
Resident Assessment of Housing Quality:

Lessons from Pilot Surveys



U.S. Department of Housing and Urban Development
Office of Policy Development and Research

PD&R

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Survey Questionnaire

Executive Summary

In 1998 PD&R conducted a pilot test of a mail survey as a means to obtain assessments of housing quality and customer satisfaction from residents of public and FHA-assisted housing. This pilot test used a questionnaire similar to that used in a previous study of Section 8 housing (HQS Section 8: Mail Survey Study, Task Order 001, December 20, 1995). The objectives of this study were to compare methods of distribution, as well as examining overall return rates and comparing resident data with observations from on-site inspectors. This survey was administered to a sample of approximately 4,000 households located in eight counties in Illinois, Indiana, and Missouri. Key findings were:

The survey yielded high response rates over 60% regardless of distribution, nearly 70% for FHA-assisted households when mailings were addressed to the resident, and the distribution was by mail. This also reinforced findings from the Section 8 study where rates of return were over 75%.

Residents' overall ratings of their units' were highly consistent with assessments by on-site inspectors. Rates of agreement for individual items were frequently above 90% and for more than three-fourths of the items agreement was greater than 80%.

For a sample of units that were inspected twice, rates of agreement between inspections were high, with most over 80 percent.

For a sample of units where respondents answered the questionnaire twice, the rates of agreement between the two questionnaires were high, generally over 80 percent agreement.

When resident observations were compared to the observations of trained inspectors the rates of agreement were high. When these were compared to the separate agreement for residents and inspectors very similar rates were found.

The importance of follow-up distributions in obtaining a high rate of return was confirmed. While a number of respondents replied immediately to the questionnaire, many others replied only after receiving one or two follow-up mailings.

The mail survey was successful in the worst and the best of housing developments.

While several alternatives are available to HUD in conducting a survey, direct mail using the resident's name consistently produces higher rates of return.

Findings reinforced the previous study of Section 8 residents which found no difference in return rates for a 3 page and 5 page questionnaire and found no difference in return rates for packages distributed by mail with HUD markings and packages distributed by mail with university markings.

1: Resident Assessment of Housing Quality

Background

Resident assessment of housing quality is something that occurs quite naturally. The experiences that each of us has in the places we live let us know the strengths and weakness of our home. Resident assessment is a naturally occurring process.

However, even though resident assessment is a naturally occurring process it has not been a traditional means of evaluating housing. As Francescato, Weidemann, Anderson, and Chenoweth (1979) point out, housing is usually evaluated from an economic perspective, a social perspective, or a physical condition perspective. Each of these perspectives is important , but they all ignore the housing quality criteria held by those who are the target of housing assistance programs.

During the last three decades researchers and scholars have turned their attention to understanding the perceptions and behaviors of housing residents (e.g., Cooper, 1975; Michelson, 1977, Weidemann & Anderson, 1985; and Rohe and Stegman, 1994). They have sought to broaden the basis for the assessment of housing quality to include the resident. As Craik and Zube said in 1976, “a truly comprehensive assessment of environmental quality would include an appraisal of the quality of the experienced environment.”

One of the most comprehensive studies of resident assessment of housing quality was the work of Francescato, Weidemann, Anderson, and Chenoweth (1979). This study had three important objectives: 1) to develop reliable and valid measures for the assessment of housing from the residents' perspective, 2) to identify and measure aspects of housing that influence residents' satisfaction, and 3) to make the measurement procedures and the substantive findings available to individuals and organizations involved in making decisions about housing.

There were several important outcomes from the work of Francescato et al. (1979). By studying 37 assisted housing developments in 10 states they showed that the reports of residents were consistent with direct observation of the site, and other related data. They also found that resident assessments were reliable, that is there was consistency between reports given at two different times.

Perhaps most importantly, the work of Francescato, et al., showed that there were successful examples of housing in each of the programs studied, e.g., public housing, FHA-assisted, etc. Resident assessments were able to identify successful programs within programs and across several programs. This makes it valuable for program evaluation and monitoring.

Resident assessment can be valuable in the management of individual housing developments. This was demonstrated by Weidemann, Anderson, and Maattala (1983) when they used resident assessments to set the priorities for site changes (e.g., traffic, recreation, appearance, etc.) and

subsequently used resident assessments to evaluate the changes. Overall satisfaction increased, assessments of aspects that changed were more positive, assessments of aspects that did not change did not increase.

Larsen (1998) used resident assessments to study the success of a program to move families out of traditional public housing into scattered site housing units. She found that the scattered site units were perceived as safer and that residents perceived that they lived in better housing. However, the resident assessments also indicated that residents of scattered site housing felt social isolation in the same way as residents of public housing.

An Opportunity

HUD has embarked on a program of institutional growth and change that represents major reforms in the way that housing programs are evaluated and the criteria by which the “success” of housing is measured. The HUD 2020 Management Reform Plan directly places importance on actual performance and on new measures of performance of housing.

In looking toward the future HUD 2020 places importance on developing a new customer-friendly structure. HUD seeks to make customer feedback a regular part of the information used in setting priorities, goals, and objectives, to look for ways that customers can guide HUD’s direction.

HUD has shifted its mission to one that includes empowering people and communities to meet local needs. The objective of empowerment is clearly stated in the FY 1999 Annual Performance Plan. To achieve empowerment HUD will seek to rely less on regulation and more on providing tools and information for communities to use to grow stronger.

These directions are consistent with those set by Congress in the Government Performance and Results Act of 1993 (GPRA) which requires government agencies to identify specific measures of performance. These overall actions of HUD are also consistent with Executive Order 12862, Setting Customer Service Standards. Five years after its issuance, the President continues to advocate for programs that will engage customers in conversations about the kind and quality of services. All of these initiatives suggest a need for thoughtful resident assessments of housing environments.

Recent Experience

In 1995 HUD’s Office of Policy Development and Research began to examine the ability of residents to provide assessments of their housing. In this case a pilot study was conducted in Section 8 housing. The study developed a short questionnaire that could be completed by residents in their homes. The study compared these resident assessments to independently obtained assessments by trained inspectors. The study was conducted in six housing authorities in Illinois and Indiana, in communities of various size, e.g., Indianapolis, Gary, Springfield.

A random sample of over 1,500 units received a questionnaire covering specific features of the home, conditions of kitchen, bathroom, walls, etc. The original distribution was followed by two reminders. This resulted in over 75% of the questionnaires being returned. Inspectors were sent to over 650 homes that returned the questionnaires. Almost 400 inspections were completed.

This 1995 study had several important findings. First, it showed that it is possible to obtain high rates of return from residents of Section 8 housing. Second, it indicated that the questionnaire length did not necessarily reduce the rate to return. Perhaps most importantly, it showed that resident assessments of housing characteristics had high rates of agreement with trained inspectors' observations. They had at least 80 percent agreement on approximately 17% of the questions.

Current Objectives

With the positive results obtained in the pilot test of the Section 8 assessment questionnaire, HUD became interested in examining the use of this questionnaire to assess other assisted housing. The objectives of this study became:

- Examine the rates of return for an assessment survey of FHA-assisted housing
- Examine the rates of return for an assessment survey of public housing
- Examine the agreement of residents and independent inspectors.
- Examine the rates of return under different distribution procedures.
- Examine the responses of residents when completing the questionnaire at two different times.

Current Results

The study was conducted in a three-state area including nearly one hundred housing developments. Approximately 4,000 household units were sampled. These households received a questionnaire package by one of five different methods of addressing and delivery. The residents who returned the questionnaire were requested to allow an inspection of the unit. Nearly 1,700 households were inspected.

