounts for 25 percent of the deviation in average total cost and it and the interaction effect together account for over half the higher average total cost.

The average wage rate in San Francisco as $19.50 in the first year of the Demonstration and $19.82 in the second. Average wage rates range from $5 to $8 an hour for the other six sites (See Exhibit 7-16). There are two reasons for higher wages in San Francisco. First, San Francisco uses only subcontractors for the repair work, and we would expect their charges for labor to include a markup for payroll taxes and insurance and a markup for overhead and profit.

According to the <u>National Construction Estimator</u>, the rule of thumb is that taxes and insurance add 25 percent to the basic wage, and the markup for overhead, contingencies, and profit add an additional 25 percent. This implies that the basic wage is increased

56.25 percent by a private contractor [(1.25)(1.25)=1.5625].*

The second reason for higher wage rates is that San Francisco is a high wage area. The National Construction Estimator also quotes national averages for union wages for various building trades. In addition, it provides multipliers for numerous cities which should be used with the national average figures to obtain wage rates appropriate for those cities. The average multiplier for San Francisco among those for six building trades is over 1.40; that is, union wage rates in San Francisco are about 40 percent higher than average union wage rates for the nation.**

We can now determine the proportion of the difference between San Francisco's wages and that for the standard of comparison due to the contractor markup and the proportion due to higher regional wages. First, we deflate nominal San Francisco wages by the contractor markup (1.5625) to get base wages. Then, the remaining difference between the base wage and the standard of comparison is due to higher regional wages. When this is done, 55 percent of the difference is due to the markup and 45 percent is due to regional effects.

We should note that the base wage in San Francisco is lower than union scale. When the wages for this site are deflated by the contractor markup, the base wage is about $12.50. The union wage in the lowest paying trade in San Francisco, a building laborer, is $20.49 per hour before the contractor's markup. It is likely that many of the subcontractors used in San Francisco are small businesses, probably one-man operations, which do not pay union scale. Their markups may also be lower because of lower overhead. In any event, the high union wages at this site are indicative of high wages in general, and this is certainly born out when either the nominal or base wage in San Francisco is compared to those of other sites.

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*See the National Construction Estimator, 1982. Edited by Gary Moselle. 13th edition. Carlsbad, California: Craftsman Book Co., 1981. Pp. 95, 140.

**Ibid, p. 5.

Exhibit 7-16

Average Wage Rates for Repair Labor, by City
($ per hour)

	YEAR 1	YEAR 2
Cincinnati	$6.36/hr.	$6.90/hr.
Cleveland	6.82	6.76
Boston	7.50	8.13
Greensboro	5.71	6.43
Hot Springs	5.00	5.76
Philadelphia	6.67	7.00
San Francisco	19.50	19.82
All Sites except San Francisco	6.78	7.13
ALL SITES	$8.12/hr.	$9.33/hr.

Source: USR&E Work Order File, 1980-81.

A similar adjustment for the use of subcontractors can be made for differences in materials expenditures. In this case the nominal expenditures for San Francisco are deflated by the contractor's markup for contingencies, overhead, and profit, which is 25 percent. When this is done, eighty percent of the difference is due to the use of different amounts of materials and 20 percent is due to the markup. We should note that this treatment assumes that there are no regional differences in the base prices for materials. This is the assumption used in the National Construction Estimator, and in any event we do not have an adequate deflator for materials.

Decomposing the wage and materials differentials for Boston is somewhat more complicated. Only part of the repair work was done by subcontactors, and payments to them are not broken down into labor and materials costs. To adjust for the use of subcontractors we assume that materials and labor costs occur in the same proportions for subcontractors as for the work done by the program staff. Then subcontractor material and labor costs are adjusted for the contractor markups.

When this is done, over 100 percent of the wage differential is due to the contractor markup in the first year; after deflating, the base wage for Boston is less than average. In the second year 75 percent of the wage differential is due to the use of contractors, and the remaining 25 percent is due to higher base wages. When the adjustment is made for materials, 20 percent of the difference is due to the use of subcontractors in the first year and only 7 percent in the second.

Summary

Average costs per repair vary from a low of $20 for Greensboro to a high of $175 for San Francisco, with both San Francisco and Boston averaging more than $100 per repair over the course of the Demonstration. Except for San Francisco and Boston, the average repair costs for the different sites are similar.

In most cases over half of the differences between sites in average repair costs are due to differences in labor costs, and only in Hot Springs are materials consistently more important. Almost all of the differences in labor costs are due to differences in the amount of labor used. The major exception is San Francisco where wage differences are the most important reason for differences in labor costs and also account for about half of San Francisco's higher average total costs per repair.

The conclusion we draw from this is that variations in average repair costs are due primarily to variations in the amounts of labor and materials used, which is a measure of the magnitude of the repairs done. Even for San Francisco, where over half of the cost difference is due to price differences, real services per repair are well above average. This is shown more clearly in the next section where we adjust nominal costs to obtain a measure of real resources used per repair.

7.3 The Magnitude of Repairs

In the previous section we decomposed variations in average repair costs into their component causes. These are primarily variations in labor and materials costs, and they can be further broken down into variations in the quantities of labor and materials used and variations in unit prices. In this section we approach the same subject from a different vantage point. We seek to determine the real magnitude of the average repair and how this varies across sites.

This is of interest because it is one dimension of the repair strategy adopted by the sites and it must be identified to determine the tradeoffs chosen by them. This is illustrated by two examples. In one the strategy is to make a small number of major repairs, and in the other it is to make a large number of small repairs. Realistically, there is a continuum of strategies that can be adopted.

The real magnitude of repairs is determined by deflating nominal average costs for price differences between the sites. The interpretation of the adjusted costs as measures of the real magnitudes depends on several key assumptions:

- The magnitude of a repair is measured by the amounts of inputs used, that is, by the amounts of labor and materials used;

- The quality of labor used does not vary across the sites; and

- The prices of materials do not vary across sites except for subcontractor markups.

The first assumption states that we measure the magnitude of the output by the level of inputs. It is not ideal, but is the best that can be done when outputs are heterogenous and have a large service content. This is a drawback of all analyses of services and has been discussed extensively in the context of the service sector of the economy; notable examples are the provision of health care and services provided by the public sector.

To calculate the adjusted average repair cost, we multiply the average number of hours per repair for each site by a constant wage. This is the average wage used as the standard of comparison in the previous section and is the average for all sites in Year 1 excluding San Francisco. The resulting labor cost is added to the average materials cost per repair for each site to arrive at adjusted average total costs per repair.

We assume that labor is homogenous across sites because we have no means of identifying variations in its quality. It is difficult to determine what biases result if labor quality does vary. If the wage levels reflect the quality of labor, then our estimates of the magnitude of repairs are too low for high wage areas and too high for low wage areas. The result is a downward bias in the differences between sites in the magnitudes of repairs.

However, to the extent that differences in wage rates reflect regional and organizational differences unrelated to labor quality, then our estimates of labor costs using the same wage for all sites result in measures of real labor use.

We assume that materials prices are the same across sites because we have no ideal deflator for materials, and therefore we have relied on the procedures used by the National Construction

Estimator. If any bias exists, it is probably in our estimates for San Francisco, a high cost area, and we may overestimate the level of materials used. But this may also be a site for which we underestimate labor inputs because of variations in labor quality. We cannot determine the net effect, and it is likely that our estimates of adjusted average total cost adequately reflect the real levels of resources used.

Nominal (actual) and adjusted average repair costs are presented in Exhibit 7-17. For all sites except San Francisco adjusted costs are about the same as nominal costs. The adjustment decreases the latter site's average cost by about 50 percent; this is understandable in light of our analysis in the previous section since both wages and materials costs are decreased for San Francisco by the adjustment.

In general, the ranking of the sites by adjusted costs, and therefore the magnitude of repairs is the same as that for nominal costs. One exception is that San Francisco makes the second largest repairs behind Boston in the first year. As we would expect, there is an inverse relation between the magnitude of repairs and the number of repairs done. This is evident upon inspection of Exhibits 7-1 and 7-17. Also, the correlation between adjusted average cost and the number of repairs is -0.67 in the first year and -0.61 in the second. If programs have fixed budgets for repairs, we would expect an even stronger negative correlation between the natural logarithms of costs and numbers of repairs, and this is indeed the case; the correlation between the natural log of costs and the natural log of the repairs is -0.79 in the first year and -0.75 in the second.*

7.4 Repair Services Per Client

In previous sections we emphasize the repair, that is, the number and types of repairs made, the costs per repair, and the

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*These correlations are different from zero at the 10 percent significance level or better for magnitudes measured in their natural units and at the 5 percent level or better for magnitudes measured as natural logs.

Exhibit 7-17

Actual Compared to Adjusted Average Total Cost Per Repair*

CITY	YEAR 1		YEAR 2	
	Actual	Adjusted	Actual	Adjusted
Cincinnati	$34	$36	$44	$43
Cleveland	29	30	46	47
Boston (1)	109	97	93	82
Greensboro	22	23	21	21
Hot Springs	42	48	43	47
Philadelphia	30	30	28	28
San Francisco (2)	117	58	175	89
ALL CITIES	$45	$39	$50	$41

*Adjusted labor costs ($6.78) x (hours/repair). Total adjusted costs per repair are the sum of adjusted labor costs and actual materials cost per repair, except for Boston and San Francisco. See footnotes (1) and (2) for the adjustments to materials costs for these sites.

(1) For Boston, Adjusted Materials Cost per Repair =
[(0.58/1.25) + (0.42)] x (Actual Material Cost per Repair)
in Year 1. Adjusted Materials Cost =
[(0.18/1.25) + (0.82)] x (Actual Material Cost per Repair)
in Year 2.

(2) In San Francisco, Adjusted Materials Cost per Repair =
(Actual Materials Cost)/1.25

magnitude of individual repairs. However, these are only part of the story. Some sites make numerous small repairs, others a small number of large repairs, and neither strategy necessarily implies a high or low level of service. In this section we focus on the client. Above all, the objective of the program is to provide services to elderly households, not to minimize or maximize the cost per repair. Therefore, we examine the average level of repair services provided per client, how these vary across sites, and how they vary from the first to the second year of the Demonstration.

The source of data is the same as that used in the analysis of repair costs, the work orders. Exhibit 7-18 contains average repair expenditures per client, their breakdown into labor and materials costs, the average number of hours of labor used per client, and the average number of repairs per client. From this we calculate measures of the real level of services in the same way the real magnitude of repairs in Exhibit 7-17 is constructed from the average costs of repairs in Exhibit 7-11; labor costs are deflated for wage differences using the same wage rate for all sites, and materials costs are adjusted for subcontractor markups for Boston and San Francisco. The wage rate and method of adjusting materials costs are presented in the footnote to Exhibit 7-17. The real service levels per client are presented in Exhibit 7-19, and our discussion in the section emphasizes these service levels.

In the first year of the Demonstration the highest service levels per client are provided by Boston, followed by Cleveland. In the second year San Francisco provides the highest average level of service per client, and Boston is the next highest. In both years the average client in Hot Springs receives the lowest level of repair services and the average Philadelphia client the next lowest. Four of the seven sites decrease the average level of repair services provided per client from the first to the second year, the exceptions being Cincinnati, Greensboro, and San Francisco. We now give a brief description of each site's experience in providing repair services to its clients over the course of the Demonstration.

Exhibit 7-18

Average Total Cost, Labor Cost, Materials Cost, Labor Hours, and Repairs per Client
(Standard Deviations in Parentheses. n = Sample Size of Clients)

CITY/YEAR	CINCINNATI		CLEVELAND		BOSTON		GREENSBORO	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
Total Cost Per Client	$164 (95) n=126	$194 (105) n=104	$225 (156) n=125	$188 (208) n=112	$337 (122) n=121	$261 (134) n=99	$149 (95) n=62	$204 (138) n=158
Labor Cost Per Client	$99 (62) n=126	$127 (68) n=104	$114 (109) n=125	$102 (127) n=112	$206 (99) n=121	$170 (99) n=99	$54 (45) n=62	$86 (61) n=158
Materials Cost Per Client	$66 (48) n=129	$66 (50) n=108	$113 (78) n=128	$92 (120) n=113	$131 (92) n=121	$91 (86) n=99	$96 (63) n=62	$119 (85) n=159
Labor Hours Per Client*	15.9	18.5	17.0	15.2	27.2	21.0	9.5	12.9
Number of Repairs Per Client	4.8 (1.7) n=129	4.4 (1.6) n=108	7.7 (3.9) n=128	4.1 (3.3) n=114	3.1 (2.1) n=123	2.8 (2.0) n=99	6.9 (3.1) n=133	9.5 (4.7) n=159

*Calculated by multiplying the mean number of hours of labor per repair by the mean number of repairs per client.

Exhibit 7-18

(continued)

CITY/YEAR	HOT SPRINGS		PHILADELPHIA		SAN FRANCISCO		ALL CITIES	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
Total Cost Per Client	$108 (59) n=115	$91 (51) n=104	$135 (96) n=138	$122 (123) n=127	$303 (70) n=135	$611 (210) n=109	$208 (132) n=822	$235 (215) n=813
Labor Cost Per Client	$41 (37) n=115	$39 (24) n=104	$90 (70) n=138	$61 (56) n=127	$203 (59) n=135	$383 (158) n=109	$121 (96) n=822	$133 (140) n=813
Materials Cost Per Client	$67 (40) n=116	$52 (35) n=104	$44 (34) n=138	$61 (74) n=128	$100 (49) n=135	$228 (115) n=109	$87 (67) n=829	$102 (101) n=820
Labor Hours Per Client*	8.2	6.9	13.4	8.7	10.5	19.4	14.5	14.1
Number of Repairs Per Client	2.6 (1.2) n=120	2.1 (0.8) n=104	4.5 (2.1) n=138	4.3 (2.1) n=128	2.6 (1.3) n=135	3.5 (1.9) n=109	4.6 (3.0) n=906	4.7 (3.7) n=821

*Calculated by multiplying the mean number of hours of labor per repair by the mean number of repairs per client.

Exhibit 7-19

Adjusted Average Total Cost, Labor Cost, Materials Cost
Labor Hours, and Repairs Per Client*
Year 1 and Year 2

CITY/YEAR	CINCINNATI		CLEVELAND		BOSTON		GREENSBORO	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
Total Cost Per Client	$174	$191	$228	$195	$300	$230	$160	$206
Labor Cost Per Client	$108	$125	$115	$103	$184	$142	$64	$87
Materials Cost (1) Per Client	$66	$66	$113	$92	$116	$88	$96	$119
Labor Hours (2) Per Client	15.9	18.5	17.0	15.2	27.2	21.0	9.5	12.9
Number of Repairs Per Client	4.8	4.4	7.7	4.1	3.1	2.8	6.9	9.5

*Adjusted by deflating for wage and material price differences. See Exhibit 7-17, footnotes, and text.

(1) Materials costs for Boston and San Francisco are adjusted for subcontractor markups.

(2) Calculated by multiplying the mean number of hours of labor per repair by the mean number of repairs per client.

Exhibit 7-19

(cotrinued)

CITY/YEAR	HOT SPRINGS		PHILADELPHIA		SAN FRANCISCO		ALL CITIES	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
Total Cost Per Client	$123	$99	$135	$120	$151	$314	$179	$192
Labor Cost Per Client	$56	$47	$91	$59	$71	$132	$98	$96
Materials Cost (1) Per Client	$67	$52	$44	$61	$80	$182	$81	$96
Labor Hours (2) Per Client	8.2	6.9	13.4	8.7	10.7	19.4	14.5	14.1
Number of Repairs Per Client	2.6	2.1	4.5	4.3	2.6	3.5	4.6	4.7

*Adjusted by deflating for wage and material price differences. See Exhibit 7-17, footnotes, and text.

(1) Materials costs for Boston and San Francisco are adjusted for subcontractor markups.

(2) Calculated by multiplying the mean number of hours of labor per repair by the mean number of repairs per client.

Boston. Boston's strategy is to provide a few large repairs to each client. From the first to the second year of the Demonstration services per client decrease by about 23 percnt. This is the result of a 10 percent decrease in the average number of repairs per client and a 15 percent decline in the magnitude of the average repair (see Exhibit 7-17).* In both years Boston is one of the two top sites in real repair services provided per client.

San Francisco. Like Boston, San Francisco also has a strategy of providing a few large repairs to its clients. But in the first year of the Demonstration the small number of repairs results in a low level of services provided per client; the site is third lowest in this year. In San Francisco, the level of repair services per client increases by 108 percent from the first to the second year, and this is the result of a 35 percent increase in the number of repairs per client and a 53 percent increase in the magnitude of the average repair.

Greensboro. Greensboro's strategy is to make a large number of small repairs, and this site is on the other end of the continuum in terms of the repair magnitude-repair numbers tradeoff. It is below average in services per client in the first year, but above average in the second. Services per client increase 29 percent from the first year to the second year, and this results from a 38 percent increase in the number of repairs per client and a 9 percent decrease in the magnitude of repairs.

Cleveland. In the first year Cleveland provides a large number of small repairs; in fact, it provides the largest number of repairs and the second highest level of services per client. In the second year Cleveland provides slightly below average numbers of repairs per client, and these repairs are slightly above average in

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*The percentage change in repairs per client plus the percentage change in the magnitude of repairs do not necessarily equal the percentage change in services per client because of an interaction effect between changes in repairs and magnitudes.

magnitude. The net effect is a 14 percent decrease in services per client from the first to the second year, and this is the result of a 47 percent decrease in the number of repairs per client and a 57 percent increase in the magnitude of the average repair. However, Cleveland is above average in services provided per client in both years.

Cincinnati. Cincinnati is about average in both the numbers of repairs and the levels of repair services provided per client in both years. Repair services per client increase from the first to the second year by about 10 percent, and this results from an 8 percent decrease in repairs per client and a 19 percent increase in the magnitude of the average repair.

Hot Springs. This site provides the lowest level of repair service per client in both years of the Demonstration. This is the result of providing about half the average number of repairs per client and larger than average repairs. Repair service per client decreases about 20 percent from the first to the second year, and this is almost entirely due to the decrease in the number of repairs.

Philadelphia. Philadelphia also provides relatively low levels of repair services per client in both years; it is the second lowest of the seven sites. It provides about average numbers of repairs per client, but these are below average in magnitude. Repair services per client decrease 11 percent from the first to the second year, and this results from a 4 percent decrease in the number of repairs per client and a 7 percent decrease in the magnitude of the average repair.

7.5 Cost Functions and Repair Costs for a Standard Case

Another approach to analyzing repair costs is to explain the variation in program repair expenditures across clients by variations in the number of repairs done and characteristics of the home and of the client. This is done using regression analysis and serves two purposes. First, we can determine the extent to which housing and client characteristics affect repair costs for any given number and type of repairs. This is especially useful in this analysis because there is still significant heterogenity among the repairs within the 14 categories. It also helps identify possible sources of cost increases related to the client.

The second purpose is to predict repair costs per client at each site holding constant the configuration of repairs done, the characteristics of the housing unit, and the characteristics of the client. This allows us to determine cost differences across sites after standardizing for client differences and differences in housing characteristics across sites.

The regression results for each site for each year are reported in Appendix H. Generally, the variation in repair costs per client is explained fairly well by repairs and by housing and client characteristics at all sites, especially in the second year. Usually, some subset of repairs has a significant effect on costs, and their coefficients can be interpreted as the marginal costs of the respective repairs. However, in two instances these coefficients are negative, implying the repairs are representing some other influence.

Three housing characteristics often affect cost in the first year of the program. These are the year in which the home was built, the number of units in the structure, and the type of construction. However, they do not affect costs in the second year of the program.

Client characteristics seldom affect costs. There are some exceptions. In the first year in Boston and Hot Springs, the existence of some degree of client disability increases repair cost, and in Philadelphia larger families are associated with higher repair costs. But client characteristics never have a statistically significant effect on costs in the second year, and it is unlikely this represents our inability to identify their effects due to multicollinearity. When regressions with and without the variables representing client characteristics are compared, the inclusion of these variables does not affect the estimated coefficients of the numbers and types of repairs made and the characteristics of the housing unit. If multicollinearity were a problem, we would expect these coefficients to vary with the inclusion of client characteristics.

Finally, these regressions are used to predict repair costs per client for each site, holding constant the number and type of repairs, the characteristics of the home, and the characteristics of the client. A representative case is constructed for each year using the average number of repairs in each of the 14 categories across the seven sites, the average year of construction for the home across all sites, and finally the modal (most frequent) value for other characteristics of the home and client. The values for explanatory variables defining these "standard" cases are presented in Exhibit 7-20, and the resulting predictions are presented in Exhibit 7-21.

Often, the predicted expenditures per client for the standard case are quite different from the actual averages in Exhibit 7-18. Exhibit 7-21 also contains the implied average costs per repair for the standard case, and again differences exist from the actual average costs in Exhibit 7-17. However, the rankings of the sites by expenditures per client and average repair costs are generally the same. San Francisco and Boston have the highest expenditures per client and the highest average repair costs, while Hot Springs has the lowest expenditure per client. Greensboro has the lowest average cost per repair in the second year, but not the first.