There are important results from this current study. In 1998 HUD's Office of Policy Development and Research (PD&R) conducted a pilot test of a mail survey as a means to obtain assessments of housing quality and customer satisfaction from residents of public housing and FHA-assisted housing. This pilot test used a questionnaire similar to that used in the Section 8 study. The study compared methods of distribution, as well as examining overall return rates and comparing resident data with observations from on-site inspectors. This survey was administered to a sample of approximately 4,000 households located in eight counties in Illinois, Indiana, and Missouri. Key findings were:

High response rates of over 60% regardless of distribution method, nearly 70% for FHA-

assisted households when mailings were addressed to the resident, and the distribution was by mail.

High response rates only occurred after follow-up mailings were performed.

Residents' overall ratings of their units' were highly consistent with assessments by on-site inspectors. Rates of agreement for individual items were frequently above 90% and for more than three-fourths of the items agreement was greater than 80%.

For a sample of units that were inspected twice, rates of agreement between inspections were similar to rates of agreement for residents and inspectors.

Future Use

HUD has developed a resident questionnaire that can be useful in helping individual Housing Agencies (HAs), as well as HUD, obtain customer feedback about housing programs. HUD can conduct an annual survey of housing programs with this questionnaire and feel confident about the quality of data obtained. Research issues such as reliability and validity have been addressed.

With an annual survey HUD could generate reports for each HA, as well as for the nation as a whole. Beginning with the completion of the first annual data collection cycle, these reports could be generated monthly. Reports will contain the average (mean value) score for each variable, calculated for each HA. Scores for HAs in the same region could be averaged in groups based upon the number of Section 8 units administered. HAs could be provided with their rank compared to their most immediate peer groups. Finally, the mean value for all respondents will be calculated for each variable. This will provide the national picture of the Section 8 program.

In subsequent years when data are collected from a national sample of Section 8 residents, the data analysis could also examine the amount of change in resident observations and perceptions from the previous year. Those changes that are statistically significant will be identified. In years when data is available from the American Housing Survey, equivalent variables from the two data sets will be compared.

Remaining Chapters

This chapter has presented an explanation of the framework in which this study has occurred and the overall findings. The remaining chapters and appendices provide more detail. First, a detailed explanation of the conduct of the study is provided in Chapter 2. This is followed in Chapter 3 by a presentation of the findings. The results of the analyses are summarized, with detailed tables presented in the appendices. The final chapter discusses what the results of this study and the pilot study of Section 8 housing, mean for the implementation of a customer survey. It shows data that could be valuable to HUD and the HAs throughout the nation.

2: How the Pilot Study Was Conducted

This chapter describes how the pilot study was conducted. Once the objectives were set, strategies for reaching them were examined. Options for sampling assisted housing units to include in the study were examined. Alternative procedures for delivering questionnaires were developed. Inspection options were outlined and reviewed. Procedures for data handling and analyses were developed. After careful planning the study was conducted. This chapter presents the data that examines the reliability of the questionnaire and the reliability of the inspections.

Selecting Survey Households

Two contrasting requirements influenced the sampling strategy. First, the sampled units needed to represent the diverse nature of FHA-Assisted and public housing units that HUD has produced. There needed to be clear samples for each of the two programs, with site diversity within each program. Second, the sampled units needed to be in clusters to accommodate the inspections and those clusters needed to be close enough to Champaign, Illinois to allow easy training and supervision of the inspectors.

The sample size was influenced by two pragmatic factors. The first factor was the amount of resources available to conduct the site inspections. The second factor was the anticipated response rate to the questionnaires. Based on the length of the inspection (about fifteen to twenty minutes per inspection), travel time between inspections, and related factors it was estimated that an inspector could visit approximately 190 housing units over a six-week period, the desired time span for the study. Based on a conservative estimate of the return rate for the questionnaire of 55 percent, it was estimated that a sample size of about 350 units was needed to obtain 190 completed questionnaires. For efficiency of resource allocation in the inspection process, the 190 dwellings assigned to an inspector should be within the same geographic area, or cluster. This suggested that geographic areas should be predefined and used as the basis for the first stage of sampling using PPS clustering procedures. Rather than creating a set of clusters of housing for this sampling stage, naturally occurring clusters in the form of counties were used. Sampling counties ensured that the clusters represented a diversity of geography, urbanization, economic conditions, etc.

An overall sample size of 4,200 housing units would result in enough completed questionnaires to answer the primary research questions and to provide breakdowns for type of program, as well as gender of respondent and similar partitioning variables. Given that a sample of 350 units within a cluster could be expected to yield 190 completed surveys, the number of necessary clusters was defined as twelve ($4,200/350$ units per cluster). For this project the sample frame of counties was defined as those within a four-hour driving distance (or approximately a 200-mile radius) from Champaign-Urbana that contain both PH and FHA housing units. With this geographical area defined, a total of 64 counties in the states of Iowa, Illinois, Indiana, and Missouri were found to fit this description.

First Stage: Selection of Counties

Twelve counties were selected from the list of sixty four counties containing both public housing and FHA-assisted housing that were also within an estimated four hours of Champaign, Illinois. The counties were selected with probabilities proportionate to size (PPS), where the measure of size was the total number of PH and FHA housing units in the county. Selecting the counties by PPS involved several steps. First, the identification of the total units of all public housing and FHA-assisted housing was needed for each county. This identification came from two primary sources: *HUD File 951.1* (a database containing a listing of all FHA projects in 1996) and the *NAHRO Directory of Local Agencies* (a directory identifying all of the public housing). The listing of total FHA and public housing was reviewed by PD&R and adjusted to reflect current HUD records. The final product of this step was a listing of counties in Illinois, Indiana, Iowa, and Missouri that contained both FHA and public housing and the total numbers of these dwellings in each county.

PPS Sampling

Statisticians at the Survey Research Laboratory calculated a cumulative sum of the number of assisted housing units over all 64 counties (470,139 FHA and public housing units). Next, the total number of housing units was divided by the number of clusters, i.e., counties, to obtain a sampling interval. A random start was then selected. Twelve selection numbers were calculated such as $r, r+s, r+2s, r+3s, \dots r+(m-1)s$, where r is the random start, s is the sampling interval, and m is the desired number of clusters. A county was sampled if the selection number was larger than the cumulative sum of all previous clusters, but smaller than the cumulative sum associated with the designated cluster. For example, in this study, the random start was 32,089. Cook County is the eleventh county in the list and the cumulative sum associated with it is one 140,127 while the cumulative sum associated with all counties listed prior to Cook is 11,020. Because 32,089 is greater than 11,020 and smaller than 140,127, Cook County was selected. Adding the sampling interval to the random start gives us the next selection number, which is 71,267, which is still less than 140,127, so Cook County was again selected. Adding the sampling interval one more time provided the next selection number, which is 110,445, which is still smaller than 140,127, so Cook County was selected for a third time. Adding the sampling interval a third time results in a selection number of 149,623, which is greater than 140,127, so a different county was selected.

The PPS procedure resulted in eight counties being randomly selected in three of four Midwestern states. The selected counties were: in Illinois: Cook, Kane, and Peoria; in Indiana: Marion, La Porte, St. Joseph, and Knox; and in Missouri: St. Louis.

Once the counties were selected, the assisted housing projects in each county were stratified into public housing or FHA-assisted housing. Within each cluster, the plan was to sample five housing projects per program (a total of ten projects per county with five public housing and five FHA-assisted housing).

Second Stage: Selection of Project Sites

For the second stage, separate listings of all PH and FHA housing developments were created for the twelve counties. Each list showed the number of units in each development and allowed for computation of cumulative sums for the PPS sampling of developments. These lists were developed primarily from two existing databases supplied by HUD: *951.1*, and *MTCS*. From these databases it was possible to define a total of 64,412 potentially occupied public housing units and 226,814 potentially occupied FHA-assisted housing units in the sampled counties. The target sample was five developments of each program for each county, i.e., a total of 60 developments for each program type. Sampling intervals were calculated for both programs, random starts were obtained, and PPS samples of developments were drawn for the two program types. Again, with PPS it was possible for one project to fall into the sample more than once, so that in some cases only four projects were selected in a county instead of five.

Third Stage: Selection of Housing Units

The third stage of sampling required a listing of units for each of the sampled developments. However, the database files used to identify the public and FHA housing sites and their total number of units did not provide a consistent address format. In some instances the database files listed units by tenants only and in other instances files listed units by addresses only. Not all files contained phone numbers of units. In order to have the most up to date and accurate information, each selected development received a request for assistance in terms of providing a list of the names, addresses, and phone numbers of tenants residing in the selected developments. Initial notification of this data request and information about the study was provided to the development management by a letter from HUD's Acting Deputy Assistant Secretary for Research, Evaluation, and Monitoring, Paul K. Gatons. The letter was mailed in early December, 1997. In mid-December, the principal investigator mailed a follow-up letter with a specific request for assistance in providing the names, addresses and phone numbers of tenants. From late December through February 1998 tenant lists were received from the PHA's and FHA's¹.

Once a current address list was received from the management, unit sampling began. From these lists 35 housing units were selected for each housing project. Obviously if a housing development was sampled more than one time, in the second stage of sampling, the number of housing units sampled increased proportionately. For example, if a housing project fell into the second stage sample twice, seventy housing units were sampled from it. Also, because a few of the selected housing projects contained less than thirty-five units (in which case all units were selected), the

¹ The Staff conducted a comparison of the data sent in the HUD files and the data sent by the FHA and PHA project managers. For the eleven sites, staff compared the tenants' names and addresses on the management rosters with the names and addresses on the rosters supplied from *MTCS*. Eight sites matched well with a 74% to 93.3% range; two sites matched with a 55.3% to 58.9% range; and one site matched very poorly at only 27.9%.

samples for the two program strata eventually contained unequal numbers of households. The final sample size was 4,106 households, with 2,056 in the FHA stratum and 2,050 in the PH stratum.

Sampling from the tenant lists was by a random interval. First, a sampling interval was calculated for each site by dividing the number of households by the required sample size, e.g. 35. Then a random start was obtained and units were selected according to the random sampling interval until the required sample size was reached.

Replacement

While confirming project site information and tenant address lists, it became clear that some sites needed to be replaced. The reasons for replacement included developments no longer being in the FHA Program, resident relocation programs, property demolition, and property managers electing not to participate. Replacement sites were selected randomly.

The projected sample in the FHA stratum was 2,056. The final sample was 1,825 after removing sites that promised to provide tenant lists, but failed to do so. The projected sample in the PHA stratum was 2,050. The final PHA sample size was 2,034.

Questionnaire Development

In 1995 HUD developed a cost-effective mail survey instrument for use by residents in assessing housing conditions of units in the Section 8 Voucher and Certificate Programs (HQS Section 8: Mail Survey Study, Task Order 001, December 20, 1995). That study showed that high rates of return were possible; over 75 percent of the sample of 1,600 Section 8 residents returned their questionnaire. The study also demonstrated that questionnaire length was not necessarily a deterrent to questionnaire return; a five-page questionnaire was returned at the same rate as a three-page questionnaire. And finally, the survey was validated by high rates of agreement between over 600 resident responses and on-site observations of the same housing units by trained housing inspectors. It was the objective of the current study to begin with that successful questionnaire and to test whether it could also be useful in monitoring public and FHA-assisted housing projects. This section describes how the questionnaire was refined for the current study.

Refinement of the Section 8 Survey Instrument

The nature of public and FHA-assisted housing can be very different from Section 8 housing. There is a greater likelihood that site and management issues will be important in these two programs. Thus the questionnaire had to be refined to address the different needs of the two programs. While the focus of the first survey instrument was on the housing unit, the focus of this survey had to be on the total housing project.

The study began by examining the two versions of the *Section 8 Housing Quality Standards Survey Instrument* used in 1995. Then three other assessment instruments were reviewed: the *American Housing Survey*, the *HQS Inspection Tool*, and a draft of the *HUD Real Estate*

Assessment Center inspection tool. Staff cross-referenced the items in the Section 8 survey instrument with the various items from the three assessment tools. The original *Section 8 Housing Quality Standards Survey Instrument* had eighty questions. This cross-referencing created a pool of 55 additional questions not in the Section 8 instrument. The additional items were organized into twelve categories. Table 2-1 presents the categories and number of additional items.

Table 2-1: Areas Where Additional Questions Were Considered

Kitchen	10
Bath	6
Walls	2
Floors	2
Ceiling	1
Electrical	2
Heating & Cooling	3
Sanitation	4
Safety & Security	3
Home	5
Outside	9
Neighborhood	5
TOTAL	55

These question areas, and the specific questions from other sources, were discussed with HUD staff. These discussions had at least three outcomes: 1) they raised questions about whether items should be generalized to the entire dwelling or refer to specific features, rooms, and areas; 2) they reinforced the need to include resident demographic items; and 3) they saw the value of having items comparable to those in the *American Housing Survey* (AHS). Additional discussions with HUD staff led to a concern for assessing management and using the resident's ability to assess change over time.

Multiple drafts of the questionnaire were reviewed over a three-month period with each draft receiving review by HUD staff. One result of these reviews was the decision that the questionnaire should initially ask the resident to assess the conditions "today;" this would provide the best comparison to the observations of inspectors. Another result of this process was the development of a concluding section that could ask the resident to assess conditions over time.

Focus Group

A focus group was used to provide a direct understanding of how public housing residents might experience the questionnaire. The Executive Director of the Decatur Housing Authority agreed to arrange a focus group of public housing residents in Decatur, Illinois. The housing authority staff worked to invite a variety of different type residents such as single parents and older adults.

The focus group was conducted in a meeting room at the Decatur Housing Authority. Although twelve residents were invited, only four attended. The residents were asked to silently go through the questions. When that was completed, there was a discussion of their understanding of the questionnaire and their feelings about the adequacy of the questions as a measure of the quality of their home. Several issues emerged, including painting, preventive maintenance, and management charges for maintenance. Following the focus group, a discussion was held with the Government Technical Manager (GTM). After careful consideration, the changes suggested by the residents were not included in the final draft of the questionnaire.

Scannable Format

Advances in computer-based imaging make the possibility of data input from an attractive questionnaire a realistic possibility. Scanning forms can speed up the data entry and analysis process, as well as reduce data input errors. Using a scannable form in this study would provide HUD with a test as to how well a scannable process would work. For a preliminary assessment of the potential for scanning, drafts of the questionnaire were shown to two companies: FormScan and National Computer Systems, Inc. In reviewing the Section 8 questionnaire, both agreed that the questionnaire would work well in a scannable format.