In five of the seven sites most of the variation from actual expenditures per client and average cost is due to the difference between the standard case and actual site averages for the number of repairs per client. However, much of the difference for Greensboro in the first year is due to differences between actual housing characteristics and those used in the standard case. For example, the average client home in Greensboro was built in 1943, whereas we use 1924 for the standard case. The number of repairs for the standard case compared to the actual average per client in Philadelphia also

Exhibit 7-20

Attributes of Standard Representative Client Case
Used to Predict Repair Costs Per Client for Each Site*

TYPE OF REPAIR	NUMBER OF REPAIRS Year 1	Year 2
Exterior	0.12	0.17
Door	0.59	0.55
Porch	0.32	0.40
Roof	0.29	0.29
Window	0.59	0.60
Weatherization	0.43	0.62
Interior	0.78	1.10
Plumbing	0.80	0.55
Other External	0.05	0.08
Electrical	0.34	0.18
Stairway	0.22	0.09
Heating	0.06	0.08
Structural	0.00	0.00
Other	0.01	0.00
TOTAL	4.59	4.71
Housing Characteristics		
Year Built	1924	
Number of Units per Structure	1	
Construction Type	Wood frame	
Client Characteristics		
Married?	No	
Household Size	1	
Deaf?	No	
Use a Health Aid?	No	
Some Disability?	No	
Disabled, Needing Assistance?	No Healthy client	
Major Disability?	No	

*Mean values for repairs per client for all clients are from Exhibit 7- used in the regressions. Mean year built overall sites is from the inspection forms. The other values are the modes for the respective variables; see Chapter 4.

Exhibit 7-21

Predicted Program Repair Expenditures Per Client and Average Repair Cost for Representative Cases, by Site*

SITE	PROGRAM EXPENDITURES PER CLIENT		COSTS PER REPAIR	
	Year 1	Year 2	Year 1	Year 2
Cincinnati	$185	$223	$40	$47
Cleveland	171	213	37	45
Boston	305	359	66	76
Greensboro	185	129	40	27
Hot Springs	143 (1)	172 (2)	33	38
Philadelphia	85	189	19	40
San Francisco	322	667	70	142

* See Exhibit 7- for the representative case for each year. These values are used in the regressions for each site explaining repair costs per client. Regression results are presented in Appendix Table __.

(1) Does not have regression coefficients for Other External and Stairway repairs in Year 1.

(2) Does not have a regression coefficient for Stairway and Heating repairs for Year 2.

cannot explain the difference between actual and predicted costs per client and per repair. Much of this difference is due to the fact that housing units in Philadelphia are primarily masonry and are much older than the overall average used for the standard case.

Finally, the variability of average costs per repair for the standard case is less than that actually observed. This results from using the same number of repairs per client for all sites, which tends to lower average costs for Boston and San Francisco where the number of repairs per client is below average and raise it for sites which provide above average repairs per client.

7.6 Summary and Conclusions

The costs and levels of repair services provided to clients of this Demonstration are determined by the types, magnitude, and costs of repairs made and by the number of repairs provided to clients. Many different kinds of repairs are made, but a large proportion are to the interior of the home and to plumbing, followed by door, window and weatherization repairs. A significant number of these are concerned with safety and security.

A relatively large number of interior repairs involve the installation of grab bars and smoke alarms, and a high proportion of repairs to doors involve the installation of deadbolt locks. Although numerous, the installation of grab bars is not widespread; over 80 percent of those installed over the two years of the Demonstration are done in Greensboro. Also, there are other variations across sites which indicate that the sites have chosen their own priorities for repairs and have responded to the needs of their clients. In general, the repairs made are those which are needed as these are identified by the program inspectors and the clients themselves. However, due to limited resources, only a fraction of repair need could be dealt with by the Demonstration.

Besides the general repairs made, about six percent of all repairs are callbacks and emergencies. Callbacks are repairs to remedy deficiencies in original work, new repairs, and repairs not otherwise specified. Over half of all callbacks in the first year are to correct deficiencies in original work, and they decrease to 39 percent of all callbacks in the second year. But a better measure of the quality of repair work is the proportion of all repairs--general, callback and emergencies--which are callbacks to rectify inadequacies in original work. In the first year these are 1.5 percent of all repairs, and they increase to 3.0 percent in the second year. This increase is probably due more to a general increase in callbacks and emergencies from the first to the second year than to a deterioration in the quality of work. In the first year sites were working on a tight schedule because of start-up problems. As a result, they probably did not take as many callbacks and emergencies and did not make their clients aware of their availability. In the second year program schedules were not as hectic, and clients became more familiar with program personnel and procedures.

The proportion of all repairs to correct deficient work does not vary significantly across sites; all are close to the average in the first year and all but Hot Springs are in the second. Hot Springs stands out as the site with the most callbacks in a single year, and the highest proportion of all repairs due to callbacks to rectify problems with original repair work, six percent.

Callbacks and emergencies are not evenly distributed across the seven sites. About two thirds are accounted for by Cincinnati, Cleveland, and Hot Springs. This undoubtedly results from a conscious policy to take additional calls from clients in addition to problems with the quality of the original repairs done.

The average cost per repair varies widely across sites from a low of 21 dollars in Greensboro to a high of 175 dollars in San Francisco. This variation is not caused by the different composition of repairs done by the sites. Over half is explained by variations in labor costs per repair, and almost all of the labor cost variations are due to variations in the amount of labor used. The primary exception is San Francisco. Over half of San Francisco's higher labor costs are due to higher wages, and this results equally from using subcontractors for all work and from being a high wage area. Subcontractor charges for labor include a markup for overhead, fringes, and taxes, whereas labor costs recorded by sites using their own personnel do not.

When the average cost of repairs are adjusted for price differences across sites, the result is a measure of the magnitude of the repairs made. These vary from 21 dollars for Greensboro to 97 dollars for Boston, and the variation in the real magnitudes of repairs is somewhat narrower than the variation in the nominal average cost would suggest.

Real repair services per client vary from a low of 99 dollars for Hot Springs in the first year to a high of 314 dollars for San Francisco in the second year of the Demonstration. Over all sites repair services per client increase from the first to the second year, but this is due to the large increase for San Francisco. The overall increase is the result of decreases for four sites and increases for three. In addition, five of the seven sites decrease the number of repairs provided from the first to the second year, and four of seven sites decrease or hold constant the magnitude of the repairs.

The decreases for a majority of the sites is surprising because most had startup problems in the first year and would therefore be expected to increase services in the second year. This is indeed the case for San Francisco, Greensboro, and Cincinnati, the sites which increased services per client. However, we must look elsewhere for explanations for the others.

One conclusion we can draw is that it is incorrect to view the second year as one of steady state in which startup problems have been solved and the levels of service represent in some sense a long-run equilibrium. One year is probably too short for all learning to have occurred. Also, in at least two cases, the output levels in the second year are the direct result of those in the first. Cleveland provided more services and spent more than it would have liked in the first year, leaving fewer resources for the second. In contrast, Greensboro had difficulty meeting its repair targets in the first, and therefore had funds to carry over to the second, allowing an increase in services. Finally, the end of the Demonstration itself may have affected the allocation of resources between the first and second years.

Overall, San Francisco and Boston provided the highest levels of repair services per client, and they were also below average in the proportion of repairs due to callbacks to rectify previous work. In contrast, Hot Springs provided the lowest levels of service, resulting from providing the fewest repairs per client and repairs of about average magnitude. This site also had the highest percentage of repairs needed to remedy problems with previous work. Philadelphia provided the second lowest level of services per client, but was about average with respect to callbacks to fix previous work. It should be noted that Philadelphia and Hot Springs are the two sites whose organizations had no previous housing experience. The other three sites fell between these two groups.

Chapter 8

The Costs of Service Delivery

A primary objective of the Elderly Home Maintenance Demonstration was to assess the costs of delivering minor repair and maintenance services to clients. The seven sponsor agencies participating in the Demonstration were selected, in part, to provide a range of agency backgrounds and orientations. Given this program variety, variations in the mix and magnitude of service delivery might be expected.

This chapter examines the distribution of costs among the various types of services extended by the seven programs. As Chapter 3 describes, service provision assumes numerous forms. Service can be strictly defined as only those labor and material costs directly associated with maintenance and repair work. A slightly broader interpretation considers maintenance and repair related costs, including transportation and equipment expenses not attributable to individual repair jobs. A third level of service incorporates all maintenance and repair related costs plus the various other nonrepair services provided by the program. These include the provision of referral assistance and home inspections.

Several policy relevant questions are addressed by this analysis of these three service levels:

- What are the costs that contribute to service delivery?
- How does the magnitude of services provided vary among programs?
- Why does the magnitude of service delivery vary from program to program?

- What is the ratio of services to administrative costs?

These questions cannot be readily addressed by the work order/repair data utilized in Chapter 7. Work order data were collected by programs in order to track all repair activity conducted over the two years of the Demonstration. While work order data provide detailed information on labor and materials costs at the repair level, it cannot by itself explain cost variations from program to program.

The sole source of information on the distribution and magnitude of service costs are the monthly cost reports utilized by the Administrative Contractor to monitor program progress and financial condition. Although these reports were not designed for evaluation purposes, they provide comparable program data on expenditure patterns for service delivery and administration. By extracting data from 1981 and 1982 program year end reports, a complete profile of expenditures has been constructed. Due to overlapping program years in several sites it was not feasible to analyze data on a year to year basis. Instead, aggregate costs for the entire period of the Demonstration are used.

The analysis of service delivery costs is presented in five sections. Basic maintenance and repair services are examined in Section 8.1. Maintenance and repair related service costs are covered in Section 8.2. The costs of other services are assessed in Section 8.3. An analysis of administrative costs is presented in Section 8.4, and an assessment of total Demonstration expenditures is provided in Section 8.5.

8.1 The Cost of Maintenance and Repair Services

Basic maintenance and repair services consist of those costs directly attributable to repair work. These service costs include all labor related to maintenance and repair work, the fringe benefits associated with the labor, the building materials purchased by programs or invoiced by subcontractors, and any subcontractor markups for overhead and profit. When program related fringe benefits are excluded these service costs should roughly mirror aggregate work order costs.

The average per program cost over the two year life of the Demonstration for basic maintenance and repair services was $88,394. When the subcontractor mark-ups paid by several programs are included, the mean cost of basic services increases to $93,012. The range of basic repair costs among programs is noticeably broad. There is nearly a 100 percent difference in maintenance and repair costs between Hot Springs and San Francisco. Hot Springs has the lowest expenditures for basic services--$62,811, while San Francisco was able to expend $123,663. Exhibit 8-1 shows the distribution of actual program costs attributable to maintenance and repair activities by site.

Reasons for the wide range of service costs are explained, in part, when the separate components of basic service are examined. Across all seven sites, basic maintenance and repair costs are distributed 55 percent to labor, 35 percent to materials, and 10 percent to fringe benefits. These proportions are summarized by site in Exhibit 8-2.

Labor generally contributed the largest proportion of expenses to basic services. Cincinnati and Philadelphia apportioned respectively 66 percent and 64 percent of their basic service costs to labor. Conversely, only 40 percent of Greensboro's basic service costs were attributable to labor. Overall, the programs averaged $48,400 for maintenance and repair labor over the two year Demonstration period. The seven sites divided cleanly into high and low labor expenditure programs. Boston, Hot Springs, and Greensboro expended relatively low levels of funds on basic maintenance and repair labor. Over the two year Demonstration Greensboro's labor costs for maintenance and repair were $31,293 and Hot Spring's only $32,023. By contrast, Cincinnati, Cleveland, Philadelphia, and San Francisco all had high labor expenditures. Philadelphia spent $63,450 on basic service labor, double the amount spent by Greensboro or Hot Springs.

Fringe benefit costs represent an important source of variation among programs. All seven programs specified agency fringe benefit rates in their original Agency Plans of Service documents. These

Exhibit 8-1

Actual Program Costs Attributable to Maintenance and Repair Activity
Combined Year 1 and Year 2

(in dollars ($))

Costs Attributable to Maintenance and Repair	CINCINNATI	CLEVELAND	BOSTON	GREENSBORO
LABOR:				
Program Labor	$60,695	$52,510	$32,612	$31,293
Subcontractor Labor			13,198	
Total Labor	60,695	52,510	45,310	31,293**
FRINGE BENEFITS:				
Actual Fringe Rates: (Total Salary/Total Fringe)	18.9%	11.5%	19.1%	16.2%
Program Fringe***	$11,597	$6,046	$6,424	$4,319
Subcontractor Fringe @ 25% of base labor	--	--	3,299	--
Total Fringe	$11,597	$6,046	$9,723	$4,319**
MATERIALS:				
Program Materials	19,112	43,140	20,321	45,687*
Subcontractor Materials			12,451	
Total Materials	19,112	43,140	32,772	45,687**
Total Materials and Labor	79,807	95,650	78,582	76,980
TOTAL COSTS:				
Labor, Materials, & Fringe	91,404	101,696	88,305	81,299**
Subcontractor Mark-ups @ 25%			7,238	
Total costs attributable to M & R			95,543	

*Unable to distinguish between building materials and other ODC expenses such as subcontractors.

**Does not include contract extension work performed after 6/30/82. These additional costs were labor-($4,494), materials-($2,545), and Fringe-($635)

***Fringe amounts proportioned according to actual distribution of salaries among the various functional categories.

Exhibit 8-1

(continued)

Costs Attributable to Maintenance and Repair	HOT SPRINGS	PHILADELPHIA	SAN FRANCISCO	ALL SITES (Mean)
LABOR:				
Program Labor	$32,023	$62,668		
Subcontractor Labor		782	53,020	
Total Labor	32,023	63,450	53,029	48,400
FRINGE BENEFITS:				
Actual Fringe Rates: (Total Salary/Total Fringe)	14.1%	22.6%	16.8%	
Program Fringe***	$6,428			
Subcontractor Fringe @ 25% of base labor	--	195	13,255	
Total Fringe	--	$14,419	$13,255	$9,137
MATERIALS:				
Program Materials	24,360	20,898		
Subcontractor Materials		438	32,655[a]	
Total Materials	24,360	21,336	32,655	30,856
Total Materials and Labor	56,383	84,786	85,675	79,257
TOTAL COSTS:				
Labor, Materials, & Fringe	62,811	99,205	98,930	88,394[b]
Subcontractor Mark-ups @ 25%		354	24,733	
Total costs attributable to M & R		99,559	123,663	

[a]Excludes any material costs absorbed by the client. Records not available for these costs.

[b]When subcontractor markup is added in, the mean cost increases to $93,012.

Source: Elderly Home Maintenance Demonstration Cost Reports: June 1981, June 1982, except where otherwise noted.

Exhibit 8-2

Percent Composition of Actual Maintenance and Repair Activity Costs
Combined Year 1 and Year 2

	CINCINNATI	CLEVELAND	BOSTON	GREENSBORO
LABOR	66.4%	51.6%	51.9%	40.0%
FRINGE	12.7	5.9	11.0	5.5
MATERIALS	20.9	42.5	37.1	54.5
TOTAL	100.0%	100.0%	100.0%	100.0%
Subcontractor Markup/Profit			8.2%	
	HOT SPRINGS	PHILADELPHIA	SAN FRANCISCO	ALL SITES
LABOR	52.5%	64.0%	53.6%	54.8%
FRINGE	7.5	14.5	13.4	10.3
MATERIALS	40.0	21.5	33.0	34.9
TOTAL	100.0%	100.0%	100.0%	100.0%
Subcontractor Markup/Profit		0.4%	25.0%	

Source: Elderly Home Maintenance Demonstration Cost Reports: June 1981, June 1982, except where otherwise noted.

rates ranged from high of 30 percent for Philadelphia's PCA to a low of 10.5 percent for Cleveland's LHC. Agency policies regarding fringes reflect prevailing market conditions as well as agency personnel objectives. Liberal fringe benefits, for example, were cited by Philadelphia as one way to attract competent repair workers who might otherwise be discouraged by program wages. These agency decisions, however, are eventually reflected in maintenance and repair service costs. The mean cost of fringe benefits for a program over the two year period was $9,137. Philadelphia, Cincinnati, and San Francisco were substantially higher than the mean; Cleveland, Greensboro, and Hot Springs were substantially lower. Since fringe benefits are linked to labor expenditures as well as agency rates it is not surprising to find programs with high labor expenditure also having high fringe benefit costs. In the case of Cleveland, its relatively high labor expenditures ($52,510) are tempered by a low agency fringe rate and results in a lower than average expenditure for fringe benefits.

The aggregate expenditures on materials also varied widely among the seven programs. Greensboro and Cincinnati illustrate the greatest contrast. While the Greensboro program targeted 55 percent of its basic service expenditures to materials, Cincinnati chose to devote only 21 percent to material costs. In absolute dollars, Greensboro spent $45,687 and Cleveland $43,140 for material over the two year period, while Cincinnati spent only $19,112, Philadephia $20,398, and Hot Springs $24,360.

Subcontractor mark-ups were reported for three programs--San Francisco, Boston, and Philadelphia. Other programs used subcontractors to a limited extent but did not differentiate their costs from program staff and material costs. As discussed in Chapter 7, the industry standard for overhead and profit mark-up is 25 percent of labor, fringes, and materials. Exhibits 8-1 and 8-2 show the affect of these mark-ups on maintenance and repair service costs. Nearly $25,000 was added to the San Francisco basic maintenance and repair costs due to mark-ups.

The various expenditure patterns for basic maintenance and repair services are affected by two factors--program strategy and performance. Differences in strategy are best illustrated by Greensboro, Cincinnati, and Philadelphia. While Greensboro chose to spend a majority of its basic service costs on materials, Cincinnati and Philadelphia opted to devote over 60 percent of their basic service costs to labor. By following such a strategy Greensboro repair staff concentrate on home deficiencies requiring little time to correct. By carefully scheduling and coordinating work, numerous small jobs could be completed with expenditures principally for materials rather than labor. Cincinnati and Philadelphia chose to emphasize labor over material costs. By concentrating on minor, yet labor intensive job repairs, these sites were able to minimize their material costs.

A second explanation of expenditure patterns is program performance. Both Philadelphia and Cincinnati operated in target areas requiring considerable transportation time. The Price Hill neighborhood target area in Cincinnati was located across town from the agency office. The Philadelphia program serviced clients throughout the city. Hence, some of the high labor costs may be attributed to time spent in transit. Performance also relates to a program's capacity to spend its available resources on repair work. Hot Springs had low labor and material expenditures, an indication that the program may have experienced problems spending its repair resources, irrespective of any strategy.

When program fringe benefits are deleted from basic maintenance and repair services, the resulting costs should approximate the repair cost totals obtained from work order data. This comparison, which serves to check the accuracy of the two data sets, is presented in the Appendix.

When work order and cost report maintenance and repair data are compared on a site by site basis wide discrepancies are found for all seven programs. These discrepancies are particularly pronounced during the second Demonstration year and are most often attributable to variances among labor cost data. The amounts of the discrepancy between cost report basic services and work order labor and materials are consisently high: in Year Two, $10,000 in Boston and Greensboro, $15,000 in San Francisco, $20,000 in Hot Springs and Cincinnati, and $40,000 in Cleveland and Philadelphia.

There are several reasons why the two data sets should have slightly different totals. First, work orders did not record travel time or down time. Labor hours spent in transit or spent purchasing materials were not assigned to individual client repairs. Downtime resulting from scheduling difficulties was also not attributable to individual work order forms. Second, material costs on work orders do not reflect any outstanding program inventories. Several programs chose to purchase frequently used items in bulk quantities to take advantage of per unit cost savings. Work order data only show those materials actually used. Cost report data, conversely, should include all invoiced bulk purchases. These differences in data sets should result in small variations in service costs totalling no more than several thousand dollars. They do not by themselves explain the remaining discrepancy.

A third cause of the differences between work order and cost report data can be attributed to the definition of program year utilized. Work order data were compiled based on program work cycles. These cycles did not always mesh with the formal Demonstration calendar years used in the cost reports. While this definitional problem may result in data set variations on a year to year basis, it does not explain the wide discrepancies that still exist when service data are aggregated for the entire Demonstration.

A more plausible reason for data discrepancy may be linked to the actual process for budgeting and cost accounting. Program cost reports generally appear to be comparable with the original program budgets proposed in the Agency Plans of Service. This similarity should be expected; significant deviations from budget projections are likely to be interpreted by the Administrative Contractor and HUD as problems in peformance. Cost reports may have been tailored to reflect budget projections.

Since cost accounting was beyond the scope of this evaluation, it is difficult to definitively determine why the two data sets are so different. While data from each source is useful in explaining overall trends and costs, the wide variation remains unexplained and troubling.

8.2 Maintenance and Repair Related Service Costs

A second level of maintenance and repair costs expands upon the definition of basic service costs. Two additional repair related costs are included: the transportation costs that pertain to repair work and the cost of equipment not attributable to a single work order.

While transportation and equipment costs generally averaged less than 10 percent of basic repair service costs, there was considerable variation among the seven programs. The $1,874 spent by Hot Springs during the two year Demonstration represented only 3 percent of basic maintenance and repair costs, the lowest amount among the seven sites. By contrast, the $13,041 expended by Cleveland was 13 percent of basic repair costs, the highest among the programs. Equipment and transportation costs were not distinguishable in San Francisco, since subcontractors covered such costs from their overhead mark-ups.