Scanning software programs were reviewed. This led to the selection of *Remark Office OMR* for data input for this study. This software uses optical mark recognition to scan surveys formatted for the program. It has the capacity to read a variety of types of inks (blue, black, red etc.) and pencils. Its ability to recognize different types of marks on the surveys was studied by composing a variety of questionnaire page layouts. Some examples are: check marks, Xs, and filling in a circle with a writing instrument, as well as circling the answer. These steps confirmed that the optical mark recognition software allowed the design of a respondent-friendly survey instrument to maximize responses from PHA and FHA-assisted housing residents.

The Pilot Test

A pilot test of procedures was conducted in Lake County, Illinois. The Housing Authority of Lake County, Illinois provided resident names and addresses in a process similar to that for the sampled housing developments. On January 23, 1998 the first mailing of the pilot test was distributed to 35 residents. On January 30th, the second mailing, a reminder post card was sent. By the end of January, seven questionnaires were returned. Another full distribution was mailed on February 10th to the non-respondents. By mid-February, 17 questionnaires were returned. Eight inspection letters were mailed on February 10th. On-site inspections were conducted on February 18th. Of the eight scheduled, two residents canceled, one was unavailable, and one requested to reschedule. Four inspections were completed. The final results were 35 questionnaires mailed, one participant moved. Of the 34 residing in the Authority, 26 were returned for a 76 percent rate of return. Eight inspections were scheduled and four were completed for a 50 percent return rate. These return rates were equivalent to those in the 1995 Section 8 Certificate and Voucher Study.

Spanish Translation

In initial discussions with HUD staff, the possibility of residents being non-English speakers and readers was raised. After later discussion with the GTM, it was concluded that Spanish was the most wide spread foreign language. It was decided that the questionnaire would be translated to a Spanish version. A Spanish translator was hired in December to translate the survey and the other distribution materials into easily understood Spanish. A sentence in Spanish was placed at the bottom of the cover letter to all residents stating that a Spanish version questionnaire was available on request and giving a toll-free telephone number to call.

There were only two requests for the Spanish version of the questionnaire. One of those was returned. Most residents that had a language limitation were apparently able to respond to the questionnaire with translation assistance from a family member, friend, or site management staff. Reports received from the management personnel at some sites in the study indicated there were places with a significant number Russian, Korean, and Chinese speaking residents.

Survey Approval

The format for the final survey instrument was approved by HUD on February 16, 1998. The questionnaire and inspection forms were then sent to the printer. There were 8,200 copies of the questionnaires printed in a twelve-page booklet format with three blank pages: the inside front cover, the back cover, and the inside back cover. Graphics were added that related to sections of questions to help organize the questionnaire and provide visual relief from a continuous list of questions. Nine questions were added for resident demographics. The questionnaires were designed for printing in a scannable format.

Questionnaire Administration

The previous section has described how the questionnaire was reviewed and revised for this current study. This section describes how the study was organized to examine several distribution alternatives and describes the administration processes.

The 1995 Section 8 survey used a mail distribution process that relied upon personalization of the distribution packages, professional appearance of distribution materials, and persistence to obtain high rates of return. The academic literature (e.g., D. Dillmen, *Mail and Telephone Surveys: The Total Design Method*, New York: John Wiley, 1978.) suggests that these are important steps in obtaining a high return rate, and the 1995 study confirmed this.

The objectives of this study included understanding the relative success of different methods of survey distribution. If HUD decides to implement a resident survey as one means to monitor housing quality standards and to obtain resident feedback, then decisions on how to distribute the questionnaires becomes a primary concern. This study addressed this concern by testing two distinct distribution methods: 1) direct mail through the U.S. Postal Service, 2) on-site distribution to residents by the housing management organization.

Distribution Alternatives

An important question for the study was: “*Do different distribution methods result in equal or unequal rates of return?*” Several distribution alternatives were discussed. Two options eventually seemed most likely for any HUD implementation: postal delivery and distribution by management. The options were also seen to be a function of the address data that is available to HUD. Some current data systems may not contain full names and mailing addresses for all units in either public or FHA-assisted properties. The distribution approaches were sub-divided to reflect varying address information. The main address variables were:

1. Resident name (known/unknown),
2. Site name/address (included/excluded), and
3. Unit address (known/unknown).

From these three address variables three different address label types were possible for direct mail distribution and two different address label types were logical equivalents for direct management distribution. Thus, it appeared that five different address distribution approaches were logical ways to implement a resident survey. The address approaches were:

For Mail Distribution

1. Resident's complete name and unit mailing address
2. Resident's complete name and site address
3. No name and complete unit mailing address

For Direct Management Distribution:

4. Resident's complete name and unit address
5. No name and unit address

To test these five distribution methods for both housing programs and at all of the sampled developments, staff assigned every fifth resident to one of the address conditions.

Distribution

The initial distribution to residents was a package with a copy of the questionnaire, an explanatory cover letter, and a business-reply envelope. This package was similar to what had been used in the 1995 Section 8 study. The distribution envelope was either mailed directly using one of three previously described addressing formats or delivered by management with one of two addressing formats. A reminder postcard (hang-tags were used for the direct distribution) was to be sent or delivered about one week after distribution. After another 7-10 days a second distribution envelope was planned with a second copy of the questionnaire, a shortened cover letter, and another business-reply envelope. Due to the large number of surveys to be distributed, the start date for the sites was varied over a three-week period.

Preparation for Direct Distribution

Effective direct distribution required engaging the cooperation of management at each site. Prior to beginning, contacts and arrangements had to be made for the direct on-site distribution through

the housing management organizations. Letters requesting assistance with the direct distribution were sent to each FHA management group, and for public housing, letters requesting assistance with the direct distribution were sent to each housing authority executive director.

Staff followed up the housing authorities' letters with telephone calls to make the necessary arrangements. Of the twelve participating housing authorities, each one had its individual approach as to how to administer the direct distribution. Generally, the three large urban housing authorities (St. Louis, Indianapolis, and Chicago) assigned contact to on-site housing managers. However, the CHA administrative office also involved five CHA regional property managers. Staff had a meeting with the CHA regional property managers and CHA police in early March to make appropriate arrangements for direct distribution and security. For the medium to smaller size public housing authorities, the instructions were to send directly to the executive directors or directors of operations or resident services (some of the smaller housing authorities do not have on-site property managers).

Survey Distribution

The survey distribution process began on February 27, 1998. Direct mail packages were sent to two public housing sites in Cook County: Frances Cabrini Homes and Cabrini Extension.

After the start of survey distribution, some distribution packages were returned without delivery. As a result, a coding system was developed for undelivered packages so that they could be removed from subsequent follow-ups, etc. The following are reasons that questionnaires were returned undelivered by either the post office or the management:

- Insufficient Address, or Address Not Known
- Vacant
- Moved
- Returned, no additional explanation
- Temporarily Away
- Deceased
- Refused to Participate
- Non-English Speaking

In March, the first distribution packages for all the PHA's and FHA-assisted housing projects were distributed for all five distribution methods. This resulted in 3,470 first distribution packages distributed during March. There were 1,528 follow-up postcards or hangtags given out and 97 full, second distribution packages dispersed during the month.

In April, there were 930 reminder post cards or hangtags distributed and 1,315 second distribution packages disseminated for PHA's and FHA-assisted housing. There were 1,103 surveys returned of which 1,052 were valid returns and 51 were returned as undeliverable.

In May, there were 202 reminder post cards or hangtags distributed, and 821 second distribution packages disseminated for PHA's and FHA-assisted housing. There were 398 valid surveys returned and 5 were returned undeliverable.