Common expenditures were gasoline and mileage allowances, vehicle maintenance costs, and vehicle depreciation allowances. Cleveland and Philadelphia both incurred substantial transportation costs relative to other programs. Conversely, Greensboro and Boston targeted most of their repair related expenses to equipment purchases and rentals.*

Reasons for spending patterns for transportation and equipment relate to program strategy, performance in delivering repair services, and available in-kind support. Hot Springs received a repair truck as in-kind support from the County. Several programs

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*Greensboro's transportation costs were included in a general "other direct costs" category and could not be separated for analysis.

required repair staff to furnish their own transportation, and simply reimbursed staff for mileage incurred. Well established housing agencies like Cincinnati's PWC and Cleveland's LHC were able to provide access to tools and equipment utilized by other agency programs.

Total repair related maintenance and repair related costs are summarized in Exhibit 8-3. The addition of the other related repair expenses described above does not alter the comparative rankings of the seven sites. San Francisco continues to lead all other programs in total repair-related service costs incurred while Hot Springs continues to lag far behind in expenditures.

8.3 The Cost of Other Non-Repair Services

A third level of home maintenance program services includes several activities not directly related to maintenance and repair. These activities have been functionally defined in the cost reports as inspections, referral assistance, and service support. The role of inspections and referrals as services for elderly cilents were documented in Chapter 3. The importance of service support is less obvious. According to the Agency Program Manual prepared for the participating Demonstration sites, service support consists of four key activities which facilitate the provision of maintenance and repair services: community relations, staff training, repair scheduling, and quality control.* While these activities by themselves do not constitute direct services to clients, they are essential to effective delivery of repair service.

Over the course of the two year Demonstration the programs spent an average $35,845 on the three non-repair services. As shown in Exhibit 8-3 these costs were fairly evenly distributed between the three activities: $10,062 for inspections, $12,091 for referral assistance, and $12,817 for service support. The variation in non-repair service costs incurred between programs was surprisingly

*Boeing Aerospace, Agency Program Manual: Home Repair Demonstration for the Eldelry, 1980.

Exhibit 8-3

Total Cost of Service Delivery
Combined Year 1 and Year 2
(in dollars ($))

COSTS	CINCINNATI	CLEVELAND	BOSTON	GREENSBORO
Total Maintenance and Repair (Labor, Materials, Fringe)	$91,404	$101,696	$95,543*	$81,299
Other Repair Related (Transportation, Equipment, etc.)	6,433	13,041	8,374	8,994
SUBTOTAL MAINTENANCE AND REPAIR RELATED	97,837	114,737	103,917	90,293
Total Inspection	13,810	11,804	2,485	2,722
Total Referral	8,016	3,690	8,248	36,689
Total Service Support	18,744	24,715	6,490	268
SUBTOTAL NONREPAIR SERVICE	40,570	40,209	17,223	39,679
Total Project Management	37,639	22,989	27,122	40,406
Overhead	8,338	11,794	28,990	--b
Total Project Planning and Development	3,801	4,763	5,803	3,330
Total Project Intake	5,409	5,604	4,937	8,1988
SUBTOTAL ADMINISTRATIVE	55,187	45,150	66,852	51,934
TOTAL COST OF SERVICE DELIVERY	193,594	200,096	187,992	181,906

Exhibit 8-3

(continued)

COSTS	HOT SPRINGS	PHILADELPHIA	SAN FRANCISCO	ALL SITES
Total Maintenance and Repair (Labor, Materials, Fringe)	$62,811	$99,559*	$123,663*	$93,711
Other Repair Related (Transportation, Equipment, etc.)	1,874	6,547	--	--
SUBTOTAL MAINTENANCE AND REPAIR RELATED	64,685	106,106	123,663	97,320
Total Inspection	a	11,719	23,081	10,062[d]
Total Referral	a	11,322	4,578	12,091[d]
Total Service Support	a	17,722	8,964	12,817[d]
SUBTOTAL NONREPAIR SERVICE	a	40,762	36,623	35,845[d]
Total Project Management	39,820[c]	32,705	18,697	29,926[d]
Overhead	17,279	12,980	3,864	11,892
Total Project Planning and Development	a	3,531	4,410	4,273[d]
Total Project Intake	a	2,380	7,174	5,617[d]
SUBTOTAL ADMINISTRATIVE	58,643	51,596	34,145	51,930
TOTAL COST OF SERVICE DELIVERY	129,585	198,465	194,431	183,724

*Includes subcontractor markup at 25%.

[a]Hot Springs data was not available in disaggregate form for Year 1.

[b]No overhead costs reported.

[c]Year 1 administrative labor costs not differentiated by function. Project Director -- $11,599, Secretary -- $7,624 in Year 1.

[d]Excludes Hot Springs.

Source: Elderly Home Maintenance Demonstration Cost Reports: June 1981, June 1982, except where otherwise noted.

as the cost data show, spent considerably less than average on referral assistance and service support. The lower expenditures for service support in San Francisco can be attributed to the use of subcontractors, hence relieving much of the burden of staff training, quality control, and repair scheduling. Boston was consistently below average in costs incurred for the three non-repair service activities, suggesting that these services were not program priorities. By contrast, Philadelphia was consistently above the mean in costs incurred for inspections, referrals, and service support, suggesting that non-repair services were perceived to be important program priorities.

8.4 The Costs of Program Administration

When total service costs (maintenance and repair activities, repair related costs, and non-repair service costs) are subtracted from the total amount expended, the remainder represents the amount attributable to program administration. Administration, as defined in Chapter 3, consists of program management and overhead costs as well as start-up costs for project planning and development and client intake. The cost of program administration is traditionally regarded as an important indicator of program efficiency; resources devoted to administration are not available for service delivery. Larger ratios of service to administrative costs are typically held in high regard.

Based on the above definition of program administration 28 percent of the total funds expended by the Demonstration were devoted to administrative activities. The proportion of spending devoted to administration by the seven programs is presented in Exhibit 8-4. Administrative costs averaged $51,930 across all programs. The variation ranged from a high of $66,852 in Boston to a low of $34,145 in San Francisco. Boston allocated 36 percent of its total program resources to administration while San Francisco was able to limit its administrative costs to 18 percent. Data for Hot Springs are difficult to interpret since its administrative costs also include labor for non-repair service activities.

slight, with the single exception of Boston. While the other five reporting sites averaged $39,569, Boston expended only $17,722 for inspections, referral, and service support.*

There were pronounced differences in the ways the programs divided their spending between the three non-repair activities. Boston and Greensboro expended only meager program labor dollars for inspections, while San Francisco paid two former HUD FHA appraisers consultant fees totalling $23,081. While Cleveland and San Francisco respectively spent $3,690 and $4,578 on referral assistance, Greensboro reported expenditures of $36,689. Service support likewise generated varied expenditure patterns ranging from Cleveland's $24,715 to Greensboro's meager $268.

The extreme expenditure patterns reported by Greensboro should be interpreted with caution. The $36,689 for referral assistance reflects procedures which pro-rated a portion of the program coordinator's salary for referral services, according to the APS approved budget. The low $268 figure for service support reflects a narrow interpretation of what constitutes service support. Much of the support-related cost are subsumed under the $40,406 project management expenses. These differences in interpreting the seven basic project function categories may cloud the comparative usefulness of the Greensboro data.

The wide disparity among programs in the way they allocate non-repair service non-repair service costs reflected accounting strategies as well as program goals and priorities. Cleveland's low referral expenditures reflects the program's strategy to limit referral assistance primarily to the enrollment period and is balanced by above average expenditures for service support activities. San Francisco chose to devote considerable resources to inspections but,

*Hot Springs was not broken down by the activity functions used by the other programs in Year One.

Exhibit 8-4

Distribution of Costs Among Program Functions
Combined Year 1 and Year 2

	CINCINNATI	CLEVELAND	BOSTON	GREENSBORO
Maintenance and Repair Related Costs	50.5%	57.3%	55.3%	49.6%
Other Service Costs (Inspection, Referral, Service Support)	21.0	20.1	9.2	21.8
Administrative Costs	28.5	22.6	35.5	28.6
TOTAL	100.0%	100.0%	100.0%	100.0%
	HOT SPRINGS	PHILADELPHIA	SAN FRANCISCO	ALL SITES
Maintenance and Repair Related Costs	49.9%	53.5%	63.6%	53.0%
Other Service Costs (Inspection, Referral, Service Support)	4.8	20.5	18.8	19.0
Administrative Costs	45.3	26.0	17.6	28.0
TOTAL	100.0%	100.0%	100.0%	100.0%

Source: Elderly Home Maintenance Demonstration Cost Reports: June 1981, June 1982, except where otherwise noted.

A majority of administrative expenses are accounted for by program management costs. Across the six sites with useful data the average two year expenditure on management was $29,926. Costs incurred for program management were highest in Greensboro, $40,046, and Cincinnati, $37,639. By contrast, the lowest expenditures for management were found in San Francisco, $18,679, and Cleveland, $22,989. Reasons for this variation in management costs differ from site to site. In San Francisco, program management was simplified by the exclusive use of subcontractors. Time consuming issues related the program work crews were eliminated and the resultant savings were prominently reflected by the cost report data. In Cleveland, the project director assumed numerous service provider roles, including inspector and quality controller, hence reducing the real time available for program management billing. In Greensboro, the division of administrative labor among several staff persons most likely contributed to the above average management costs. Greensboro's program organization specified a day to day project administrator, a separate report writer, record keeper, and data compiler, and part-time coordinating project director.

Overhead expenses represented the second most significant component of program administration costs. The two year Demonstration mean for overhead expenses was $11,892. The range of program overhead costs reflect the differing roles of the sponsoring parent agencies. Greensboro records no overhead expenses during the Demonstration, suggesting that such costs were reallocated to other budget categories or absorbed by the Housing Authority. The San Francisco program's low two year overhead costs, $3,864, may be attributable to the use of subcontractors as well as the ability of HCI to absorb Demonstration overhead expenses. Conversely, Boston spent $28,990 on overhead, primarily to pay for bookkeeping, payroll, and audit assistance. Similar expenses helped to raise overhead expenses in Hot Springs to $17,279. The need to purchase accounting assistance illustrates the important impact parent agencies can have in controlling administrative costs. The remaining five sites all utilized the accounting capacity available from their parent agencies and this savings is reflected in their overhead costs.

The definition of administration includes two additional activities which pertain to program start-up--project planning and development and client intake. These activities generally received comparatively low levels of resources; planning and development averaged $4,273 across six sites while the mean client intake cost was $5,617.* The use of the existing PCA social worker network resulted in low intake expenditures, $2,380, in Philadelphia, despite a city-wide target area. San Francisco and Greensboro accumulated above average intake costs due, in part, to early client recruitment problems.

The ratio of maintenance and repair related costs to administrative cost averaged 1:1 across the seven Demonstration sites. This ratio was fairly consistent for all sites except San Francisco. Due to its use of subcontractors, which increased service costs while decreasing administrative costs, San Francisco's ratio of repair related service expenditures to administration costs was 1.7:1. When total service costs, including non-repair services, are compared to administrative expenses, the Demonstration ratio increased to 2.6:1. There was only two noteable variations to this mean. In Boston, the ratio of total service service costs to administration costs was 1.8:1, reflecting that program's high administration totals and low non-repair service costs. In San Francisco, the same ratio was 4.6:1, reflecting the comparatively low administrative costs and high expenditures for maintenance and repair and inspection services.

8.5 A Review of Total Program Expenditures

The total costs of service delivery incurred over the two year Demonstration period are indicative of the ability of programs to expend their resources in a timely, efficient manner. High expenditure rates do not necessarily correspond to cost effective service

*Excludes Hot Springs.

delivery since costs could pertain to administration as well as service provision. Expenditure rates can suggest the capacity of a program to utilize grant resources. Low expenditure rates may be indicative of organizational deficiencies, while high rates of expenditures may be attributed to an existing capacity to spend available resources.

The total cost of service delivery shown in Exhibit 8-3 are also the aggregate program expenditures for the Demonstration. When total expenditures are compared with $200,000, the average total income available to programs from HUD and the sponsor foundation, the amount of unexpended funds can be computed. As Exhibit 8-3 shows, 95 percent expenditure rates were realized in four of the seven sites: Cleveland, Philadelphia, San Francisco, and Cincinnati. Boston and Greensboro achieved 90 percent expenditure rates. The only program to experience substantial difficulties in expending its allocated funds was Hot Springs. As of May 1, 1982, the Hot Springs program had spent a total of $129,585, only 65 percent of its total available funds. While expenditures were incurred in May, the Hot Springs expenditure rate remained low relative to the other programs, reflecting the organizational problems confronted by the fledgling program during the Demonstration.

Chapter 9

The Attitudes of Program Participants Toward Their Homes and the Home Repair Program

Between May and June, 1982, a survey of the participants of the home repair program was conducted. In all, approximately 650 persons or 71 percent of all clients were interviewed by USR&E staff in order to determine how elderly homeowners feel about their homes and neighborhoods, as well as to identify their opinions about the home repair program and how it has served their needs.* In this chapter, the results of this survey are examined.

Given the large number of clients who were interviewed, we can speak with some assurance about the attitudes of those who participated in the program. However, in generalizing about the opinions of these elderly respondents, it is important to remember that our sample represents a diverse group of households, despite the fact that they share similar age and income characteristics. This is particularly difficult to keep in mind when, as will be seen in the following pages, they respond similarly to a number of survey questions. Nevertheless, USR&E interviewers discovered a varied group; from the elderly black woman confined to a wheelchair and the first floor of deteriorating rowhouse in West Philadelphia to the recently widowed Greensboro matron to an elderly Chinese couple from San Francisco. These people are but a few of those who participated in the Demonstration and shared their views on this program with USR&E interviewers.

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*At least two-thirds of all clients were interviewed in each city, including 91 of 121 clients in Cincinnati, 94 of 141 clients in Cleveland, 98 of 147 clients in Boston, 91 of 126 clients in Hot Springs, 91 of 122 clients in Philadelphia, and 87 of 136 clients in San Francisco.

The chapter is divided into four parts. In Section 8.1, the attitudes of the elderly respondents toward their home environment are discussed. Among the issues addressed are: (1) the satisfaction of the elderly with their homes and neighborhoods; (2) perceptions about housing conditions; (3) major problems the elderly face in keeping their homes; and (4) the importance of living independently. An examination of these issues provides some notion of how the home repair program can assist elderly homeowners and sets the stage for an analysis of client reactions to the home repair program.

In exploring the interaction between client and program, it is useful to examine the effects of the program on the elderly homeowners. Measuring program effects is difficult to do, particularly when one considers that the program may impart psychological, physical, and financial benefits. No attempt is made here to precisely assess the impacts of this program on clients. However, an effort is made to identify in a general way how the program may have improved the quality of life of participants. This is done by examining responses to questions that detect how clients reacted to the program and may have reacted in the absence of the program. These questions are explored in Section 9.2.

In Section 9.3, the satisfaction of program participants with the home repair program is explored. We examine the extent to which clients are satisfied with the work that was done on their homes. In addition, responses to questions about whether clients would recommend the program to others and whether they would participate in the program again are analyzed. Differences in the level of program satisfaction across the sites are also explored.

Finally in the last section of the chapter, the information presented in Section 9.1 through 9.3 is summarized. In addition, some concluding remarks are offered concerning elderly homeowners and the Elderly Home Maintenance Demonstration.

9.1 The Attitudes of Elderly Respondents Toward Their Home Environment

In examining the overall attitudes of the elderly respondents toward their home environment, a number of issues are addressed. How satisfied are the elderly with their homes and neighborhoods? How do they evaluate the condition of their homes? What problems do they experience as homeowners? How important is it for them to maintain an independent lifestyle? An investigation of these questions not only tells us something about the lives of these elderly respondents, but also provides some perspectives on the role of a home repair program in contributing to the elderly's housing satisfaction.

9.1.1. Satisfaction with Home and Neighborhood

As shown in Exhibit 9-1, an overwhelming number of respondents reported that they were satisfied with their homes -- almost 92 percent across all sites. Only at two sites, Cleveland and Hot Springs, did less than 90 percent of all respondents indicate that they were satisfied. The highest levels of satisfaction were found in Boston, San Francisco, and Cincinnati (approximately 97 percent of those surveyed at each site).

The elderly respondents tended to be somewhat less content with their neighborhoods than with their homes, although three-fourths stated that their neighborhoods were in excellent or good condition. Among the sites, there was a great deal more variation in the responses to this question then to the housing satisfaction question. Interestingly, more respondents in the two southern cities expressed neighborhood satisfaction than did those in northeastern cities. As shown in Exhibit 9-2, approximately 92 percent of the Hot Springs respondents and 88 percent of the Greensboro respondents thought highly of their neighborhoods, compared with Philadelphia and Cleveland, where approximately 63 percent of those interviewed stated that their neighborhoods were in good or excellent condition.*

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*It is likely that perception of neighborhoods will vary by geographic target areas. This analysis, however, deals only with aggregate service areas, rather than other political or neighborhood boundaries.

Exhibit 9-1

% OF RESPONDENTS WHO REPORT THEY ARE SATISFIED WITH THEIR HOME. BY CITY.

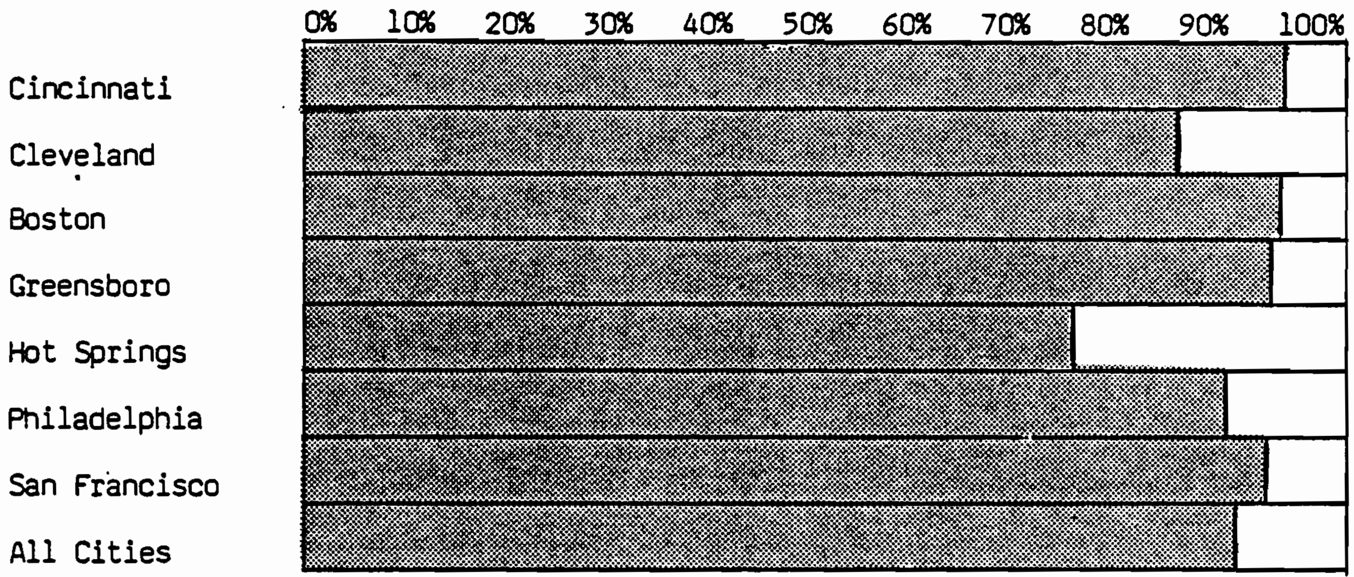
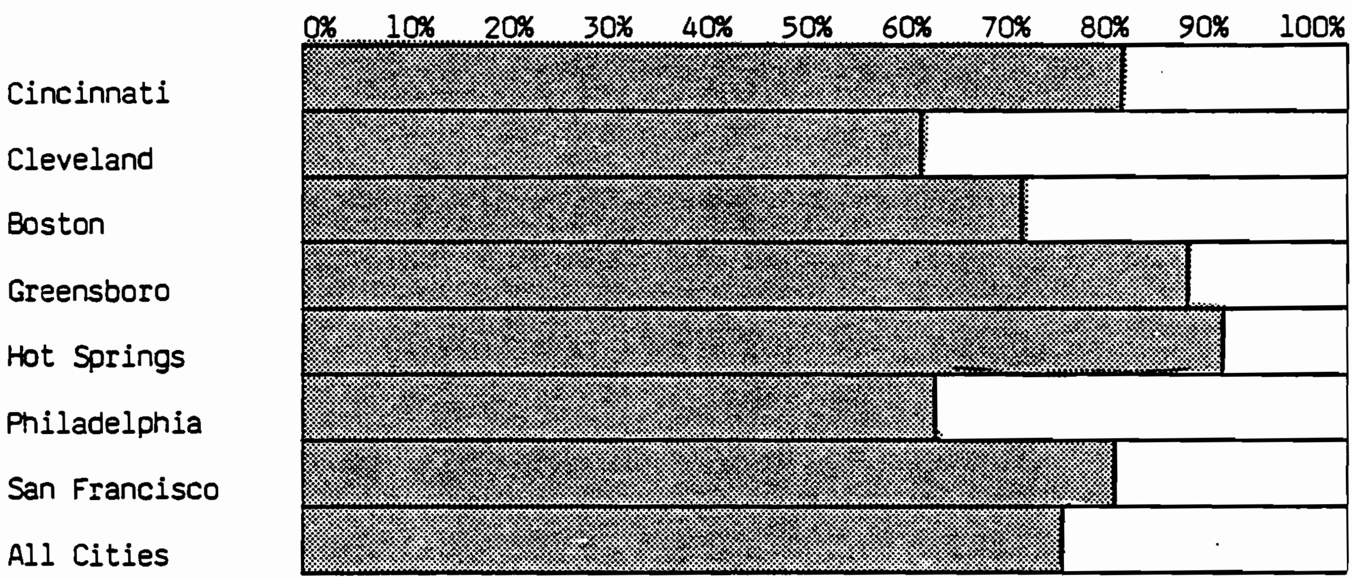


Exhibit 9-2

% OF RESPONDENTS WHO DESCRIBE THEIR NEIGHBORHOOD AS A GOOD OR EXCELLENT PLACE TO LIVE. BY CITY.



Source: Survey of Home Maintenance Program Participants, May - June, 1982.

It might be expected that there would be a strong correlation between housing and neighborhood satisfaction. However, in examining the results of this survey, it can be seen that this is not quite the case. While more Hot Springs program participants reported that their neighborhood was in good condition than respondents at the other sites, it was in this city where the fewest clients reported that they were satisfied with their homes. The reverse was true in most other cities. In Boston, for example, almost all respondents indicated that they liked their homes, while just over two-thirds said that their neighborhood was in good or excellent condition.

There are a number of possible reasons why, overall, the survey results suggest greater housing satisfaction than neighborhood satisfaction. First, when asked whether they liked their homes, it was not unusual to hear the elderly respondents reply that, of course, they were satisfied, they had to be. This type of response suggests that the high level of housing satisfaction that was reported in the survey may be overstated. In fact, some respondents may have said that they were satisfied when, in fact, they believed that their housing choices were limited and they must be content with what they had.

It is also possible that some respondents, particularly those who were homebound, identified more strongly with their houses than with their neighborhoods. Even some of the more mobile elderly may have felt more strongly about a home environment that they controlled and maintained as opposed to a neighborhood environment that may have been less well-maintained and secure.

9.1.2. Perceptions of Housing Conditions

In the course of the interviews, respondents were also asked to rate the condition of their homes. As Exhibit 9-3 shows, more than one-half of the respondents stated that their homes were in good (45.5 percent) or excellent condition (8.9 percent). About 8 percent of respondents reported that their homes were in poor condition. There was some variation in the responses to this question among the sites. More respondents in Philadelphia and Hot Springs

Exhibit 9-3

RATING OF CONDITION OF HOME BY RESPONDENTS. BY CITY.

City / Rating	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Excellent Condition	12.2%	8.5%	11.1%	11.2%	2.2%	2.2%	14.9%	8.9%
Good Condition	58.9	41.5	51.5	54.1	31.8	35.6	43.7	45.5
Fair Condition	24.4	42.6	32.3	32.7	49.5	43.3	35.6	37.1
Poor Condition	4.5	7.4	5.1	2.0	16.5	16.7	5.8	8.2
Don't Know	0	0	0	0	0	2.2	0	.3
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Survey of Home Maintenance Program Participants, May - June, 1982.

gave their homes a poor or fair rating than at any of the other sites -- 60 and 66 percent, respectively. On the other hand, 71 percent of Cincinnati respondents, and 66 percent of Greensboro respondents said that their houses were in good or excellent condition.

Is there a relationship between housing satisfaction and perceptions of housing conditions? In comparing overall responses to these questions, we see that while 92 percent of all respondents said they were satisfied with their homes, only half as many said that their homes were in good or excellent condition. At the same time, we find that those sites where the poorest housing conditions were reported (Philadelphia, Hot Springs, and Cleveland) are the same sites where fewest respondents indicated that they were satisfied with their homes. Thus, there appears to be some correlation between housing satisfaction and conditions although some elderly homeowners are satisfied with houses which they feel are in fair or poor condition.

It is also interesting to compare respondents' reports of housing conditions with housing conditions as perceived by USR&E interviewers. To some extent we expect that the elderly's perceptions about housing conditions would be colored by personal experience and socio-economic status. Nevertheless, based on the observations of USR&E interviewers, survey results are generally on target. That is, the houses in Philadelphia and Hot Springs appeared to be in worse condition than housing units at the other sites.

9.1.3. The Problems of Elderly Homeowners

In questioning elderly program participants about housing conditions and the problems they face as homeowners, we can begin to understand how a home repair program can address some of their needs. Exhibit 9-4 lists a number of possible problems that elderly homeowners might face. Respondents were asked whether any of these problems had affected them.

Exhibit 9-4

PROBLEMS FACED BY ELDERLY HOMEOWNERS.

	% Of Respondents Reporting Specific Problems							
Problems	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
security	9.8%	31.9%	28.3%	8.2%	13.2%	31.9%	14.1%	19.7%
health	19.6	12.8	10.1	6.1	27.5	33.0	26.7	19.0
home maintenance and repairs	48.9	51.1	39.4	35.7	53.8	49.5	58.1	47.8
increasing housing costs	50.0	45.7	34.3	43.9	59.3	52.7	32.6	45.5
cleaning house	6.5	10.6	6.1	8.2	18.0	13.3	20.9	11.7
other	4.3	0.0	4.0	2.0	4.5	0.0	1.2	2.3

Source: Survey of Elderly Home Maintenance Program participants, May - June, 1982.

Overall, the problem reported most frequently by respondents was maintenance and repair of the home (noted by 47 percent of those surveyed.) This was followed closely by rising housing costs -- mentioned by 45 percent of all respondents. Lack of security and poor health were each reported as problems by 19 percent of those interviewed.

In examining the responses of homeowners in each city, we see that maintenance and repair problems were mentioned most frequently in Cleveland, Boston, and San Francisco, while at the remaining increasing housing costs were reported most often. It should be noted that, on average, program participants in San Francisco, Boston, and Cleveland had higher incomes than clients at the other sites. Thus, we would expect that rising housing costs would not be as much of a problem for respondents in these three cities.

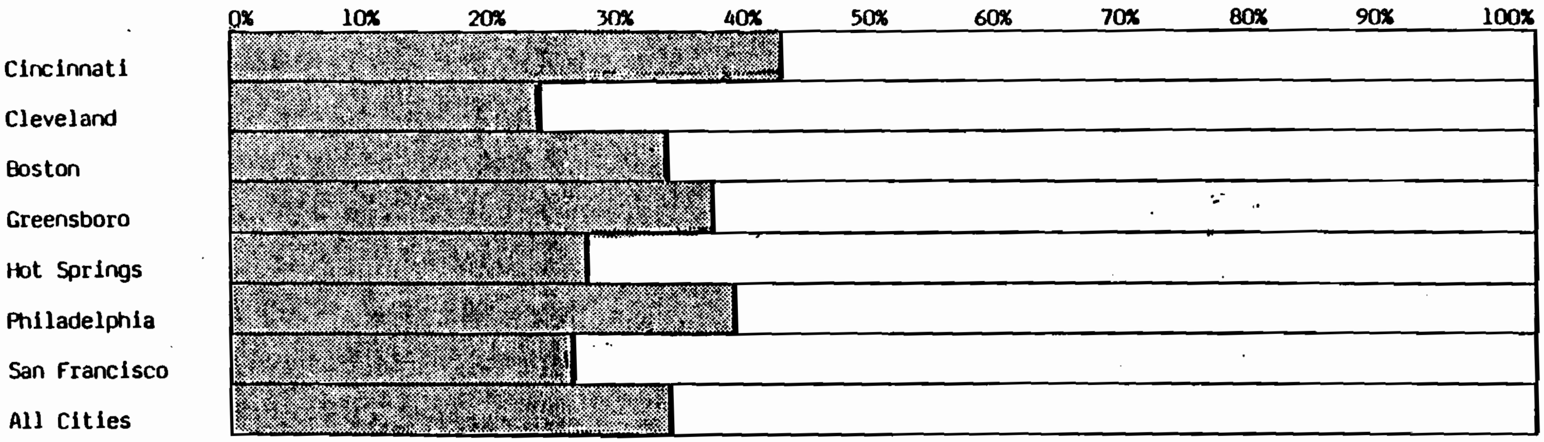
As we might also expect, security-related problems were more prevalent among clients in older, urban areas such as Boston, Cleveland, and Philadelphia. Approximately 32 percent of Philadelphia and Cleveland respondents, and 28 percent of respondents in Boston cited inadequate security as a major problem, compared with 8 percent of the Greensboro clients and 13 percent of the Hot Springs clients. Health problems were also cited by one-third of Philadelphia respondents. This is not surprising either since the Philadelphia home repair program was targeted to the infirm.

One reason why home maintenance is seen as a problem by the elderly is that, for a variety of reasons, they may be leery of hiring private contractors. Almost 35 percent of those interviewed reported that they had experienced problems with private contractors. (See Exhibit 9-5). Among the sites, the number reporting problems ranged from 25 percent of those surveyed in Cleveland to 45 percent in Cincinnati.

When asked specifically about the types of problems they had experienced, respondents most frequently noted that private contractors overcharged them for work they had done. Respondents also

Exhibit 9-5

% OF RESPONDENTS REPORTING THAT THEY HAVE HAD PROBLEMS USING PRIVATE CONTRACTORS TO MAKE REPAIRS ON THEIR HOMES, BY CITY.



TYPES OF PROBLEMS REPORTED BY ELDERLY RESPONDENTS ACROSS ALL CITIES

PROBLEM	% OF PROBLEMS THAT WERE REPORTED
1. Contractors too expensive.	38.0
2. Contractors not qualified to do the work.	23.8
3. Contractors refuse to do work because job is too small.	17.3
4. Respondent mistrusts private contractor.	12.4
5. Can't find private contractor to do home repairs.	2.6
6. Other	5.9
7. Total	100.0

Source: Survey of Home Maintenance Program Participants, May - June, 1982.

noted that some private contractors were not qualified to do the work that they were employed to do (accounting for 24 percent of all problems reported) and that others refused to accept small repair jobs (17 percent of problems reported).

9.1.4. The Importance of Living Independently

Despite the problems that these elderly homeowners face, an overwhelming number wish to remain in their homes. Exhibit 9-6 shows the preferences of elderly homeowners in this regard. Over 90 percent of respondents at each site stated that they wanted to remain in their homes, while between one and three percent said that they wanted to move. The remainder did not feel strongly about staying or moving.

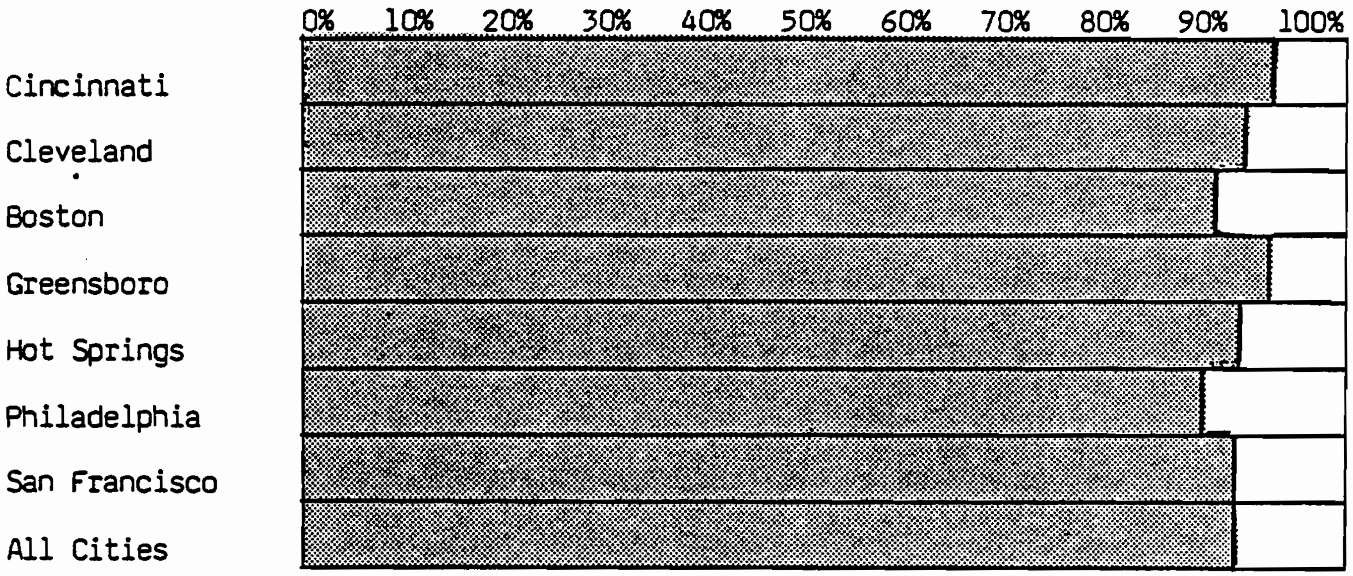
The large percentage of respondents who said that they wanted to stay in their homes can be compared with the survey results discussed earlier where many of those interviewed indicated that they liked their homes, and to a lesser extent, their neighborhoods. Overall, responses to these questions suggest that this is a satisfied group of homeowners. While these elderly respondents are not without their problems, particularly rising housing costs and a decreasing ability to keep their homes in good repair, such problems have not altered their positive attitudes toward their home environment or an independent lifestyle.

9.2 Improving the Quality of Life of Program Participants

As stated in the introduction to this chapter, we can not precisely evaluate the psychological, physical, or financial effects of this program on participants. Through our survey of program clients, however, it is possible to examine in a general way how the program may have contributed to the well-being of the respondents. Respondents were asked a series of questions that detect how clients reacted to the program and how they might have acted in the absence of the program. By examining responses to these questions, we can

Exhibit 9-6

% OF RESPONDENTS REPORTING THAT IT IS IMPORTANT THAT THEY REMAIN IN THEIR HOMES. BY CITY.



Source: Survey of Home Maintenance Program Participants, May - June, 1982.

identify whether the program enriched the lives of these elderly homeowners by bringing about changes that they would not have been able to achieve on their own.

The first question that is examined is whether the elderly homeowner could or would have made repairs if the home repair program had not provided them with this service. Exhibit 9-7 suggests to what extent the respondents could have carried out needed home repairs in the absence of the program. Only 18 percent of those surveyed indicated that they would have undertaken all of the repairs made by the home repair program on their own. Eighty percent said that they would have made none or only some of the repairs. Responses to this question varied somewhat among the Demonstration sites. In Cleveland, Greensboro, Hot Springs, and San Francisco, respondents were somewhat less inclined to make all of the repairs than respondents at the remaining sites. Over 35 percent of clients in Boston, Hot Springs, and Philadelphia said they would not have made any of the repairs.

There are a variety of reasons why homeowners would choose not to make repairs, although as Exhibit 9-8 shows, the most important reason for these households was lack of money. Over 90 percent of respondents who said that they would not undertake all of the repairs gave financial reasons. Some respondents mentioned additional reasons for not making repairs, such as: they couldn't find anyone to do the work (reported by 11.5 percent of respondents who said they would not make all repairs); or poor health prevented them from having the work done (7.2 percent); or having these repairs made was not important to them (4.1 percent).

Responses to this question were fairly consistent among the Demonstration cities. Lack of funds was the principal reason why clients could not make repairs. There was only one city where a reason not to make repairs was mentioned much more frequently than at the other sites. In Cincinnati, over 26 percent of respondents reported that health problems prevented them from making repairs

Exhibit 9-7

THE LEVEL OF CLIENT HOME REPAIR ACTIVITY IN THE ABSENCE OF THE HOME REPAIR PROGRAM. BY CITY.

How Many Repairs Would Made Without The Program?	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Percent of Respondents That Would Make All Repairs	21.7%	14.9%	24.2%	10.2%	13.2%	26.4%	13.8%	17.8%
Percent of Respondents That Would Make Some Repairs	59.8%	61.7%	36.4%	55.1%	47.3%	36.3%	56.3%	50.3%
Percent of Respondents That Would Make No Repairs	17.4%	21.3%	37.4%	31.6%	36.3%	35.2%	28.7%	29.8%
Percent of Respondents That Said Don't Know	1.1%	2.1%	2.0%	3.1%	3.2%	2.2%	1.1%	2.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Survey of Elderly Home Maintenance Program Participants, May - June, 1982.

Exhibit 9-8

REASONS WHY ELDERLY HOMEOWNERS WOULD HAVE MADE NONE OR ONLY SOME OF THE REPAIRS ON THEIR HOMES

(Percent of respondents reporting that they would not have made all the repairs.)

Reasons Not To Make Rep	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	Total
Lack of Money	89.9	96.2	91.7	89.2	93.2	92.3	94.5	92.4
No one to do the work	13.0	14.1	13.9	9.6	14.9	10.8	4.1	11.5
Repairs not Important	10.1	1.3	4.2	4.8	2.7	3.1	2.7	4.1
Health Problems	26.1	7.7	5.6	3.6	6.8	1.5	0.0	7.2

Source: Survey of Elderly Home Maintenace Program Participants, May - June, 1982.

compared with less than 10 percent of respondents reporting this problem in every other city.*

Despite some variation in the responses to these questions, we can see that for the majority of clients, the home repair program filled a need that they could not have addressed on their own. In order to identify in what ways the clients saw an improvement in their living situation, respondents were asked which repairs were most important to them and why were they important. While there was tremendous variation in the responses to both questions, program participants tended to report repairs that added to their security (i.e., locks installed or exterior doors) or improved their physical safety (installation of grab bars in bathroom or stair railings) as the repairs that were most important to them. (See Exhibit 9-9.) To some extent their answers mirror the home repair program objectives which were to increase the physical safety and security of respondents as well as improve the appearance of their homes.

Besides adding to the physical safety and security of these homeowners, the home repair program could potentially lead to a reduction in home repair activity and expenditures or enable homeowners to undertake other (perhaps more cosmetic) repairs. Exhibit 9-10 shows the level of home repair activity conducted by program participants in the year prior to the program and in the year after the program started.** In general, the level of home repair activity dropped substantially in all repair categories. For example, only 13 percent of respondents made exterior repairs in the year after the program started compared with 44 percent in the year

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*The fact that Cincinnati respondents gave poor health as a reason not to make repairs is hard to explain when one considers that respondents in this city reported the fewest serious health problems of all the Demonstration sites. Fifty-four percent of Cincinnati respondents said they had serious health problems, while for the entire sample this figure was 63 percent.

**This includes both major and minor home repairs.

Exhibit 9-9

MOST IMPORTANT TYPES OF REPAIRS PERFORMED BY HOME REPAIR PROGRAM AS REPORTED BY RESPONDENTS. BY CITY.

(Repairs Ranked According to Frequency With Which They Were Reported by Respondents)

All Cities

1. exterior door
2. exterior porches, steps and railings
3. plumbing fixtures
4. interior windows
5. exterior windows
6. miscellaneous interior work

Cincinnati

1. exterior porches, steps and railings
2. plumbing fixtures
3. pipes/drains
4. exterior door
5. gutters/drainspouts
6. windows

Cleveland

1. exterior porches, steps and railings
2. windows
3. plumbing fixtures
4. exterior door
5. pipes/drains
6. electrical outlets

Boston

1. exterior porches, steps and railings
2. windows
3. interior walls
4. interior ceilings
5. exterior docr
6. roofing/flashing

Greensboro

1. exterior door
2. exterior porches, steps and railings
3. miscellaneous interior work
4. plumbing fixtures
5. floors
6. weather-stripping

Hot Springs

1. exterior door
2. plumbing fixtures
3. storm doors
4. exterior porches, steps and railings
5. windows
6. roofing/flashing

Philadelphia

1. exterior door
2. plumbing fixtures
3. basement stairs
4. interior windows
5. electrical switches
6. living room stairs

San Francisco

1. exterior door
2. plumbing fixtures
3. interior windows
4. exterior porches, steps and railings
5. miscellaneous interior work
6. roofing/flashing

Source: Survey of Home Maintenance Program Participants, May - June 1982.

Exhibit 9-10

CLIENT HOME REPAIR ACTIVITY IN THE YEAR BEFORE AND YEAR AFTER THE PROGRAM STARTED. BY REPAIR CATEGORY AND CITY.*

Repair Type	Percent of Clients Making Repairs											
	Cincinnati			Cleveland			Boston			Greensboro		
	Before	After	Change	Before	After	Change	Before	After	Change	Before	After	Change
Exterior	56.2%	16.8%	-39.4%	50.0%	17.0%	-33.0%	35.5%	12.1%	-23.4%	34.7%	12.2%	-22.5%
Interior	39.2	11.2	-28.0	35.3	7.4	-27.9	32.3	9.1	-23.2	21.1	13.3	- 7.8
Plumbing	43.0	10.1	-32.9	57.0	6.4	-50.6	39.8	10.1	-29.7	53.1	8.2	-44.9
Electrical	12.2	1.1	-11.1	19.7	3.2	-16.5	9.7	0	- 9.7	10.9	1.0	- 9.9
Heating	65.6	6.7	-58.9	44.3	2.1	-42.2	55.6	3.0	-52.6	44.9	4.1	-40.8
Average Change For All Repair Categories			-34.1			-34.1			-27.7			-25.1

Repair Type	Percent of Clients Making Repairs											
	Hot Springs			Philadelphia			San Francisco			All Cities		
	Before	After	Change	Before	After	Change	Before	After	Change	Before	After	Change
Exterior	30.2%	11.0%	-19.2%	46.3%	12.2%	-34.1%	53.3%	11.5%	-41.8%	43.7%	13.3%	-30.4%
Interior	22.4	8.8	-13.6	34.7	11.1	-23.6	34.6	10.3	-24.3	31.1	10.0	-21.1
Plumbing	55.2	11.0	-44.2	60.2	13.3	-46.9	56.9	17.2	-39.7	52.7	10.8	-41.6
Electrical	18.4	0	-18.4	21.3	3.3	-18.0	20.7	1.2	-19.5	6.2	1.4	- 4.8
Heating	24.6	4.4	-20.2	59.0	3.3	-55.7	30.4	0	-19.5	46.0	3.4	-42.6
Average Change For All Repair Categories			-23.1			-35.6			-31.2			-28.0

Sources: USR&E Work Order Files and Interviews with Program Participants, May-June 1982.