No questionnaire packages, hang tags, or post cards were distributed after May. However, returns continued to be received during these months. The survey results by the end of July are shown in Table 2-2.

Table 2-2: Review of Questionnaire Distribution

Questionnaires distributed	3,895
Returned by Post Office or management	286
Net distribution	3,609
Questionnaires returned	2,199
Gross returns	56%
Net returns	61%

The final number of distributed questionnaires was less than the sample size: the loss was the result of two developments failing to provide sufficient address information. For more discussion on the final rate of returns and comparison results, see **Rate of Return**.

Requests for Survey Assistance

There were approximately 123 telephone calls to the toll-free number with questions regarding the questionnaire. There were four requests for assistance to complete the survey over the phone. Staff received two requests for the questionnaire in a Spanish version and many calls on general and specific questions relating to the questionnaire.

Questionnaire Reliability

The research plan for this project stated that a questionnaire reliability test would be conducted to measure the extent to which the same instrument obtains the same data for the same phenomena at two different times. To examine reliability, a sample of respondents was asked to complete the questionnaire a second time. This created two sets of data collected from respondents in the same household at two different times to be compared for agreement. The responses were matched on gender to create as comparison data set.

In early July a random sample of 272 residents from all sites received a second questionnaire and a request to complete the questionnaire. The residents were randomly selected from all returns. The surveys were distributed on July 2nd and 3rd. Reminder post cards were mailed July 10th and 13th. The second questionnaire packages (cover letter, questionnaire, and reply envelope) were distributed July 21st. The survey reliability data was all conducted by direct mailing. By the end of July the following results were recorded:

Table 2-3: Review of Reliability Survey Distribution

Questionnaires distributed	272
Returned by Post Office or management	15
Net distribution	257

Questionnaires returned	154
Gross returns	57%
Net returns	60%

For more discussion on final results of the survey reliability see **Questionnaire Reliability** (page II-17 in this chapter).

ADMINISTRATION OF ON-SITE INSPECTIONS

Introduction

For PHA and FHA residents' evaluations to be beneficial, the resident assessments must be seen to be accurate. To meet this need, this study compared the residents' responses to the observations of on-site inspectors on a unit-by-unit basis. The inspections were conducted by professional inspectors familiar with housing inspections. This section outlines the administration of the on-site inspection process. This process involved: 1) the refining of the inspection protocol and data collection instrument, 2) the selection and training of inspectors, 3) the process for conducting the inspections, and 4) noting various management issues encountered.

Refining the Inspection Protocol and Data Collection Instrument

Agreement of inspector's observations with resident observations depends in part on what the inspectors are asked to observe and how they are asked to record what they see. It is important that the inspectors focus on the same events and features as the residents. Thus the inspector's data collection instrument was derived primarily from the resident questionnaire. The first step in developing the inspection form was the elimination of all questions that an inspector could not be expected to observe, e.g., questions of satisfaction with the residence. The second step was the organization of the questions in the inspection form for an efficient inspection. Previous experience from inspections carried out in evaluating the 1995 Section 8 questionnaire was valuable as a source of procedures for the inspection process.

The inspection form was designed as a three-page checklist in a scannable format, allowing it to use *Remark Office OMR* for data entry. The inspection forms were printed on non-carbon reproducible (NCR) paper for ease of creating copies for the inspectors. At the same time that the form for recording inspection observations was being completed, several other new and revised documents were developed: a copy of the resident letter notifying them of the on-site inspections, inspector scheduling log listing the assigned inspections, inspector identification badge, notification hang tags for doors to leave notification when the resident was not home, inspection invoice forms for billing purposes, contact lists for assigned PHA and FHA sites, and self-addressed return envelopes for inspectors to use to mail in the completed inspection forms.

Selection of Inspectors

Early discussion revealed two primary options for obtaining inspectors. They could be hired and trained specifically for this study, an option that would maximize the control of the inspection protocol, or existing professional inspectors could be retained for individual communities, an option that would have less opportunity to introduce the bias of the research team. After discussing the options, the decision was made to use professional inspectors located in the communities where the inspections were to occur. This was a different strategy than used in the previous Section 8 study.

Within each of the eight counties in the study building inspectors were recruited from home inspection firms, architectural firms, and firms with public housing and HQS inspection experience. Staff began the selection process by sending out letters of inquiry to building inspection firms located in the selected counties. From approximately 50 letters mailed out, there were about 25 serious inquiries. From this group of inquiries, staff requested professional resumes and information about the firms. Those responding were telephoned for further discussion. After telephone discussions with the inspectors and review of their submitted materials, staff selected fourteen organizations to conduct the on-site inspections.

Training the Inspectors

After agreements were reached with the inspection firms training sessions were scheduled. The training session was held at six different times and locations for the convenience of the inspectors. The training sessions took approximately an hour and a half. The focus of the training sessions was on: 1) a question-by-question review of the inspection form, 2) scheduling procedures and the role of the inspection logs, 3) procedures for recording and reporting inspection results, 4) method of payment and billing, and 5) scheduling times for telephone conferences. The inspectors identified specific inspection items and procedures that they thought could be of concern. These questions and the discussion resulted in a final revision of the inspection form.

A training session was also held for three University of Illinois graduate students in architecture. They were trained using the videotapes and other HQS training materials obtained from the earlier pilot study *HQS Section 8 Mail Survey Study*. The students had an on-site training session at Lakeside Terrace, a Champaign County Public Housing Authority site. This group provided backup in case problems arose with any of the other inspection firms. They were eventually used at one Kane County site in order to keep the study on schedule.

Security

Inspector security arose as an issue during the inspection training sessions. Inspectors involved with Indianapolis, St. Louis, and Chicago Public Housing Projects requested security or some type of escort assistance while on-site. Specific sites were of concern. After discussion the housing authorities provided on-site escorts for the inspectors at troubled sites. The inspector would notify the site office and request an escort, which was then provided. The escorts assigned were site managers, office staff, maintenance staff, and security personnel.

Oversight of On-Site Inspections

The on-site inspections began in early March 1998 and continued through July. The study sites were divided into three groups: 1) Cook/Kane Counties, 2) St. Louis and Marion Counties, and 3) Peoria, La Porte, Knox, and St. Joseph Counties. One staff person was assigned to handle each group. They were responsible for organizing the data files of each project site, assembling the survey returns, selecting the units for inspection, supervising the production and distribution of resident notification letters and inspector logs, and supervising the inspectors in the field.

Selection of Households for Inspection

The objective of the study was to attempt to inspect *every unit* that had returned a questionnaire. The process of selecting units for inspection began with identifying returned surveys from each community and project site. The return of questionnaires was noted in the tenant address database as the questionnaires arrived. At the end of every week, the database was sorted by county. When staff found that a county had at least six to ten units located in the same neighborhood, these units were grouped and scheduled for inspections.

The scheduling began by contacting inspection firms located in the county and reserving time for the following week. This allowed inspectors to establish schedules that also accommodated their other commitments. Inspection teams were generally assigned eight to ten inspections a day.

When travel time to reach a development was significant, inspections for that development were not scheduled until at least four units could be scheduled. This approach made the implementation of the inspections more organized and efficient. After a schedule was developed, a log sheet was also produced for use by the inspection teams. The log sheet contained the names, addresses, phone numbers if available, and time frame for the scheduled inspections. The log sheets were faxed to the assigned inspectors. After receiving the inspection logs, the inspectors were asked to call as many households as possible, in order to arrange specific inspection times. Rescheduling of incomplete inspections was handled by the inspectors.