*Note that data on repairs prior to start of the program is for most or all clients, while data on repairs after program started is based on a sample of program participants.

before the program started. The number of respondents making interior, plumbing, and heating repairs dropped by 21 percent, 42 percent, and 43 percent, respectively. Under the first two of these categories, the number of respondents reporting repair activities after the program started hovered around 10 percent. Approximately 3 percent of those surveyed reported that they had made heating repairs during the same period. For all types of repairs, the average decline in the number of respondents making repairs was 28 percent.

It is noteworthy that there is less variation in repair activity among the sites in the year after the program began than in the year prior to the start of the program. Thus, the program appears to have equalized the amount of repair activity conducted at each of the sites. For example, at Greensboro and Hot Springs, where the number of repairs reported prior to the start of the program was relatively low when compared with other sites, the average decline in the number of clients undertaking repairs was 25 and 23 percent, respectively. In cities with higher levels of pre-program repair activity, notably Cincinnati, Cleveland, and Philadelphia, the number of respondents making repairs dropped by about 35 percent.

Exhibit 9-11 shows how the program may have affected home repair expenditures of participants. Overall, average expenditures per household, including those households where no repairs were made, declined from $506 in the year before the program started to $127 in the year after the program began. Average expenditures declined under every repair category, although the amount of the decrease depended on the size of expenditures prior to the start of the program. For example, exterior repairs which initially constituted the most expensive repair type (an average of $226 per household), experienced the largest decline ($172). By the same token, households spent more for exterior repairs than they did for other types of repairs both before and after the program started. And, electrical repairs were the least costly repair type during both

Exhibit 9-11

YEARLY AVERAGE CLIENT EXPENDITURES FOR HOME REPAIRS BEFORE AND AFTER START OF PROGRAM. (INCLUDING CLIENTS MAKING NO REPAIRS). BY REPAIR CATEGORY AND CITY.

Repair Type	Yearly Average Home Repair Expenditures Per Household											
	Cincinnati			Cleveland			Boston			Greensboro		
	Before	After	Change	Before	After	Change	Before	After	Change	Before	After	Change
Exterior	$ 189	$ 53	$ -136	$ 270	$ 84	$ -186	$ 375	$ 78	$ -297	$ 105	$ 62	$ -43
Interior	71	23	-48	75	7	-68	167	48	-119	34	36	+2
Plumbing	74	25	-49	99	19	-80	113	22	-91	32	33	+1
Electrical	35	0	-35	28	3	-25	24	0	-24	3	0	-3
Heating	81	22	-59	59	$ 9	-50	192	27	-165	49	9	-40
Average Total Expenditures Per Household	456	123	-333	544	122	-422	793	175	-618	230	140	-90

Repair Type	Yearly Average Home Repair Expenditures Per Household											
	Hot Springs			Philadelphia			San Francisco			All Cities		
	Before	After	Change	Before	After	Change	Before	After	Change	Before	After	Change
Exterior	$ 81	$ 12	$ -69	$ 183	$ 39	$ -144	$ 385	$ 47	$ -388	$ 226	$ 54	$ -172
Interior	31	13	-18	86	46	-40	250	53	-197	102	32	-70
Plumbing	33	11	-22	88	37	-51	81	34	-47	74	26	-48
Electrical	11	0	-11	77	4	-73	35	0	-35	29	1	-29
Heating	21	11	-10	158	21	-137	23	0	-23	81	14	-67
Average Total Expenditures Per Household	144	57	-87	592	147	445	844	134	-710	506	127	379

Source: USR&E Work Order Files and Survey of Elderly Home Maintenance Program Participants, May - June, 1982.

Thus, it appears that participants did not choose to concentrate on different types of repairs after the program started, but simply reduced the amount of money they were spending for repairs.

Among the sites, we can see some interesting changes in expenditure levels following the start of the program. As with the level of repair activity, there was a great deal of variation in the home repair expenditures at different sites prior to the program. For instance, respondents in San Francisco and Boston reported average expenditures of about $800 per month while Greensboro and Hot Springs reported expenditures of between $150 and $250. Much of this variation was eliminated once the program began. Five of seven sites had average expenditures of between $125 and $150. Boston was somewhat higher at $175, while in Hot Springs the figure was only $57.

As Exhibit 9-12 shows, home repair expenditures begin to look much different when we examine expenditures based only on those participants who made repairs after the program started. By eliminating those households that made no repairs, we see that average household expenditures actually rose in some repair categories. For instance, the average household expenditure for plumbing repairs rose by $105, while the average heating expenditure rose by $278. On the other hand, the average yearly cost of exterior repairs decreased by $114, and household electrical repairs declined by $103. The cost of interior repairs was constant.

Few patterns emerge when analyzing repair expenditures at each of the Demonstration sites. First, cities where low pre-program expenditures were reported did not necessarily report the lowest post-program expenditures. In the case of Greensboro, a city where respondents reported low home repair expenditures at the start of the Demonstration, the expenditures rose in four of five repair categories. At the same time, the level of expenditures remained relatively low in Hot Springs when compared to the other sites. Second, the percentage increases and decreases in expenditures for

Exhibit 9-12

YEARLY AVERAGE CLIENT EXPENDITURES FOR HOME REPAIRS BEFORE AND AFTER START OF PROGRAM. (AMONG CLIENTS MAKING REPAIRS). BY REPAIR TYPE AND CITY.

Repair Type	Yearly Average Home Repair Expenditures Per Househould											
	Cincinnati			Cleveland			Boston			Greensboro		
	Before	After	Change	Before	After	Change	Before	After	Change	Before	After	Change
Exterior	$ 344	$ 350	$ +6	$ 606	$ 530	$ -76	$1144	$ 707	$ -437	$ 315	$ 552	$ +237
	(n=66)	(n=15)		(n=58)	(n=16)		(n=39)	(n=12)		(n=48)	(n=12)	
Interior	186	269	+83	$ 223	104	-119	536	530	-6	184	273	+89
	(n=46)	(n=9)		(n=47)	(n=7)		(n=38)	(n=9)		(n=26)	(n=13)	
Plumbing	177	255	+78	189	304	+115	290	215	-75	62	400	+338
	(n=50)	(n=9)		(n=67)	(n=6)		(n=48)	(n=10)		(n=75)	(n=8)	
Electrical	327	50	-277	155	92	-63	244	0	-244	26	0	-26
	(n=13)	(n=1)		(n=25)	(n=3)		(n=12)			(n=14)		
Heating	124	405	+281	152	$ 400	+248	$ 365	$ 875	+507	$ 111	$ 308	+197
	(n=77)	(n=6)		(n=50)	(n=2)		(n=61)	(n=3)		(n=65)	(n=4)	

Repair Type	Yearly Average Home Repair Expenditures Per Househould											
	Hot Springs			Philadelphia			San Francisco			All Cities		
	Before	After	Change	Before	After	Change	Before	After	Change	Before	After	Change
Exterior	$ 311	$ 110	$ -201	$ 415	$ 320	$ -95	$ 764	$ 458	$ -306	$ 552	$ 438	$ -114
	(n=31)	(n=10)		(n=53)	(n=11)		(n=65)	(n=10)		(n=360)	(n=86)	
Interior	154	150	-4	268	592	+324	750	508	-244	347	350	+3
	(n=25)	(n=8)		(n=38)	(n=10)		(n=45)	(n=59)		(n=265)	(n=65)	
Plumbing	63	62	-1	150	309	+159	145	227	+82	146	251	+105
	n=64	n=10		(n=70)	(n=12)		(n=75)	(n=15)		(n=449)	(n=870)	
Electrical	64	0	-64	395	133	-262	193	50	-143	200	97	-103
	n=21			(n=25)	(n=3)		(n=24)	(n=1)		(n=134)	(n=9)	
Heating	96	244	+148	275	641	+366	90	0	-90	186	464	+278
	(n=27)	(n=4)		(n=69)	(n=3)		(n=33)			(n=382)	(n=22)	

Source: USR&E Work Order Files and Survey of Elderly Home Maintenance Program Participants, May - June, 1982.

some types of repairs varied significantly among the sites. For example, while in Boston the average yearly expenditures declined by 38 percent ($437) after the program began, it declined by only 12.5 percent ($76) in Cleveland and increased by 43 percent ($237) in Greensboro. Under only one repair category were percentage changes relatively constant -- for those households making heating repairs, there was an increase in expenditures of between 58 to 70 percent at six of seven sites.

There are a number of reasons why household repair expenditures appear to have increased in some repair categories. The rise in the cost of repair materials and labor during this period certainly explains some of these increases. At the same time, these figures are misleading because post-program expenditures most likely reflect the major home repair expenditures of a small number of households. Since the pre-program expenditures reflected both major and minor repairs of a large number of households, many of whom could not afford major repairs, the average cost of repairs appeared to be much lower the year prior to the start of the program in a number of categories.

In fact, what Exhibits 9-11 and 9-12 suggest is that repair activity declined significantly the year after the program started. A few households continue to devote significant financial resources to what were probably major repair projects; while the majority relied primarily on the home repair program to take care of their maintenance needs.

It is possible that the home repair program also affected clients in ways that are not directly related to the program's physical or financial benefits. In visiting the elderly in their homes, the home repair programs staff could begin to assess the total needs of the elderly clients and make referrals to other programs. In this way, the home repair program served to make elderly homeowners aware of the range of services available to them. If the client had a positive experience with the home repair program, he or she might be less reticent to seek out these services. Potentially, some isolated elderly persons could be drawn closer to the community through participating in this program.

While we can not measure the extent to which elderly persons became more active in the community as a result of this program, we can examine whether they were referred to other programs and whether they received additional services. Exhibit 9-13 shows to what extent program participants were referred to other services through the home repair program agencies. Across all sites, 10 percent of participant households were referred to programs that were administered by the agency that sponsored the home repair program. At five of seven sites, 7 percent of the respondents indicated that they had received a referral of this nature. Note that San Francisco's Housing Conservation Institute made substantially more referrals to programs under its jurisdiction -- particularly, a rehabilitation loan program -- than did other agencies.

Overall, 14 percent of respondents were referred to the housing or social service programs administered by other agencies. The rates of referral to other agencies were particularly high in Cincinnati and Boston, 25 and 21 percent of respondents, respectively. In both cities, participants were most often referred to fuel assistance programs.

As Exhibit 9-14 shows, less than 10 percent of participants sought and received an additional service as a result of a home repair program referral. The types of services that were received ranged from major rehabilitation loans to weatherization repairs and housing counseling. The most frequently provided service -- fuel assistance -- was received by approximately 4 percent of all program participants.

More additional services were received by elderly homeowners in Cincinnati, Cleveland, and Boston than at the other sites. Again, fuel assistance ranked as the service most often provided at these sites. It is interesting to note that while 33 percent of San

Exhibit 9-13

% OF RESPONDENTS WHO WERE REFERRED TO OTHER HOUSING AND/OR SOCIAL SERVICES THROUGH THE HOME REPAIR PROGRAM. BY CITY

	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
% of Respondents Offered Other Services by Agency Sponsoring the Home Repair Program	7.6%	7.4%	7.1%	3.1%	7.7%	7.7%	32.6%	10.1%
% of Respondents Referred to Programs of Other Agencies By the Home Repair Program Agency	25.0%	13.8%	21.4%	13.4%	11.1%	4.4%	9.2%	14.2%

Exhibit 9-14

TYPES OF SERVICES RECEIVED BY PROGRAM PARTICIPANTS THROUGH HOME REPAIR PROGRAM REFERRALS

Services	Percent of Respondents Reporting That They Had Received Services							
	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Major Rehab	1.1%	0.0%	0.0%	0.0%	1.1%	1.1%	2.3%	.8%
Weatherization	0.0	0.0	1.0	2.0	2.2	0.0	0.0	.8
Fuel Assistance	10.9	5.3	7.1	0.0	0.0	1.1	2.3	3.8
Housing Counseling	2.2	3.2	1.0	1.1	0.0	0.0	0.0	1.1
Other Housing Assistance	0.0	3.2	2.0	2.0	1.1	0.0	0.0	1.3
Social Services	0.0	0.0	0.0	0.0	0.0	3.3	0.0	.05
Other	0.0	1.1	2.0	0.0	3.3	3.3	0.0	1.4

Source: Survey of Home Maintenance Program Participants, May - June, 1982.

Francisco respondents reported that they had been referred to a new program, less than 5 percent of respondents said that they participated in this program.

We have seen so far in this section how the home repair program may have contributed to the well-being of clients--by reducing home repair expenditures or by enabling them to receive other housing and social services. Other effects of the program are more difficult to assess. For instance, at one site some respondents mentioned that they had grown fond of one member of the program staff. This wasn't the only case where a friendly staff person offered more to the clients than repair services. Another effect that is hard to measure is whether the program affected the ability of any of these elderly to remain in their homes. While we would not expect that the provision of minor home repair services alone would convince a homeowner to stay, it is possible that the program could influence such a decision.

In order to identify whether the program may have influenced the housing choices of clients, respondents were asked directly whether the program had affected their ability to stay in their homes. Their responses to this question are shown in Exhibit 9-15. Thirty-eight percent of respondents reported that the program had affected their ability to remain in their homes.* Those who responded affirmatively to this question were also asked how the program had affected them. (See Exhibit 9-16.) The most frequently reported reasons were: (1) they would not have been able to make the repairs on their own (reported by 24 percent of the sample); and (2) the program helped them financially (20 percent). In Cincinnati and Boston, the most frequently reported response was that repairs would not have been made otherwise (reported by 42 and 37 percent of

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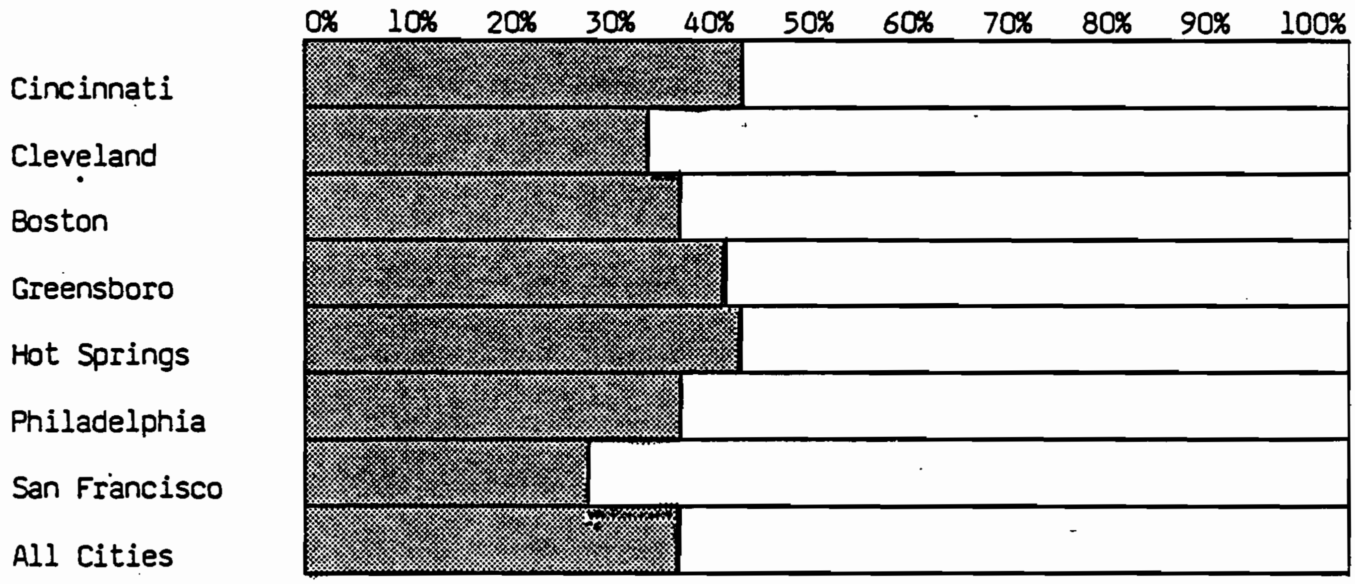
*It should be noted that this figure may overstate the truth of the matter. In fact, interviewers found that many respondents liked the program and were eager to make complementary remarks about the program. Consequently, respondents were likely to answer "yes" to questions of this nature without giving them much thought.

Exhibit 9-15

PERCENT OF RESPONDENTS REPORTING THAT THE PROGRAM HAD AFFECTED THEIR ABILITY TO STAY IN THEIR HOMES. BY CITY.



Source: Survey of Home Maintenance Program Participants, May - June, 1982.

Exhibit 9-16

REASONS WHY THE HOME REPAIR PROGRAM AFFECTED THE ABILITY OF PROGRAM PARTICIPANTS TO REMAIN IN THEIR HOMES. BY CITY.

Reasons	Percent of respondents who stated the program helped them to remain.							
	Cincinnati n=38	Cleveland n=27	Boston n=27	Greensboro n=30	Hot Springs n=34	Philadelphia n=33	San Francisco n=17	Total n=206
Repairs would not get done	42.1	14.8	37.0	20.0	17.6	18.2	11.8	24.3
Saved house	7.9	11.1	14.8	3.3	5.9	15.2	0.0	8.7
House more Comfortable	7.9	18.5	3.7	30.0	23.5	12.1	29.4	17.0
House more Secure	2.6	7.4	7.4	23.3	23.5	6.1	5.9	11.2
Financially Helpful	26.3	25.9	22.2	10.0	14.7	24.2	17.6	20.4
Other	13.2	22.3	14.8	13.4	14.7	24.3	35.3	18.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Survey of Home Maintenance Program Participants, May - June 1982.

the sample, respectively); while in Greensboro, Hot Springs, and San Francisco, the increased comfort of the home was mentioned most often. Twenty-five percent of the respondents in Cleveland and Philadelphia indicated that the program had eased their financial burden and that this affected their ability to remain in their homes.

In summary, the purpose of this section was to explore client reactions to the home repair program and determine whether the quality of life of these individuals may have been affected. Three principal findings have emerged. First, since over 80 percent of the respondents indicated that they could not have made these minor repairs on their own, we may presume that the program contributed in some way to the physical comfort (particularly the safety and security) of these households. Second, the majority of elderly clients were able to significantly reduce their expenditures for home repairs as a result of this program. Third, between 5 and 10 percent of all households received additional housing or social services as a result of their participation in this program. In addition, the program may have had other less tangible effects on clients, such as contributing to their decision to remain in their homes. Given these findings, we can say with some assurance that the program has had a positive effect on the lives of at least some of the participants.

9.3 Client Satisfaction With the Home Repair Program

Thus far we have seen that the majority of those surveyed want to remain in their homes despite a number of housing related problems, and that some of these problems were alleviated through participation in the home repair program. Thus, we would expect that clients would be strongly in favor of this program. In fact, the results of the survey showed that the elderly homeowners were very happy with the home repair program.

In order to determine whether elderly homeowners were satisfied with this program, respondents were asked a number of questions concerning whether they would participate in the program again, if they would recommend the program to others, and whether they were satisfied with the repairs that were made.

Respondents were first asked whether they would pay a $10.00 fee to participate in the program next year. As Exhibit 9-17 shows, 94 percent of all respondents said that if the program were offered, they would participate again. Following this question, respondents were asked whether they would be willing to pay a $40.00 fee to participate. The response to this queston was somewhat less enthusiastic. About two-thirds of the respondents reported that they would pay this amount.

The willingness of respondents to participate in the home repair program at a cost of $40.00 varied somewhat among the sites. At three sites (Boston, Greensboro, and San Francisco), two-thirds of the respondents reported that they would participate at a cost of $40.00 compared with about 80 percent of the respondents in Cincinnati and Cleveland. Respondents in Philadelphia and Hot Springs were less willing to pay $40.00 than respondents in other cities. Approximately 43 percent of the respondents at these two sites said that they would pay the fee. The reluctance of some respondents to pay $40.00 may have had less to do with their feelings about the program than it did with a lack of financial resources. Respondents in Philadelphia and Hot Springs had the lowest average incomes of respondents at all the sites.

In responding to questions concerning their involvement in the program next year, a number of clients who were willing to participate noted that a $40.00 fee was no where near what they would pay a private contractor to perform this work. In order to identify the value that clients placed on these home repairs, we asked them to estimate the cost of the work done by the home repair program. The average cost of repairs per household as reported by all respondents was $208, compared with the actual average cost of repairs reported by sponsoring agencies of $443.00. (See Exhibit 9-18.) Thus, while respondents recognized that the work that had been done was worth more than $40.00, they still undervalued the cost of repairs by a considerable amount. At six of seven sites, the average cost of repairs per household was about two and one-half times greater than what respondents estimated.

Exhibit 9-17

PRECENT OF RESPONDENTS WHO WOULD PAY $10.00 FEE AND $40.00 FEE TO PARTICIPATE IN HOME REPAIR PROGRAM NEXT YEAR

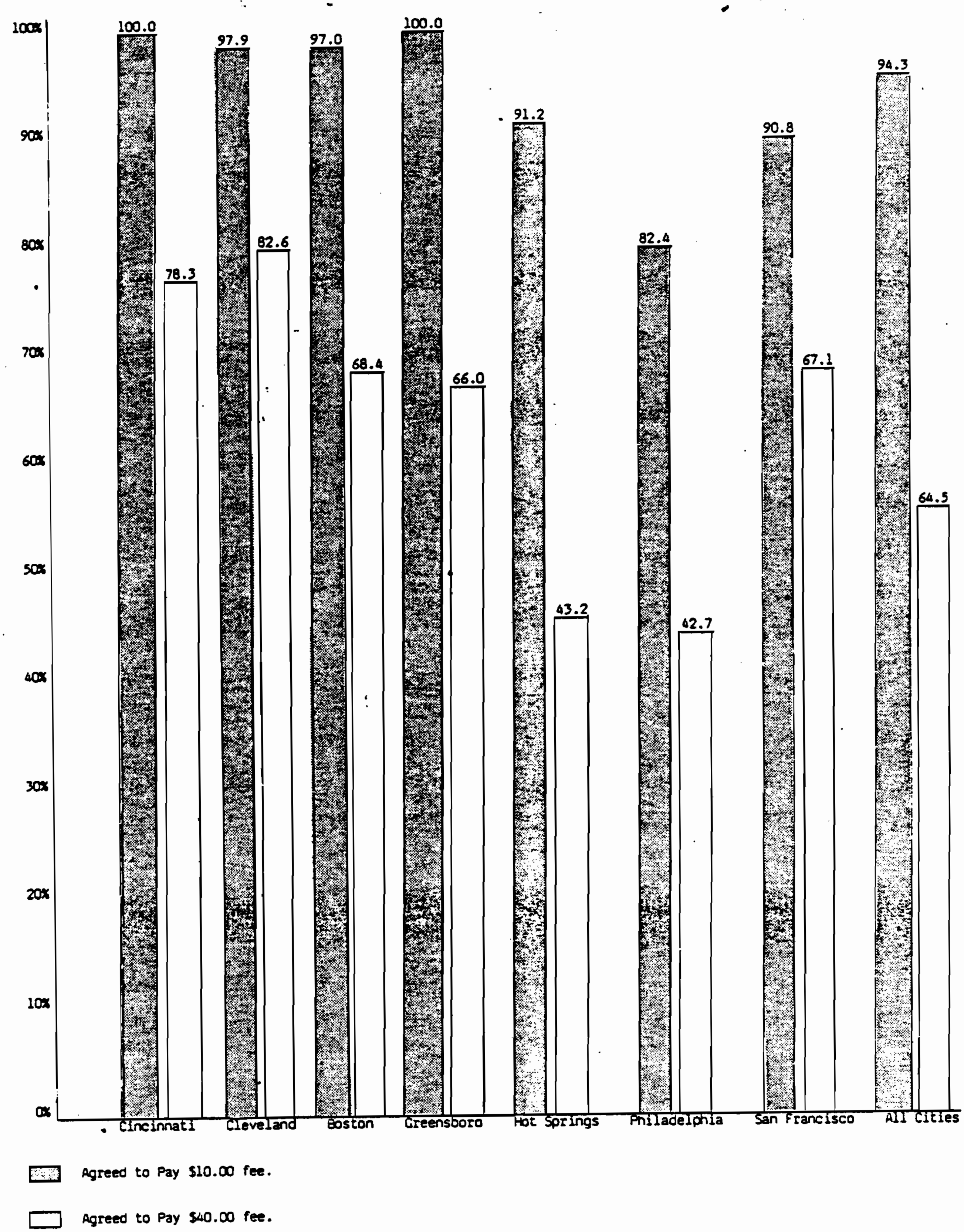
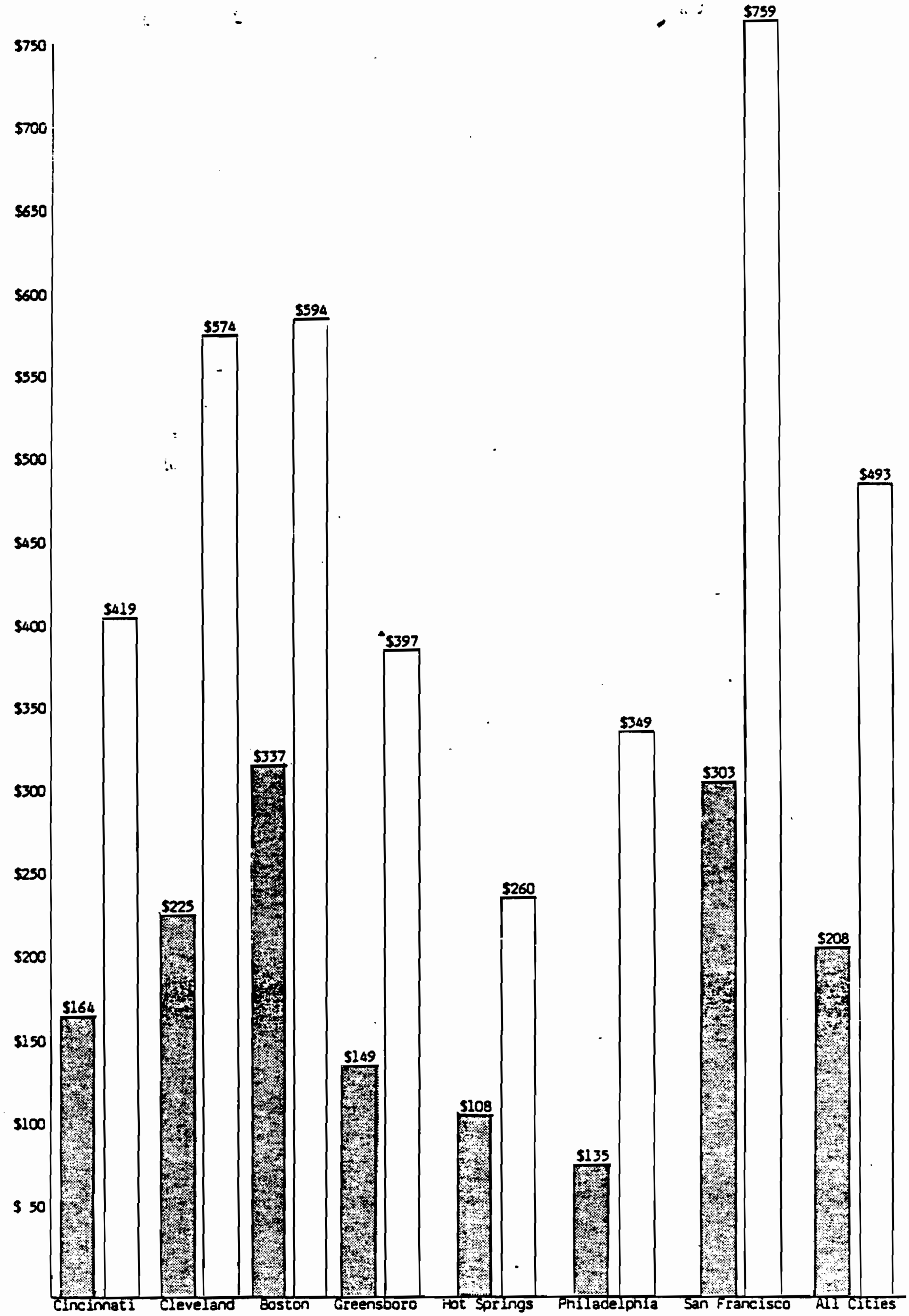


Exhibit 9-18

COMPARISON OF AVERAGE COST OF REPAIRS (MATERIAL AND LABOR) REPORTED BY PROGRAM WITH AVERAGE ESTIMATED COST OF REPAIRS AS REPORTED BY ELDERLY RESPONDENTS. BY CITY.



	Cincinnati	Cleveland	Boston	Greensboro	Hot Springs	Philadelphia	San Francisco	All Cities
Ratio of Average Estimated Elderly Cost to Actual Average Repair Costs	2.5:1	2.5:1	1.7:1	2.6:1	2.4:1	2.6:1	2.5:1	2.4:1

Source: USR&E Work Order Files and Survey of Home Maintenance Program Participants, May - June, 1982.

Clients were also asked whether they would recommend the home repair program to others. Overall, 93 percent of all respondents stated they would strongly recommend the program to other elderly homeowners. (See Exhibit 9-19.) Slightly fewer respondents in Hot Springs and Philadelphia, (88 and 86 percent, respectively), indicated that they would strongly recommend the program than did respondents at the other sites. Thus, somewhat fewer persons appear to be satisfied with the program in Hot Springs and Philadelphia, although an overwhelmling majority were still happy with the program.

One reason why some clients may have been dissatisfied with the program is that they were not pleased with the repairs that were made on their homes. As shown in Exhibit 9-20 over 90 percent of all respondents expressed satisfaction with the repairs made. Approximately 8 percent said they were dissatisfied -- primarily because they though that the workmanship was poor. Philadelphia and San Francisco were the only sites where less than 90 percent of the respondents were satisfied with the repairs made to their homes. In Philadelphia, 17.6 percent said they were dissatisfied, while 12.6 percent of San Francisco respondents were dissatisfied. In both cases, the primary reason was again poor workmanship although a few dissatisfied Philadelphia clients complained that repairs were incomplete or were not made when scheduled.

Overall, program satisfaction runs high at all seven Demonstration sites. Clients were willing to participate in the program again and to recommend the program to others. The only city where more than a few clients were dissatisfied was Philadelphia. But even at that site, a majority of those interviewed expressed satisfaction with the program.

9.4 Conclusion

If we were to assess the Elderly Home Maintenance Demonstration based solely on the opinions of elderly clients, it would be rated an unequivocal success. In the course of this chapter, we have seen that clients are overwhelmingly satisfied with the home repair program. Over 90 percent of those interviewed reported that they

Exhibit 9-19

% OF RESPONDENTS REPORTING THAT THEY WOULD STRONGLY RECOMMEND THE HOME REPAIR PROGRAM TO OTHER HOMEOWNERS. BY CITY.

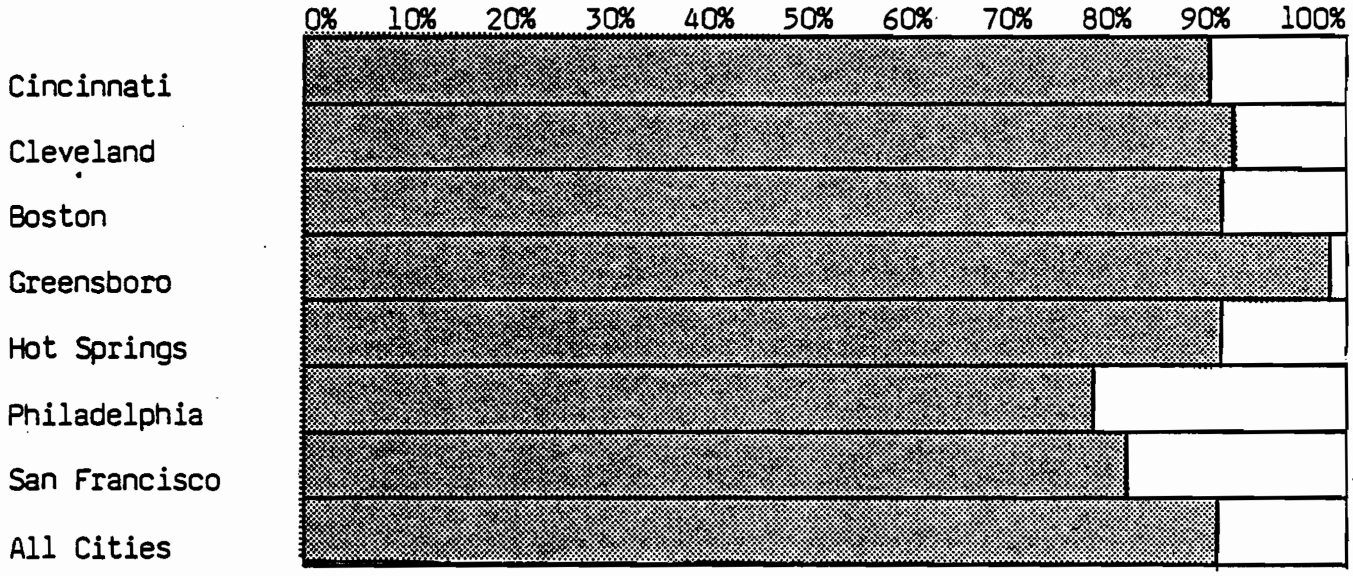
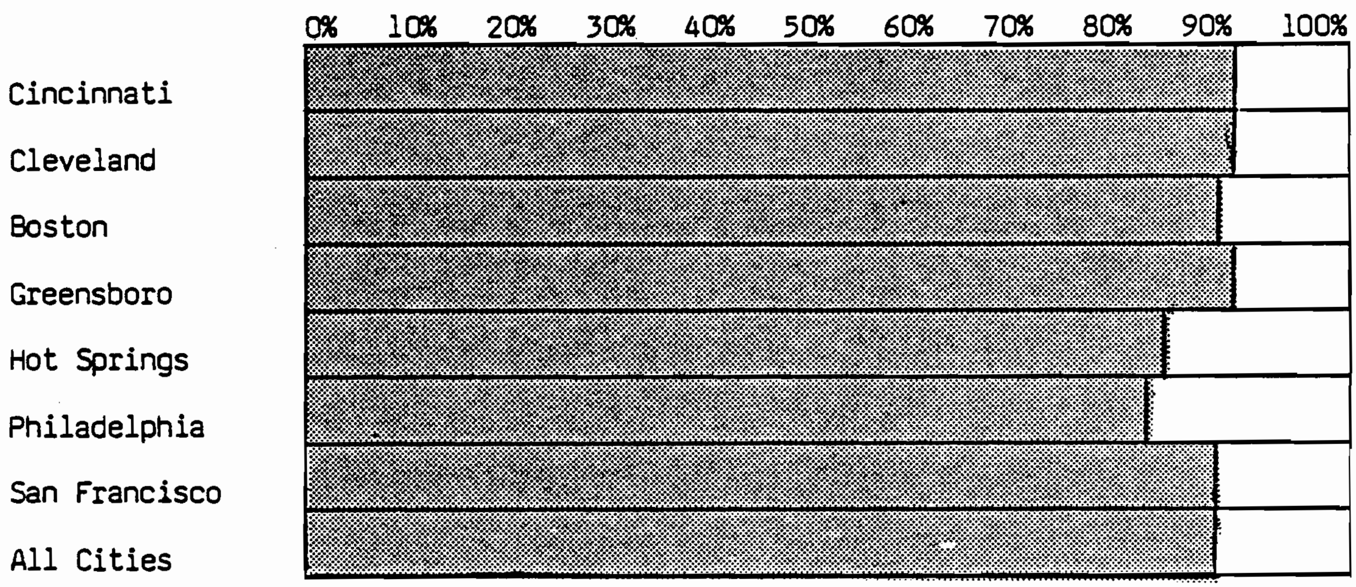


Exhibit 9-20

% OF RESPONDENTS REPORTING THAT THEY WERE SATISFIED WITH REPAIRS THAT WERE MADE BY THE HOME REPAIR PROGRAM. BY CITY.



Source: Survey of Home Repair Program Participants, May - June 1982.

were happy with the repairs that were made and would recommend the program to other elderly homeowners.

Even more important, however, we have seen that, based on client perceptions about their homes, there is a very real need for a program of this nature. Most respondents said that they did not want to move, despite mixed feelings about the condition of their homes and serious concerns about their declining ability to maintain their homes and keep up with rising housing costs. Since the Demonstration was designed to address all these concerns, one would expect that the program would have a very positive effect on the lives of these elderly homeowners.

In fact, the program appears to have contributed to the well-being of many, if not all, of the program participants. Over 80 percent of those surveyed would not have been able to make repairs were it not for the home repair program. By their accounts, these repairs not only added to their physical comfort but improved their sense of safety and security in the home.

In some cases, the program also alleviated some of the financial strain associated with owning a home. As we saw in Section 9.2, many households spent less of their own money on home repairs after the program started. In addition, a small number of participants obtained additional social or housing services as a result of a referral by home repair program staff.

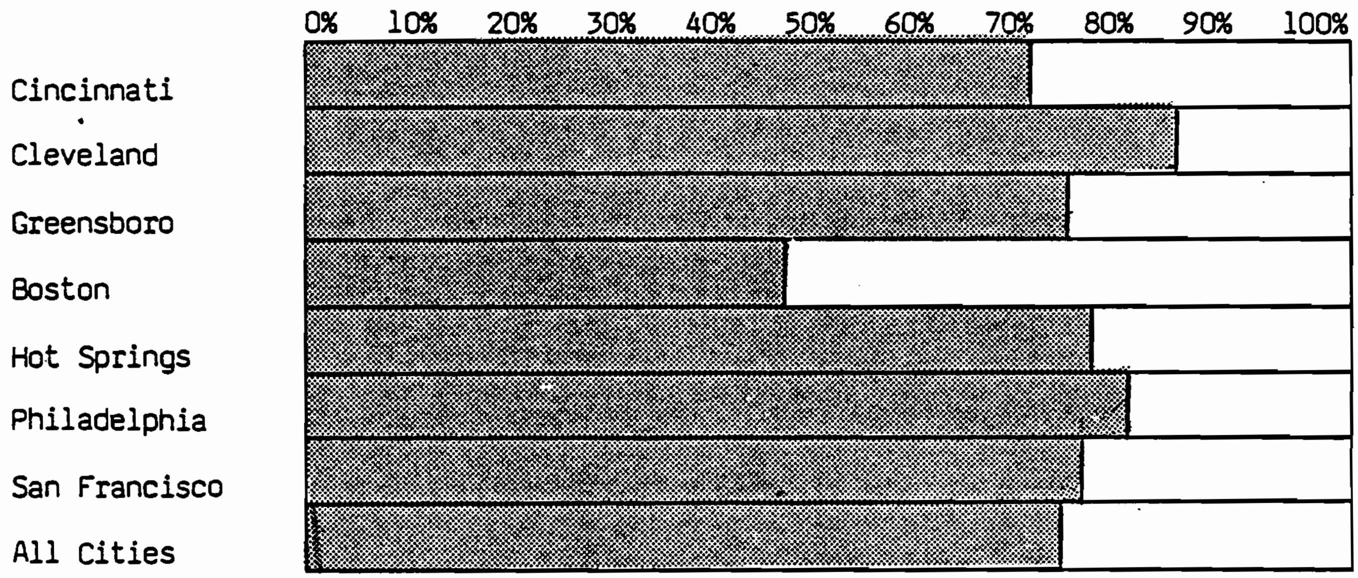
Perhaps because of their enthusiasm for the home repair program, many respondents expressed their concern as to whether the program would continue. As shown in Exhibit 9-21, almost 75 percent of respondents indicated that their homes were in need of additional repairs. Many hoped that the maintenance crew would return next year to correct some of these problems. Respondents were worried however, that the program was in jeopardy.

Clients were asked their opinions about whether the program could be modified to save money and still adequately serve the needs of elderly homeowners. Two program models were presented -- one where clients paid for materials and were provided with free labor

Exhibit 9-21

PERCENT OF CLIENTS REPORTING THAT THEIR HOMES ARE STILL IN NEED OF REPAIRS. BY CITY.

(Includes Major and Minor Repairs)



Source: Survey of Home Maintenance Program Participants, May - June, 1982.

and one where materials were provided free of charge and clients paid for labor. Respondents clearly indicated their preference to have the program continue as is. However, given these two choices, more preferred to pay for materials than labor because, as was noted repeatedly, it was much more difficult to find someone to do the work than it was to find materials.

In concluding these interviews, respondents were asked how the home repair program could be improved. It was difficult to get elderly respondents to make recommendations about the program. A handful of apparently dissatisfied clients said that they should hire more experienced workman or improve the organization of the program. A number of clients also suggested that the program expand the scope of repair services to include interior and exterior painting. Overall, however, respondents indicated that they were well satisfied with the program as it was. Their primary concern was that the program could provide them with minor home repair services in years to come.

10.1.1 Program Performance: Repair Services

Over all sites the average real value of the repair services provided for the two year demonstration is $371 per client. This is only the direct costs of labor and materials. If the costs of intake, inspections, and supervision are included, about $545 worth of services are provided.

When real services are measured by labor and materials only, the sites fall into four groups. Boston provides far and away the largest level of repair services per client ($530). The next highest group is composed of Cleveland and San Francisco with over $400 of services per client, or 15 and 25 percent more than average, respectively. The third group is composed of Cincinnati and Greensboro which provide about average levels of service. Finally, the sites supplying the lowest levels of service are Philadelphia and Hot Springs, providing 30 to 40 percent less than average. See Exhibit 10-1 for a summary of performance measures for the sites.