Notification of Selected Households

After the units were selected for inspections, each household was sent a personalized letter notifying it of the inspection. The letters indicated that they had been selected for an inspection, the day and time of day (morning or afternoon) the inspection was expected, and a toll-free telephone number that could be used to arrange an alternative inspection time or to discuss any questions. The toll-free number proved invaluable for arranging or rescheduling inspection appointments and answering any questions. Approximately 480 calls were received concerning the inspections.

Completion and Processing of the On-Site Inspections

Inspectors visited assigned units and evaluated the entire unit including any indoor common areas, surrounding outside areas, and the neighborhood. Their findings for each unit were recorded on the inspection forms. When the inspectors completed the inspection forms, they were mailed with an invoice to the BRC. The forms were checked for completeness and the invoices were checked for accuracy. Inspectors were paid only for complete inspection forms. The receipt of each

inspection form was entered into database of sampled households.

Results of the On-Site Inspections

From March through July, 2,124 inspection letters were sent. Table 2-4 provides a breakdown of this distribution by county and by housing program. While an equal number of PHA and FHA inspections were sought, the table shows that more letters were sent to PHA units than to FHA units.

Table 2-4: Inspection Letters Sent March-July, 1998

Counties	PHA Inspection Letters Sent	FHA Inspection Letters Sent	Total Inspection Letters Sent
Cook	359	235	446
Kane	77	61	138
Peoria	49	82	131
Knox	86	83	169
La Porte	60	77	137
Marion	332	274	606
St. Joseph	79	84	163
St. Louis	95	91	186
Total	1,137	987	2,124

Inspection letters were sent for ninety seven percent of the returned surveys by the end of July. Of the 2,124 inspection letters mailed 1,662, or 78%, of the inspections were completed. Table 2-5 presents a breakdown of the number and percentage of completed inspections by county and by housing program.

Table 2-5: Inspections Completed During March-July, 1998

Counties	PHA Completed Inspections		FHA Completed Inspections		Total Completed Inspections
	Number	Percent	Number	Percent	
Cook	245	68	157	67	402
Kane	62	80	43	70	105
Peoria	45	91	70	85	115
Knox	74	86	79	95	153
La Porte	50	83	51	66	101
Marion	267	80	232	85	499
St. Joseph	53	67	72	86	125
St. Louis	82	86	80	88	162
Total	878	77	784	79	1,662

This table shows that the rate of successful inspections varied by county, with Cook County, Illinois showing rates of about 67 percent in both housing programs and Peoria County, Illinois showing over 90 percent completion of PHA units.

Unexpected Events

There were some unique situations encountered in Chicago during the study. In late March, the Postal Service briefly suspended deliveries for one site in the study following sporadic shooting at Robert Taylor Homes. After negotiations with the police, CHA officials, and Postal Service officials, a safety plan was developed for the letter carriers. Once this was arranged, the Postal Service agreed to resume delivery the next day. This cancellation of delivery service was one of the largest cutoffs in the city's history.

There was shooting at the CHA in April. This incident occurred at Cabrini Homes and a resident was killed. An inspection team was there that day, escorted by the CHA police. They reported that there was some tension, but the police decided to proceed.

Difficult Inspections

By late March, staff became concerned about accessing some units for on-site inspections in the large urban housing authorities. Feedback from field inspectors described these difficulties, especially in family developments. Many of the residents did not have phones and were not home at scheduled times. After some discussion about this issue with the GTM, it was decided to draft letters to the three large urban housing authorities (St. Louis, Indianapolis, and Chicago) requesting assistance from the site managers. Escorted entry into difficult to access units was requested. In the end, this approach was used in only one county. A letter was sent to the Executive Director of the Chicago Housing Authority requesting the CHAs assistance by

permitting site managers to provide escorted entry into those units where residents were not available.

DATA REVIEW

Introduction

This section reviews the procedures for processing the returned questionnaires and the completed inspections. It examines the reliability of the questionnaire and inspections as indicated by the comparison of data collected on the same unit at two different times. It concludes with a review of the questions with the highest non-response.

Processing

Questionnaires were returned individually in the business reply envelopes provided in the distribution package. As they arrived, their arrival date and postmark date (when present and legible) were recorded on the questionnaire and in the database of sampled residents. A bar code was placed on the first question page. This bar code allowed the unit identification to be scanned in at the time that the questionnaire was scanned into the data file. Questionnaires were sorted and filed by site for subsequent data entry.

Completed inspection forms were returned periodically by firms. As they arrived these forms were reviewed for completeness. The date of the inspection was entered into the database of sampled residents. Finally, forms were sorted and filed by site prior to their data entry.

Scanning

Data entry was by scanning with optical mark recognition (OMR) software. Preliminary tests of scanning began in April using an Hewlett Packard (HP) ScanJet 5s scanner and Remark 4.0 software. The scanner was fed sets of 5 questionnaires at a time. The software stopped for operator intervention when scanned images showed multiple marks in the boxes, weak or faint marks, and similar problems. Corrections were made on the basis of what the operator saw on the image screen. The process of scanning one questionnaire on the ScanJet 5s and then correcting the errors that showed up on the screen took approximately seven minutes. Scanned data was saved in two file formats for Excel and SPSS.

After preliminary testing the questionnaires were scanned on an HP 6100C using the same Remark software. Though the process of scanning the pages was the same as for the ScanJet 5s, the new scanner would accept 10 questionnaires at a time and scanned at a faster rate. This reduced the average time to scan and correct 1 questionnaire to 5 minutes.

Scanning Accuracy

During June and July a thorough review of both the questionnaire and inspection data was undertaken, a process often referred to as cleaning. Records kept during the cleaning allowed

estimates of the error rates in the original scanning. One questionnaire was picked from each development and the data from the SPSS files were verified by comparison with the actual questionnaire. The accuracy of the scanned data entry was just over 99% when each item in a sample of 100 questionnaires was compared to the marks on the original forms.

When there were errors in the scanned data they seemed to be attributable to a number of specific problems:

- Very weak lead pencil marks, fading ball point pen marks, and light colored marks were read as blanks by the computer, and were not picked up during the post scan corrections.
- Written answers, instead of marked boxes, were ignored by the scanner or mistaken for marks when the writing crossed a single box.
- Boxes that were marked and then scratched out, with another box marked, were recorded as either multiple answers or as the more dominant mark.
- On rare occasions certain marks were picked up where they didn't exist and certain marks were not recorded when they were present.
- Sometimes when a page or a section was crossed out, segments were read as legitimate if the marks crossed any of the boxes.
- Long tails on certain check marks caused misreads.

In reviewing the inspection data there turned out to be two kinds of inspection forms, printed originals and copies that inspectors made in the field. In a sample of 100 copied forms, 57% had at least one error, although 95% of the items were still accurately scanned. On the other hand only 37% of the forms that we distributed had at least one error in scanning and 97.25% percent of the items were scanned accurately. The majority of the scanning errors occurred on the first page.

Because the analysis involved item-by-item comparisons these rates of accuracy on the inspection forms were judged to be too low. The inspection forms needed to be at least as accurate as the questionnaires. From the last week of July through mid-August staff verified all the questionnaires and inspection data against the actual forms, thereby increasing the accuracy of the data to be analyzed to over 99%.

Questionnaire Reliability

A good measuring instrument is one that will give you the same value for repeated observations of the same phenomena. This is true for measuring instruments of all kinds, including questionnaires. An instrument that provides the same value for the same phenomenon is said to be reliable or to have reliability.