There appears to be little consistent relationship between the organizational characteristics and the repair strategies of the sites and their performance in terms of the level of repair services provided per client. Both Boston and San Francisco pursued a strategy of providing a small number of large repairs. However, Cleveland, the second highest repair service provider, provided slightly above average numbers of repairs of somewhat below average magnitude. In the third group supplying average levels of services, Greensboro provided the largest number of the smallest repairs, while Cincinnati was average for the seven sites in both the number and magnitude of the repairs. In the group supplying the lowest level of service, Philadelphia provided an average number of small repairs and Hot Springs provided a low volume of repairs which were above average in size.

By most indications there appears to be little relation between the organizational characteristics of the agencies and their performance in delivering services. The Boston agency is a social service agency with considerable experience in housing. It relied primarily

Exhibit 10-1

Summary of Site Performance in Repair Service Delivery. Years 1 and 2 Combined

Site	Repair Strategy		Summary	Real Repair Services Per Client
	Number of Repairs	Magnitude of Individual Repairs	Summary	
Cincinnati	1,122	$39	Middle Strategy: Average number of repairs of average magnitude	$365
Cleveland	1,572	$35	Middle Strategy: Average number of repairs of below average magnitude	$423
Boston	701	$91	Low volume of large repairs	$530
Greensboro	2,620	$22	High volume of small repairs	$366
Hot Springs	588	$48	Low volume of repairs slightly above average in magnitude	$222
Philadelphia	1,208	$29	Average number of small repairs	$255
San Francisco	723	$74	Low volume of large repairs	$465
All Sites	8,497	$40		$371

Sources: Number of Repairs, Exhibit 7-1; Magnitude of Individual Repairs, Constructed from Exhibit 7-17; Real Repairs Per Client, Exhibit 7-19.

on its own repair staff, but also used subcontractors for repairs, especially in the first year. San Francisco and Cleveland are exclusively housing organizations with previous experience in housing rehabilitation, but no experience in providing social services. San Francisco relied solely on subcontractors for its repair work, while Cleveland relied on its own staff with some use of subcontractors in the first year but none in the second.

The two agencies providing average levels of service both have considerable experience in housing, but not in social services. The Greensboro agency is a public housing authority that used its own staff for repairs with some assistance from subcontractors. The Cincinnati agency is a neigbhorhood organization with experience in major rehabilitation and weatherization, and it relied entirely on its own staff for repairs.

There are two characteristics which distinguish the low service providers from the other five. Both had no previous experience in the area of housing. The Philadelphia agency is an area agency on aging and has considerable experience providing social services to the elderly. Finally, the Hot Springs agency had no previous experience since it was set up exclusively for this demonstration. Besides providing low service levels, Hot Springs also had the highest incidence of callbacks to rectify problems with original repair work and the most trouble spending its money over the course of the demonstration.

There is one other distinguishing characteristic of these two sites: they have the poorest housing stock of the seven sites. This is evident from our site visits and from the average value of client homes presented in Chapter 5. However, this should not affect our measure of service delivery because we use the level of inputs to measure repair output; that is, we measure services by the labor and materials used, not by the improvement in the housing stock as a result of the repairs made.

10.1.2 Program Performance: Referrals

Besides repairs, agencies referred clients to other services provided by themselves and by other agencies. However, the referral activity was very limited at all sites. This was apparent from the administrative interviews and from the responses from clients at the sites. In Exhibit 10-2 we present the number of respondents at each site who said they were referred to another service of the agency, another agency, or both. The exhibit also contains amounts each site spent on referral activities based on their cost reports and the average amount spent per client who was referred.

From 12 to almost 50 percent of clients received some referral, but as we noted in Chapter 9, a much smaller percent actually took advantage of the referral. The expenditures per client are modest for San Francisco and Hot Springs, but high for Greensboro and Philadelphia. These figures are probably not a reliable indicator of referral effect. Those for Greensboro are much too high in light evidence. Those for Philadelphia are surprisingly high in light of the fact that most clients were introduced to the program because they were receiving social services from the agency to begin with.

Referral expenditures for Hot Springs are probably low. During Year Two this site had a person full-time for resource development and referrals, and she was especially active in making referrals to the Farmers Home Administration (FmHA) for rehabilitation loans.

10.1.3 Program Performance: Administrative Costs

There are three ways in which program administrative costs are related to performance. The first is the volume of resources devoted to administration and the second is the proportion of program expenditures used for administration. It is tempting to consider administration as being non-productive. But no economic activity can exist without it. Nevertheless, administrative costs do represent resources which cannot be used directly for service provision, and it is reasonable to expect that for any level of service, the

Exhibit 10-2

Summary of Site Performance by Non-Repair Measures.
Years 1 and 2 Combined

Site	Referral Services			Administrative Cost as Percent of Total Program Expenditures
	Total Expenditures	No. of Clients Receiving Services	Expenditures per Client Receiving Services	
Cincinnati	$ 8,016	36	$ 223	28.5%
Cleveland	$ 3,690	30	123	22.6%
Boston	$ 8,248	35	236	35.5%
Greensboro	$36,689	24	1,529	28.6%
Hot Springs	$ 1,446*	24	60	45.3%
Philadelphia	$11,322	15	755	26.0%
San Francisco	$ 4,578	54	85	17.6%
All Sites	$73,989*	216	343	28.0%

* Figures for Hot Springs are calculated by doubling the one-year figure in Exhibit 8-3.

Sources: Total Expenditures, Exhibit 8-3; Number of Clients, USR&E Client Interview File; Administrative Costs as a Percent of Total Program Expenditures, Exhibit 8-4.

less used for administration the better. Finally, for this evaluation the third aspect of interest is the extent to which administrative costs are related to organizational characteristics of the agencies.

The two major components of administrative costs are management and overhead. Two aspects of agencies' organization appear to be related to management costs; the extent to which subcontractors are used and the extent of the division of labor within the organization. For example, San Francisco and Cleveland have the lowest management costs of the seven sites, and in both individuals assumed several responsibilities. In Cleveland the project director enrolled clients and did inspections. In San Francisco the director also helped with enrollments in the first year and did inspections in the second year. In contrast, there was considerable division of labor in Greensboro where there was little sharing of responsibility, and this site has the highest management costs. It appears that at the scale at which the demonstration sites operated, extensive division of labor can increase costs.

A major determinant of the variation in overhead costs appears to be the extent to which facilities and services are shared with parent agencies. For example, overhead costs are high in Boston and Hot Springs because of the high costs of bookkeeping, payroll management and audits. The other sites appear to share these with their parent agencies. In contrast, the San Francisco, Cincinnati, Cleveland, and Greensboro programs share these services with the parent agency (HCI); in addition, it does not require facilities to store equipment, materials and vehicles because of its subcontracting.

Total administrative costs are relatively low in San Francisco and Cleveland where overhead and responsibilities are shared and, in San Francisco, where subcontractors are used. These costs are high in Boston because of high overhead. They are high in Hot Springs because both overhead and management costs are high; overhead cannot be shared because the program is not run by an agency with a wider range of activities, and the high management costs may in part result from inexperience.

10.1.4 Program Performance: Other Considerations

Besides repair services and cost considerations, the demonstration provided other important benefits to its clients. In the client interviews it was apparent that they received significant intangible benefits in the form of reassurance as a result of the inspections and repairs and an increased feeling in security. Several clients stated that it was a great benefit to have someone dependable to call in case of emergency, which suggests that the program was viewed as a form of insurance--we discuss this more below. For many it was the first government subsidy program with which they were ever associated, and the reaction was almost uniformly positive.

Given the magnitude of the repairs done, it is surprising that over a third of the clients interviewed stated that the program affected their ability to remain in their homes. It is doubtful that this is actually the case. About a fourth of those stating the program affected their ability to stay in the home said that the main reason was that the repairs would not have been done otherwise. Since these were minor repairs, it is hard to see why they would affect a client's plans to stay or move. An additional 17 percent stated that the repairs made the house more comfortable, and 20 percent said the repair program was financially helpful. The point that should be made is that although it is doubtful that the program enabled a third of the clients to stay in their homes by any objective measures, this many thought that it did. This is another indication of the significant psychological benefits the elderly received from the program.

10.2 Lessons From the Demonstration

The experience of the seven sites has demonstrated that a successful home repair program for the elderly must have four major characteristics: (1) It must have the elderly's trust; (2) it must serve as the point of contact at which the elderly can obtain a wide range of repair services; (3) the agency should have experience in the delivery of housing related services; and (4) it must provide services at low cost.

A key to the success of a repair program for the elderly is trust. The elderly are often suspicious and frightened, especially when dealing with repair people. They are concerned that they will be cheated, and many have been. The sooner this trust is developed, the sooner elderly clients can be attracted to the program. In the demonstration most of the sites had problems enrolling clients early in the first year. Once they established their credibility and the word got around, attracting clients was not a problem. The one clear exception was Philadelphia. Most of their clients were drawn from the roles of the social service agency, and as a result familiarity and trust were not problems. This is especially important for elderly home owners, many of whom have had little experience with government sponsored service programs.

This can be beneficial to the agency in another way. In the demonstration, clients were very supportive of the agency and the program. There is a minor exception that can be instructive in designing a program. San Francisco clients were somewhat less enthusiastic about the agency than was true at other sites. This is an impression we obtained in the client interviews and is reflected in two ways. San Francisco's clients seemed to be much less familiar with the Housing Conservation Institute's staff; that is, they did not know them by name as often as was the case at other sites. Also, San Francisco was one of the two sites at which clients were least likely to be willing to recommend the program to others.

One reason for this may be the exclusive use of contractors. This results in less contact between the agency staff and the client and in a larger number of different repair people coming into the home if a number of different kinds of repairs are made. However, two characteristics of San Francisco's clientele may weaken this interpretation. The average client is better educated and financially better off than at most other sites, and as a result they might be less dependent on the program.

The second major characteristic which a repair program for the elderly must have is that it serves as one source at which elderly home owners can obtain a wide range of repair services. This in intimately related to the development of trust with potential clients. But the point we wish to make is that a major advantage of this program for the elderly is that the agency serves as a clearinghouse for the various sources of repair services. Instead of each home owner going through a process of trial and error for each type of repair service needed, the agency does this. As a result, significant economies of scale are realized in gathering information about dependable sources of repair, and this is the case whether an agency uses its own repair staff or relies on subcontractors.

A third characteristic for a successful program is experience, at least in the short run. We saw that the one distinguishing feature of the sites providing the lowest levels of service is their lack of previous experience with housing programs. However, we should qualify this by noting that inexperience may increase startup costs more than affect the long-run performance of an agency. The two year duration of the demonstration is probably not long enough to exhaust the significant effects of learning. It is quite likely that the second year does not reflect steady state performance, and inexperienced agencies can obtain the necessary experience with more time.

In the case of Philadelphia, a social service agency, one might expect offsetting benefits in the form of non-repair services. This does not appear to be the case. In Philadelphia, clients were introduced to the program because they received other services, not the reverse. However, social service agencies potentially have fewer outreach problems than pure housing programs, and, as the

State-of-the-Art survey shows, many are getting into this field in order to provide one more among many services needed by their existing clientele.

New organizations set up to provide repair services face additional problems. In this demonstration, Hot Springs is a case in point. They had no organizational history and were not able to share overhead, whether physical plant or managerial services like bookkeeping. New organizations may also face political problems not encountered by existing organizations. The line of responsibility may not be well defined, and their place in the local service network may not be established. For example, the Hot Springs agency suffered from conflict between the board of directors, program staff, and to a much lesser extent the county, over control and policy making for the program. Existing programs, especially housing related, have already fought these battles and defined their turf.

A fourth characteristic for a successful program is low cost. Program clients stated that the major reason they would not have made the repairs themselves was cost. Regardless of the form taken by a program, costs must be kept low. Clients who stated they would opt for a program which provided labor while they paid for materials also added that this is an attractive alternative because labor costs are so high. Note that in this demonstration the subsidy amounted to about three to four percent of client income if only labor and materials are counted, and it was about 12 percent of client income when all demonstration expenditures are included.

It appears that the current economic recession had a direct effect on the availability of repair personnel and program costs. Most sites which relied on their own staff for making repairs had problems recruiting qualified repair people and then losing them to better paying jobs. At some sites agency personnel admitted that they were aided by the high rates of unemployment in the building trades in light of the wages they were able to pay.

In San Francisco the agency used contractors which they had previously hired for housing rehabilitation jobs, and it is likely that these contractors did minor repair work for the agency in hopes that bigger jobs would be forthcoming. Also the repair work saw them through the lean times the construction industry was experiencing.

In better economic times home repair agencies will probably experience greater difficulty obtaining and keeping qualified repair people, and this can be expected both for agencies using their own staff and those hiring subcontractors. In both cases they will have to compete with better paying jobs in the construction industry. As a result, they will have to pay more or find qualified sources of labor that are not attracted to the better paying jobs. One possible source is the use of retired tradesmen. At one site a woman received help finding a repair man through her church. He was a retired plumber and was willing to do repairs for less than plumbers usually charge. This would work for agencies hiring their own staff, and although San Francisco used contractors advantageously, this may not be viable in a strong economy.

10.3 Strategies for Financing Service Delivery

The year to year funding for home maintenance agencies can be generally characterized as tenuous and uncertain. Uncertainty over future funding was identified as a major concern among both Demonstration and State-of-the-Art programs. At least 60 percent of the surveyed Area Agencies on Aging (AAAs) and weatherization minor repair programs report that funding for their next fiscal year is uncertain. Federal budget constraints have resulted in greater demands for fewer available resources. Uncertainty is also heightened by the tendency of non-Demonstration programs to rely on a single source of funding. Approximately 70 percent of the AAA, NHS, and weatherization programs surveyed must rely on one income source.

The experiences of the Demonstration and the findings of the State-of-the-Art survey suggest two policy alternatives for financing home maintenance service delivery: increased reliance on client contributions or fees and the utilization of the private sector to deliver repair services. These alternatives are assessed in Sections 10.3.1. and 10.3.2.

10.3.1 The Role of Clients

The Demonstration generally assumed a passive position regarding client contributions to the program. The only formal Demonstration requirement was the imposition of an annual $10 enrollment fee, designed more as a token client contribution than a serious source of revenue. Collection of the fee was waived by several programs, particularly during the second year. Two programs adapted more aggressive policies toward client contributions. Cincinnati solicited year end contributions from its clients on a voluntary basis, with favorable results. San Francisco encouraged clients to pay the costs of any materials for work which would exceed the program designated per client limit. HCI would then contribute the needed excess labor. In general, however, the Demonstration provided grant assistance to enrolled households.

The elderly households serviced by the Demonstration programs all qualified for eligibility due to their limited income status. Given the limited income status of the client households, how much are clients willing or able to pay for home maintenance services? Will the imposition of additional client charges discourage program participation among elderly households most in need yet least able to incur repair related costs?

Client attitudes suggest that some programs may be able to utilize client contributions or fees to a greater extent than is currently the case. A survey of Demonstration clients found overwhelming support for the original Demonstration design; 94.3 percent of all surveyed clients would continue their participation in a home maintenance program for a $10 fee. A $10 fee is essentially symbolic, since it is only able to generate a small amount of program revenues. When asked if participation would be continued if a flat annual fee of $40 were imposed, 64.5 percent of all interviewed

Demonstration households indicated support for such a fee increase. Support for a $40 fee was popular among all household income groups although, as expected, client households with monthly incomes less than $400 were less likely than other income groups to continue their program participation. Only 56.7 percent of the clients with incomes ranging from $200 to $400 per month agreed with the $40 fee; the level of support dropped to 46.7 percent among clients with monthly household incomes less than $200.

Client support for a higher fee varied between program cities. The most enthusiastic support came from clients in Cleveland (82.6 percent) and Cincinnati (78.3 percent). Conversely, a majority of clients did not support a $40 program fee in Philadelphia (42.2 percent) and Hot Springs (43.2 percent). In fact, nearly one-third of the interviewed clients in Philadelphia expressed outright disapproval of a fee increase of this magnitude. The reluctance of clients in Philadelphia and Hot Springs to embrace a strategy designed to assess larger fees from the recipients of services is consistent with their lower income status and depressed housing values relative to the other Demonstration program sites. Hence, it appears that the imposition of higher client fees should be a localized decision, based on the income characteristics of the resident population. Decisions to rely on clients for a larger proportion of program costs should be substantiated by local surveys.

An alternative approach to establishing a higher flat fee is to require that clients assume responsibility for the costs of either labor or materials. Among the comparable State-of-the-Art programs, the practice of requiring clients to pay the cost of materials appears to be widespread. Many AAA sponsored programs have stretched their limited resources by adopting such a financing strategy. Among Demonstration clients, interest in a program that provided free labor but required the client to pay for the cost of materials was lukewarm. When asked to choose between programs providing only free labor, only free materials, or free labor and materials at a slight fee, most clients (56.7 percent) opted for the latter alternative. A total of 17.6 percent of the clients supported a program that provided free labor but required the client household to cover the costs of materials. This option would undoubtedly have received wider support if the question had been reformatted to eliminate the free labor and free materials response.

Clients readily realized that minor repair work typically entails high labor costs rather than expensive material outlays. The problems involved with securing reliable and affordable labor were also major client concerns. Many clients did recommend that materials be purchased by the program rather than by client households, with the clients then reimbursing the program. These clients expressed concern over how or where to locate necessary materials and believed the program could obtain them at discount prices. The income status of the client household was not related to support for any of these program alternatives.

Several Demonstration programs have considered the use of deferred loans to assist client households undertake large repairs. In San Francisco, the HCI administered deferred loan program was actively integrated into the home maintenance program during the second program year. Client interest in a deferred loan program averaged 43 percent across the Demonstration but varied markedly between cities. Interest was greatest in San Francisco and Cleveland, where respectively 58 percent and 53 percent of the clients expressed interest in the program concept. In contrast, only 28 percent of the clients in Boston and 32 percent of the clients in Greensboro expressed interest in a deferred loan program. Concerns about attaching loan restrictions to the property were the predominant reason for disapproval. Many clients expressed a desire to have their children inherit their home without any costly encumbrances. Support or opposition to a deferred loan program was not affected by the income status of the client household.

10.3.2 The Need for Public Subsidies: For-Profit Alternatives

To what extent can home maintenance service be provided without public subsidy? While the State-of-the-Art survey identified several programs which utilized such nonservice delivery strategies as the use of volunteers, adopting a neighborhood orientation, and soliciting private sector funds, these same programs also required some Federal or State funding to support their service delivery.* One alternative strategy for delivery of home maintenance services is to eliminate all public subsidies and operate programs on a for-profit basis. The provision of services on a for-profit basis has been considered by at least one Demonstration program. Two State-of-the-Art programs have been identified as for-profit home maintenance service providers.

The Missouri Regional 10 Area Agency on Aging contracted with Upjohn Healthcare Services to provide handyman minor home repair services to its four county region. Upjohn, a major pharmaceutical corporation, provides free labor to elderly households using handymen expert in minor carpentry, plumbing, and electrical repairs. Clients are required to pay for materials needed for the repairs and may make additional contributions on a voluntary basis.

During the interviewing of Demonstration clients, a number of households reported receiving minor home repair services from their local Sears and Roebuck stores. In these communities, Sears had developed a line of repair services which were marketed to area residents similar to such other Sears services as appliance repair and servicing, automotive repairs, and insurance sales. Utilizing its well known and respected trade name, the corporation apparently maintains a staff of repair specialists who can be dispatched upon client request.

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*For more information on nonservice approaches to home maintenance service delivery, see SRI, International, <u>Rediscovery Governance: Using Nonservice Approaches to Address Local Social Welfare Problems</u>, April 1981.

There are two levels of for-profit service delivery. One level consists of small scale organizations sponsored by local nonprofit or community organizations to service specific target areas and target populations. Such organizations might be planned and developed by nonprofit staff and subsequently spun-off as for-profit subsidiaries. This type of for-profit organization is likely to have minimal up-front capital and will likely be content to cover overhead, salary, and debt costs. Alternatively, the Sears program represents an attempt by a major corporation to expand its portfolio of service available to consumers. Development capital for such programs is unlikely to constitute a problem. Such programs are designed to utilize existing consumer sales bases, credit lines, and advertising strategies. The potential resources available to infuse into a program financed at this level are considerable.

There are several critical issues which relate to for-profit provision of home maintenance services:

- Can for-profit ventures provide repair services at costs comparable to publicly subsidized programs? Public subsidies could reduce the effective costs of service delivery, therefore negating any advantage of a for-profit delivery strategy. Since the Demonstration had no for-profit model, the San Francisco program must serve as the closest approximation to for-profit, private sector service delivery. While San Francisco repair costs were higher than other sites due to subcontractor expenses, the program was able to maintain a low administrative overhead, which effectively compensated for the high price costs. Given the presense of such firms as Sears in the home repair marketplace, it appears likely that the private sector can deliver repair services at comparable or even more favorable costs.

- A second major requirement for a home maintenance program is an umbrella organization that be tapped for support services, accounting assistance, and overhead efficiencies. Both levels of for-profit programs are likely to possess such an organization. Large scale programs can rely on their corporate sponsor. Smaller programs can rely on their nonprofit benefactor.

- The third key program element identified by this evaluation is trust. Can for-profit programs generate the same degree of trust that have been shown by the nonprofit Demonstration programs? One apparent strength of the nonprofit or public sector approach to service delivery may be the agency goodwill and trust that a home maintenance program can tap. Assuming a favorable performance record, residents are likely to perceive a nonprofit service agency as a nonthreatening source of assistance, hence enhancing their likelihood to trust their home maintenance program. Private enterprise cannot lay claim to benevolent objectives. Consumers must always be wary of the profit motive. On the other hand, private enterprise succeeds because it is able to generate and retain trust in its goods or services. Hence, although for-profit home maintenance ventures may require a greater effort to develop goodwill, they can also be perceived by clients as trustworthy.

- Are for-profit programs able to deliver such nonrepair services as referral assistance? The Demonstration programs were characterized by staff who shared a genuine interest and concern for their clients. Staff were often willing and able to offer referral assistance as necessary. Could the private sector match this concern?

  The San Francisco program, which comes the closest to mirroring a private sector venture, restricted most of its referral efforts to the preparation of an elderly resources guidebook, which was distributed upon enrollment. This level of referral assistance is certainly replicable by any for-profit venture. It is unclear, however, if a for-profit organization could afford to spend considerable monitoring and follow-up of client referrals which would not generate any program income. However, the Demonstration programs were not especially successful in devoting considerable resources to referral assistance.

- What affect does the current recessionary period have on the cost of home maintenance service delivery? Previously we noted the affect of a constricted construction market on the ability of the nonprofit Demonstrations to recruit and retain repair staff. Given better market conditions, it is likely that programs would be forced to pay higher wages to attract necessary repair talent. The use of nonprofit organizations/public sector programs as a strategy to deliver home maintenance programs may prove to be a costly approach in nonrecessionary times.

The preceding discussion of issues suggests that for-profit organizations may be effective alternatives to public subsidized program approaches. The for-profit approach, however, assumes that the client will be able to pay a market price, however discounted, for services received. As the Demonstration clients illustrate, there are many clients who would be unable to afford the costs of any private sector program. These households would be excluded from sharing in program benefits unless some public subsidy were extended to them for repair/maintenance assistance. One likely format for such a subsidy would be in the form of a housing voucher granted to eligible, low income resident households. The cost of administering such a voucher program should be considered when weighing the benefits of a private sector approach to home maintenance provision.

10.4 Implications for Elderly Housing Policy

This concluding section reviews elderly home maintenance programs in the context of elderly housing policy. Three principal themes are addressed:

- Elderly home maintenance programs are important components of long term care strategies which emphasize appropriate placement.
- Elderly home maintenance programs create special problems for provider agencies due to their dual housing and social ser- vice orientation.
- Existing elderly home maintenance programs have very clear limitations that must be accommodated or at least recognized by policy strategists.

The section concludes with closing comments about the intangible aspects of home maintenance programs that have important impacts on the lives of the clients but are not readily quantifiable.

10.4.1 Elderly Home Maintenance Programs and Long-Term Care Policy*

The cost of long-term care for the nation's elderly population is a growing policy concern. Rapidly increasing long-term care costs are related to a number of demographic and medical factors: the number of persons "entering" the aged population is increasing dramatically; the longevity of elderly persons continues to rise; and the number of persons living at high levels of disability is also increasing.

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*This section was prepared by Brian O. Burwell

As long-term care costs rise faster than per capita incomes, fewer persons can afford to pay for long-term care services privately, putting increasing pressure on public resources. From 1965 to 1978, the percent of health care services to the elderly paid by the public sector increased from 30% to 63%.* Nursing home expenditures paid by Medicaid rose 22% per year from 1974 to 1978.** Clearly, the problem of how to finance and deliver long-term care services to the nation's elderly population is going to be a continuing policy issue as the nation's population continues to age.

Central to the delivery of cost-effective long-term care services is the concept of appropriate placement. Appropriate placement simply means that an elderly person is living in a residential environment that matches his or her needs. Otherwise stated, it means that an elderly person lives at the highest level of independence which his or her functioning permits.

Maintaining the highest level of independence possible not only decreases long-term care costs, but promotes individual well-being, and preserves physical health longer. It is within this context of maintaining maximum independence that elderly home maintenance programs can be discussed as a component of long-term care policy.

A commonly cited inefficiency in the long-term care system is that a significant portion of elderly persons are not appropriately placed; that is, they are living in residential environments which exceed their needs. The reasons for inappropriate placements are multifactorial, and the focus of much research. For example, many elderly persons enter nursing homes primarily for financial reasons rather than for medical reasons, simply because they cannot afford needed supportive services through private means. The net effects of inappropriate placements are increased public long-term care expenditures and lower quality of life for these elderly persons,

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*C.R. Fisher, "Differences by Age Groups in Health Care Spending." Health Care Financing Review 1(4): 65-90, Spring 1980.

**HHS, ASPE. Working Papers on Long-Term Care, October 1981.

who often become despondent over their lost independence. Therefore, to the extent that elderly persons abandon their homes and live in more dependent environments simply because the maintenance and repair of their own homes becomes an excessive burden, then the establishment of elderly home maintenance programs is effective long-term care policy.

From a long-term care (rather than housing preservation) perspective, the cost-effectiveness of elderly home maintenance programs depends on two major factors: (1) the cost of providing home maintenance and repair services to elderly homeowners versus the cost of other long-term care services; and (2) the degree to which the provision of these services prevents or delays inappropriate placements in more structured, and costly, long-term care environments.

On the first factor, it is clear that the per unit cost of publicly-subsidized maintenance and repair services is much less than most other long-term care services. The annual cost of providing home maintenance and repair services in the Demonstration was approximately $800.* In comparison, the average annual Medicaid payment to a public assistance client in an Intermediate Care Facility (the lowest level of nursing home care) was about $7,350, in 1979.**

Another possibility is to compare the cost of home maintenance and repair programs with the cost of providing subsidized housing to income-eligible elderly tenants. In USR&E's recently completed study of the costs of HUD Multifamily Housing Programs, the annual

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*Note that this figure was arbitrarily set as a parameter of the Demonstration program. Home maintenance and repair services outside the Demonstration would have different costs depending upon housing conditions and levels of services provided in each program.

**HHS, HCFA, ORD. The Medicare and Medicaid Data Book, 1981. April, 1982. Adjusting for inflation (11.0% in 1981, and 5.0% in 1982), would yield a 1982 cost of $8,556.

subsidy per unit in the Section 202/8 Direct Loan Program for the Elderly and Handicapped was $3,725 in 1979. Clearly, therefore, the public cost of home maintenance and repair programs is far less than the public cost of housing elderly persons in more structured residential settings.

Of course, the above cost comparisons are largely invalid in that they compare dissimilar entities. Nursing home costs cover a broad range of shelter, subsistence, and service costs, while the Section 202 cost figure represents the total capital and operating subsidy for providing elderly housing. However, the comparisons are appropriate to the extent to which the burden of home maintenance and repair is the <u>sole</u> factor forcing an elderly homeowner into a more costly residential setting. If increasing the availability of home maintenance and repair services decreases the demand for more expensive long-term care services, then home maintenance and repair services could be considered cost-effective. Or more simply put, if in providing services to five Demonstration program participants, home maintenance and repair services (at a cost of $800 per client) prevents at least one of those clients from unwillingly moving to a publicly-subsidized Section 202 elderly housing project (at a cost of over $4,000) then the Demonstration was cost-effective from a long-term care perspective.* More realistically, however, it is probably the provision of home maintenance services, <u>in conjunction with the provision of other in-home supportive services</u> (Meals-on-Wheels, homemaker services, transportation services) which prevent or delay placement of elderly persons in more dependent and costly long-term care settings.

Further, the cost-effectiveness of home maintenance and repair programs as alternative long-term care services depends on the

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*Note that this excludes considerations of the effects of housing preservation, and also assumes that the supply of subsidized elderly housing is responsive to demand. Not considered here are the costs associated with development and construction of new elderly housing units to meet any excess demand.

targeting of programs. Cost-effectiveness is increased to the degree that programs are targeted to elderly homeowners who are feeling excessively stressed by the maintenance needs of their homes, and provide services that effectively reduce or eliminate that stress. Programs which provide services indiscriminately to elderly homeowners without consideration of the likelihood of their giving up homeownership due to the burdens of home maintenance needs would likely not be cost-effective from a long-term care policy perspective.

Whether the Demonstration program actually helped its participants to stay in their own homes longer is impossible to ascertain. The vast majority claimed that it definitely helped them keep their homes. On the other hand, the majority said that if the services had not been provided, the principal effect would have been that the repairs would not have been made. The participants were in general so closely attached to their homes that most would probably stay in their homes as long as they could function adequately within them. To really address this question, one would have to conduct a case-control study of comparable elderly populations, one which receives maintenance and repair services, the other not, and see whether gradual placement in more heavily subsidized residential environments differs between the two groups, all other factors remaining constant. A more elaborate study would evaluate home maintenance and repair services as a component within a broad range of in-home services designed to maintain the frail elderly within their own homes. It is noteworthy, for example, that the state of New York is experimenting with making home maintenance services eligible for reimbursement through Medicaid, as part of a nursing home diversion program.*

10.4.2 Service Providers: Housing versus Social Service Agencies

Housing and social service programs have historically been administered by separate, distinct agencies with divergent orientations.

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*New York State Department of Social Services. Nursing Home Without Walls Program. Long Term Home Health Care Program (LTCHHCP), 1981.

With the exception of Title III and Title XX programs and Community Action Agency forays into weatherization and housing rehabilitation, the funds to support housing and social service programs have originated from different source agencies. Housing oriented agencies have sustained their activities by tapping traditional housing program funding sources; likewise, social service agencies have been beholden to the traditional Federal, State, and local sources of social welfare program assistance. Until recently, there have been few opportunities to mesh housing and social service program resources. The Congregate Housing Demonstration Program presented one recent attempt to link housing and social service activities together in a coordinated program to meet elderly needs. The Home Maintenance programs represent yet another opportunity to connect housing and social service activities.

Elderly home maintenance programs present special problems for their administrators. Social service agencies are required to serve as housing providers while housing agencies must also fulfill the role of social service provider. These uncharacteristic roles can present problems and beg the question--what type of agency should administer an elderly home maintenance program?

Several observations about housing and social service agencies as service providers can be drawn from the descriptive data and analyses presented in previous chapters. These observations and their policy implications are summarized below:

- Social service agencies appear to be better positioned to extend referral services at reasonable costs. Yet, the Demonstration cost reports suggest that the social service and housing agencies were similar in their limited allocation of funds to referral assistance. While Philadelphia clients were recipients of numerous other agency program resources, this assistance was typically not the result of the home maintenance program. Referral assistance, however, appeared least developed among the housing oriented programs.

- It is important to understand the context in which agencies perceive home maintenance programs. Several housing oriented Demonstration agencies appeared to perceive their home maintenance program as yet another housing rehabilitation program scaled down to address minor repair needs, an adjunct to a major housing rehabilitation program. Social service agencies, however, may be more likely to perceive home maintenance as one component of a comprehensive long-term care program for elderly clients.

- Some NHS programs have perceived the home maintenance concept as an approach to ensure that targeted neighborhoods remain in sound condition after the formal NHS presence has been dismantled. When NHS programs finish in a neighborhood, a low level home maintenance program could be used to ensure that physical deterioration will not recur.

- Home maintenance programs may be a useful first step in the development of an agency housing capacity. When Philadelphia's PCA entered the Demonstration, it had no previous housing experience. By the end of the second program year the agency had negotiated with the city to administer a major housing rehabilitation CDBG grant program along with the home maintenance program. Just as weatherizaton served as a first step for many Community Action Agencies interested in providing housing services, the home maintenance programs may have served a similar function for AAAs.

- The lack of any significant findings from the Baltimore study on the impact of a home maintenance program on housing conditions suggests that the primary benefits of home maintenance are client rather than housing oriented. The widespread desire of elderly households to remain in their own homes, regardless of actual conditions, suggests that a client oriented approach to home maintenance is warranted.* This supposition is supported by the USR&E administrative interviews with program staff and the 1982 client interviews.

10.4.3 The Limits of Elderly Home Maintenance Programs

The findings of the State-of-the-Art analysis accent two key limitations of home maintenance programs for the elderly: the inability of home maintenance programs in general to address rental housing and the preference for basically sound rather than deteriorated housing stock.** An effort to

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*Richard Curtin, Sandra Newman, and Alexander Chan, Home Repair Services for the Elderly: An Evaluation of Baltimore's Home Maintenance Program, Phase One, HUD Contract No. H-2988.

**The HUD Demonstration excluded rental housing and unsound housing stock from eligibility. However, the SOTA study found that there are few examples of any home maintenance programs that address these issues.

formulate a comprehensive elderly long-term care policy will need to address these limitations.

Rental Housing

Servicing the maintenance and repair needs of elderly tenants was a difficult issue purposely avoided by the Demonstration. Eligibility requirements for the Demonstration specified that all enrolled clients be owner occupants. Rental properties, including rental units within an eligible owner-occupied structure, were considered beyong the scope of the Demonstration. HUD's reluctance to consider rental housing is a reflection of the attitudes and experiences of home maintenance programs throughout the country. The State-of-the-Art survey found no program exclusively directed toward renters and only a handful of programs permitting services to be extended to tenants.

The general reluctance to target home maintenance to renters can be attributed to several factors. First, a majority of elderly households own their homes. Homeownership among elderly households is also prevalent at all income levels. Hence, home maintenance programs directed toward homeowners are targeted to a majority of the elderly population. A second reason for the widespread homeowner bias among programs are the more complex service delivery issues involved with serving tenant households. Approval to undertake repair work must be obtained from the building owner. In many communities, the widespread existence of absentee landlords confounds this approval process. Third, a program directed toward tenant households calls into question the issue of landlord responsibility for apartment maintenance and upkeep. In most instances, landlord/tenant lease agreements assign maintenance responsibilities to the landlord. A public program designed to assume some or all of this responsibility is subject to public debate.

The issue of landlord responsibility is further complicated when elderly tenants are involved. In many communities, elderly tenant rents are depressed below market rates. Elderly households are perceived by many building owners as long term tenants who live moderate lifestyles, are reliable, quiet, unlikely to damage property, and are committed to timely rent payments. For these economic reasons, as well as for altruistic concern for the well-being of elderly households, landlords are often willing to maintain below market rents for their elderly tenants. This practice is particularly widespread in owner-occupied two and three family structures. Program staff reported this informal private sector housing subsidy in the Jamaica Plain neighborhood of Boston, one of the seven Demonstration target areas. Landlords who neglect their maintenance responsibilities but also provide informal rent subsidies to their elderly clients present a difficult dilemma for housing policy strategists. Efforts to convince the landlord to rectify rental unit deficiencies may result in increased rents to cover repair costs and possible displacement of the elderly tenant household. Conversely, provision of public sector home maintenance program assistance to tenant households may result in public questioning of a policy designed to reward noncompliant landlords.

Faced with such complex issues, most programs choose to exclude tenant households from eligibility. Yet, low-income elderly tenant households are prevalent in many communities. The State-of-the-Art survey data offers several suggestions for formulating an elderly home maintenance policy for renters:

- Target repairs to clients, not units. Several programs which served renters provided such safety items as smoke detectors, grab bars, and deadbolt locks. It is relatively easy to link such service provision to the client.

- Expand the scope of home maintenance program to include rental units in eligible owner-occupied homes. Several Demonstration programs made repairs to common walls, roofs, and basements in such structures. Given the low incomes of many owners, it is unlikely that they will have sufficient private funds to meet repair needs of both the owner-occupied and the rental units.

- Recognize the importance of the informal private rent subsidy extended to many elderly households. Any programs to encourage landlords to upgrade properties that result in the loss of these subsidies should be seriously studied.

Home Condition

The Demonstration required that all repair work performed be minor or maintenance related. Major or substantial rehabilitation was specifically excluded. Hence, the Agency Program Manual suggested that only structurally sound housing stock be accepted into the Demonstration. Any home with major deficiencies to the heating, plumbing, or electrical systems should be excluded.*

The effect of this eligibility criteria was to exclude elderly households whose homes needed major repair. Adherence to this suggested eligibility criteria varied among programs according to local housing stock conditions. Field visits to client homes in Hot Springs and Philadelphia confirmed the existence of numerous homes with major repair needs not covered by the Demonstration. The problem was particularly evident in Hot Springs where interviewers identified numerous major home deficiencies in houses already serviced by the program.

This prevalence of major repair deficiencies even among homes in the Demonstration raises the issue of program appropriateness to the actual need. What impact will a minor repair and maintenance program have on a home or household with major repair deficiencies? This question was debated at length by the Hot Springs program, with the Advisory Board and staff having different opinions. Upon seeing the urgent needs of many of the client homes enrolled, the Hot Springs staff argued that the definition of a minor repair should be upgraded commensurate with the housing need. In the early stages of Year One, Hot Springs staff slowed production in order to accomodate the large amount of repair work needed by each client. The Board, meanwhile, contended that a minor repair and maintenance program could still be beneficial to clients, even if most or all urgent needs were not addressed. At issue was the adoption of a client versus a housing orientation. A client orientation highlights the psychological impact that repairs have on elderly households. A

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*Abt Associates and BE&C Engineers, Inc., Agency Program Manual: Home Repair Demonstration for the Elderly, 1980.

housing orientation is concerned primarily with addressing unmet housing needs. The findings of the Demonstration suggest several policy oriented conclusions about housing condition and home maintenance programs:

- Housing condition is relative and cannot be easily compared from city to city. Environmental noms help to define the degree of housing deficiency. Good housing stock in Philadelphia or Hot Springs might easily be considerd deficient housing in San Francisco, Greensboro, or Cincinnati.

- It is difficult to exclude homes from a program due to condition. Program directors reported only a limited number of cases where homes were disqualified due to deficient conditions. When a program priority is to meet safety and comfort need, it is sometimes difficult to differentiate major from minor repairs. In general, major repairs should be avoided to the extent possible.

- Condition of the housing stock becomes less relevant when programs are oriented toward clients rather than housing. A client oriented approach may be more likely to include homes with major deficiencies.

10.4.4 Concluding Remarks: Intangible Benefits

There are several aspects of the program which cannot be described or analyzed in quantitative terms yet which are important statements about the value and benefit of home maintenance services. These intangible benefits cannot be derived from data; they instead were the product of person to person interviews with nearly 700 Demonstration client households.

- Home Maintenance as Insurance. The importance of home maintenance programs transcend actual repair service provision. Many clients expressed sincere relief that matters pertaining to their home could be entrusted to the program agency. Further, they were relieved to know that the program was available to them in the event of an emergency, despite the fact that most clients did not avail themselves of emergency services.

- Home Maintenance as an Alternative to Private Contractors. A sizeable number of clients were able to describe cases where private contractors had defrauded them or done unsatisfactory work. One woman, restricted to her house by a wheelchair, angrily recounted how a private contractor retained to paint the exterior of the house collected full payment for a job he reported complete. Days later, visitors informed the woman that only the front of her home facing the road had been painted. Such stories were frequent. Similarly, client accolades about the trustworthiness of the home maintenance personnel.

- Home Maintenance as a Source of Income. Interviewers encountered numerous cases of clients able to redirect resources from housing repair expenses to such staple purchases as medicine, heating fuel, and food. This ability to save or generate resources is illustrated by a Philadelphia woman who lived alone on a meager monthly income of less than $200. Due to her already tight budget, she was often forced to choose between food, fuel, or medicine on a week to week basis. Since there was no slack income for home repair, serious problems were corrected only at the expense of food, fuel, or medicine, and only if the private contractors would agree to budget plan payments.

- Home Maintenance as a Source of Referral. The referrals generated by programs occasionally outweighed the value of the repair service. An elderly household with six young infants and children received weatherization assistance to tighten up their drafty home. The same household also received counselling for child abuse, which was reported by a program repairman.

- Home Maintenance as a Source of Companionship. The home maintenance staff was generally valued by clients for the companionship they provided, however brief. Program staff from most sites reported that part of their job consisted of conversation with clients, despite efficient scheduling to the contrary. The value of this companionship appeared to be substantial and non-quantifiable.

Perhaps the strongest, most widespread message to emerge from the client interviews was the emotional attachment that clients felt toward their homes. As reported in Chapter 9, nearly all clients affirmed a desire to remain in their own homes as long as possible. Many elderly clients have lived in their present homes their entire lives; most had lived in their homes for at least 25 years. All were able to recall numerous family memories of children, deceased husbands or wives, better economic periods, and times when health was not a nagging, daily concern. These remembrances should not be objectively dismissed as senile ramblings. Instead, they represent the cumulative personal investment made by clients in their homes.

Client attachment to their homes appears to be both sentimental and economic. When asked if they had intentions or desire to leave their homes, many clients responded that their home was the only shelter they could afford. While income generating strategies such as Reverse Annuity Mortgage (RAM) plans may prove helpful to some clients, there were numerous others whose home values were so low as to be unable to support a RAM option.

Sentimental reasons, however, appeared to be a more universal reason why a client preferred not to move. Client homes provided familiarity and comfort that no other housing arrangement could emulate. Clients routinely suggested that their mental and physical well-being was associated with their home. When perceived in this context, the intangible value of a maintenance program becomes magnified.