As the questionnaire distribution process came to its conclusion a listing of all respondents was created as the basis for an assessment of the reliability of the questionnaire. From this list a 10% sample was randomly selected. These respondents received a new distribution package with a cover letter requesting that they complete the questionnaire a second time, a copy of the questionnaire, and a business reply envelope. Regardless of the initial distribution, all were

distributed by mail, using the respondent's name and unit address. A postcard follow-up was sent in approximately one week and a second questionnaire distribution package followed after another week.

The returns from this reliability-test distribution were good. Less than 6% of the sample was returned as undeliverable. This resulted in a net sample size of 257. Completed second questionnaires were received from 154 respondents. Thus the rate of return for this reliability-test sample is 60%.

Comparisons of the data obtained from the 151 respondents that completed the questionnaire twice were made. The rates of agreement are high for those questions with a choice of two questions. Twenty-nine items had overall agreements over 90%. Another 14 items had agreements between 80% and 90%. Only one item was less than 80% (79.6).

The highest rates of agreement generally occur with items that are unlikely to change in the dwelling. For example, it is unlikely that the number of working outlets changed in the sampled units, and the overall agreement for this item was just over ninety nine percent. On the other hand, those items with the lowest rates of agreement were items that were more likely to change or items that required greater judgement.

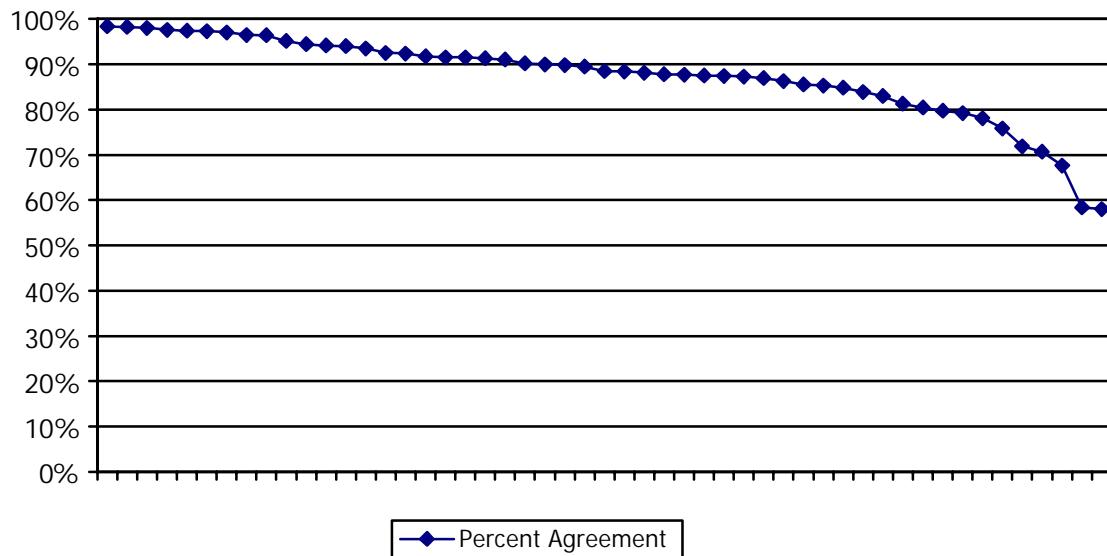
Several questions had more than two response choices. Another 16 items had agreement rates greater than 90%, and 21 had rates between 80% and 90%. Still, a number of items had lower rates of agreement. These are items that are related to individual opinions and personal experiences, e.g. "The management's polite," and "What is the condition of the neighborhood streets?" Some items with rates less than 80%, also appear to address issues where conditions might easily change; e.g., "I often hear bothersome noises."

The overall sense from these analyses is that the questionnaire is a reliable instrument. This is especially true for those items concerned with the specific unit characteristics. Items with lower rates of agreement appear to: 1) address phenomena that are more likely to change, 2) address items that require greater subjective judgment, or 3) rely upon memory of participants.

A sense of the reliability of the questionnaire is shown in Figure 2-1. This is a plot of rates of agreement for the questionnaires completed at two different times. The data has been sorted by rate of agreement. It is not the intent to describe individual questions in this figure, however it is still possible to identify the items with the lowest rates of agreement. These are the items that are related to individual opinions and personal experiences, e.g. "The management's polite," and "What is the condition of the neighborhood streets?"



Figure 2-1: Questionnaire Reliability of each item



Sources of Disagreement

Analyses were conducted to see if the reliability, i.e. the percent agreement, might be different for groups within the reliability sample. Each of 110 questions was examined by the analysis of variance procedures (ANOVA) within SPSS. In a simple factorial model the specific question's agreement was taken as the independent variable. The housing program, respondent gender, and respondent age were taken as the independent variables. Each of these was a dichotomy: Public Housing/FHA, male/female, and under sixty two/sixty two and over.

The results of this series of analyses were summarized by showing the statistically significant main effects and interactions for these three factors. The analysis showed when the difference between groups was greater than might occur by chance, when significance was 0.05 or less and when it was 0.01 or less.

In fact, a review of the analyses will show very few significant main effects or interactions. The numbers found are summarized in Table 2-2. Given the number of questionnaire items examined (121), the table shows that there are generally no more significant findings than what might be expected by chance. At 0.05 level of significance it should be expected to obtain 5 significant findings in a set of 100 analyses. At the 0.01 level of significance it should be expected to obtain one significant finding out of a set of 100 analyses. The table indicates that there are more differences than might be expected for two conditions: age and housing program. Further examination of the Appendix shows there is a pattern worth observing. Questions from the agree-disagree block all have either a significant main effect (housing program or respondent age) or a significant interaction (age interacting with housing program or respondent gender).

Table 2-6: Summary of Housing Program, Gender, and Age as Sources of Reliability Problems

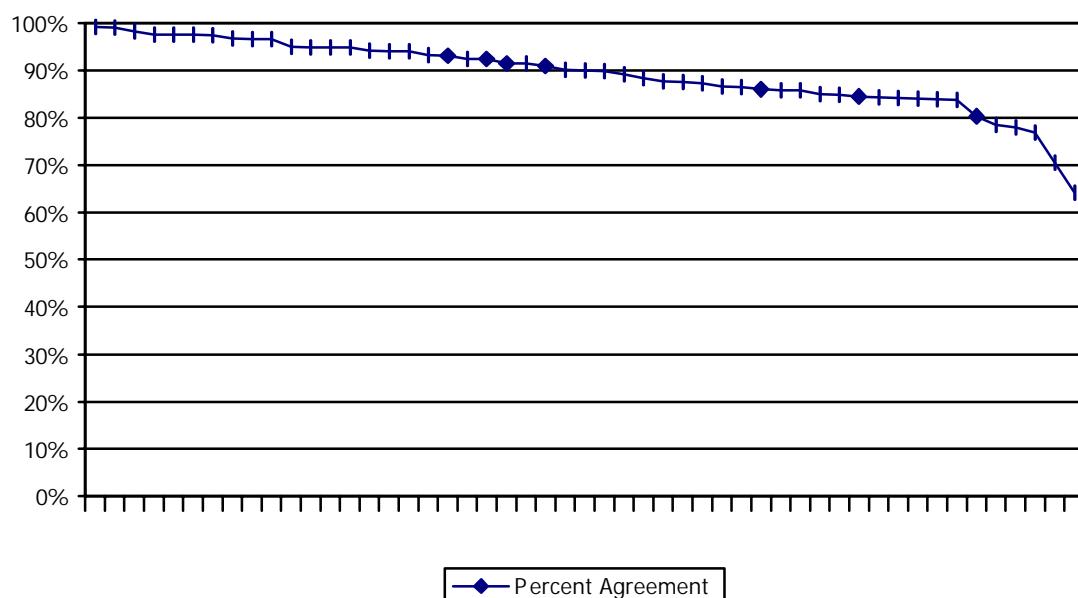
	Number Significant at $p = 0.05$	Number Significant at $p = 0.01$
Housing Program	12	4
Gender	5	1
Age	10	5
Program & Gender	7	1
Program & Age	6	1
Gender & Age	6	1
Program, Gender, & Age	5	1

This does not necessarily mean that these agree-disagree items are not reliable. The rates of agreement for the individual groups were all quite high. However, it does suggest that for these items some demographic groups will be slightly more reliable.

Reliability: Inspections

As described previously, inspections were conducted twice for a sample of residences. These repeated inspections were more difficult to obtain than repeat questionnaire returns because of greater intrusiveness and the need for the cooperation of management, as well as residents.

Although the sampling for units to be inspected a second time could not be random, it sought to be representative by including units from several sites with different characteristics. A total of 117 units were inspected twice. The data for the dichotomous inspection items was compared. Thirty-three of the items had rates of agreement of 90% or more. Ten had rates between 80% and 89%. Five inspection items had rates between 70% and 79%. There were no items with rates below 70%.

Figure 2-2: Reliability of Inspection Items

Two items had an agreement rate of 70%. Four had agreement rates of 60% to 69%. This pattern of high rates of agreement among inspectors can be seen in Figure 2-2. As in the previous figure, items have been sorted from highest to lowest rate of agreement. The patterns are similar. The analysis shows that, as was the case with the resident comparisons, the rates of agreement appear to be lowest for those items that require greater judgment.

Comparing Resident and Inspector Reliabilities

One can begin to sense from the discussion and these last two figures, that residents and inspectors had similar levels of agreement when tested twice. The analyses show that for a few items the reliability appears higher for inspectors than for residents, e.g., “Are the sidewalks, driveways, and parking lots in good repair?”, had an agreement of 92.1% for inspectors but only 86% for residents. On the other hand, there were items where the residents appear more reliable than the inspectors, e.g., on the item asking “... are there 2 means of egress?” inspectors agreed 76.1%, while residents agreed 89.9%.



Figure 2-3: Comparison of Questionnaire and Inspection Agreements

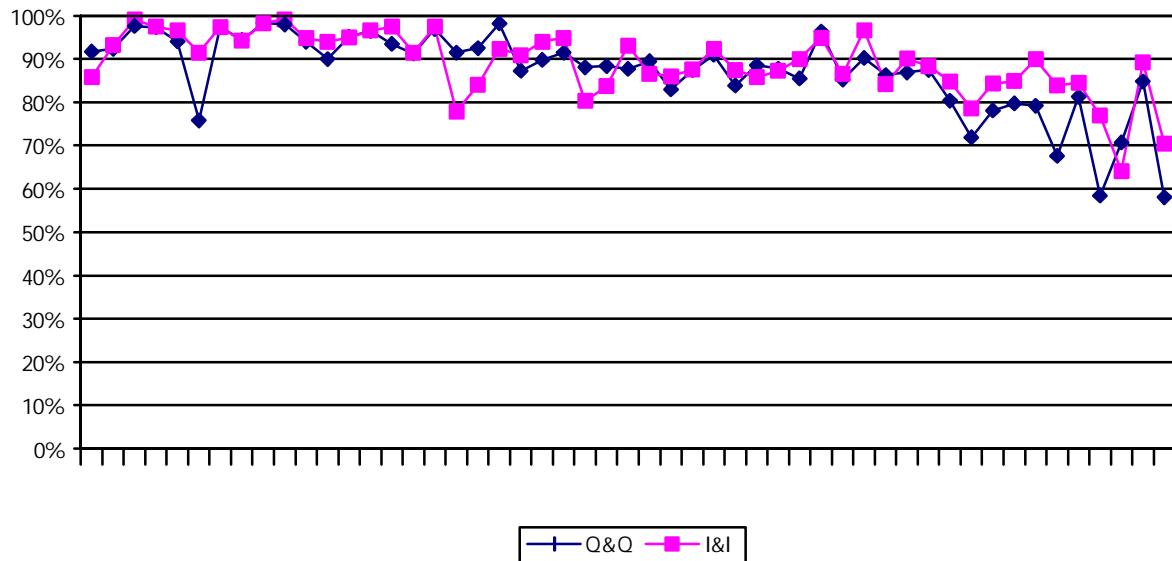


Figure 2-3 allows an overview of the reliability of these two groups. Thus, the rates of agreement were matched by common items and then sorted by questionnaire agreement. While it is not possible to label each point on the X-axis, the points represent identical items on the questionnaire and on the inspection form. The order of presentation is based upon sorting the pairs of data in a decreasing order for the questionnaire reliability. The patterns are similar and perhaps most importantly, it appears that residents are as reliable, i.e., as likely to give the same data at two

separate times, as are the trained inspectors. In looking at both sets of agreements, there is no reason to believe that resident data is less reliable than that obtained from inspectors.

Missing Data

When the data from questionnaires is examined it is common to find that not every respondent answers every question. This results in “missing data.” Analysis shows the rate of missing data for each questionnaire item. In general the rate is low (i.e., completion rate high). Forty-four items had a missing data rate of less than 3%. Eighty-four items had a missing value rate less than 5%. Only 15 items had missing data in excess of 10%. The average rate of missing data is 4.8%.

It is possible to infer the cause for some missing data. For example, the item “working exhaust fan” with 4.1% missing data has a higher rate of missing data than items immediately above or below it. This suggests that some may have left it blank because they felt the question did not apply to them. Having no exhaust fan, they may have skipped it.

In some cases missing data may represent the respondent’s lack of knowledge. Leaving an item blank may be the same as indicating “don’t know.” This may be an explanation for the high rate of missing data for the item “building in your neighborhood entirely vacant,” with its 11.1% rate of missing data; higher than adjacent items.

The rates for missing data are generally low until the last pages of the survey, where it increases generally, not just for specific items. This may be an indication of respondent fatigue, but also the success of different question types. The average missing rate for the 6 satisfaction questions was 3.5%. This is followed by a section of 8 agree-disagree items where the missing data rate is 8%. The next 4 items have an average missing data rate of 3.5%. This suggests that the agree-disagree questions may be slightly more difficult, annoying, fatiguing, or otherwise problematic.

The section of questions concerned with changes over time had an average missing data rate of 12.4%. This may indicate fatigue, but it may also represent an implicit “does not apply” response.

Summary

In summary, missing values for this questionnaire appear to be acceptable. Where the missing rates are relatively high the question should be examined to see if the response options allow expression of “don’t know” and “does not apply.” These questions should also be examined to see if they ask for reasonable information, to see if they are overly complex, and to see if they may be especially fatiguing.

Taken together the three sets of analyses indicate that the most questionable set of questions is the group with the agree/disagree response format. These have some of the lowest rates of agreement, show up as being different for program type, and have higher rates of missing data.

3: What the Study Showed

With the positive results obtained from an earlier pilot test (1995) of the Section 8 assessment questionnaire, HUD's Office of Policy Development and Research became interested in examining the use of that questionnaire to assess other assisted housing. The result was the development of this study of public and FHA-assisted housing.

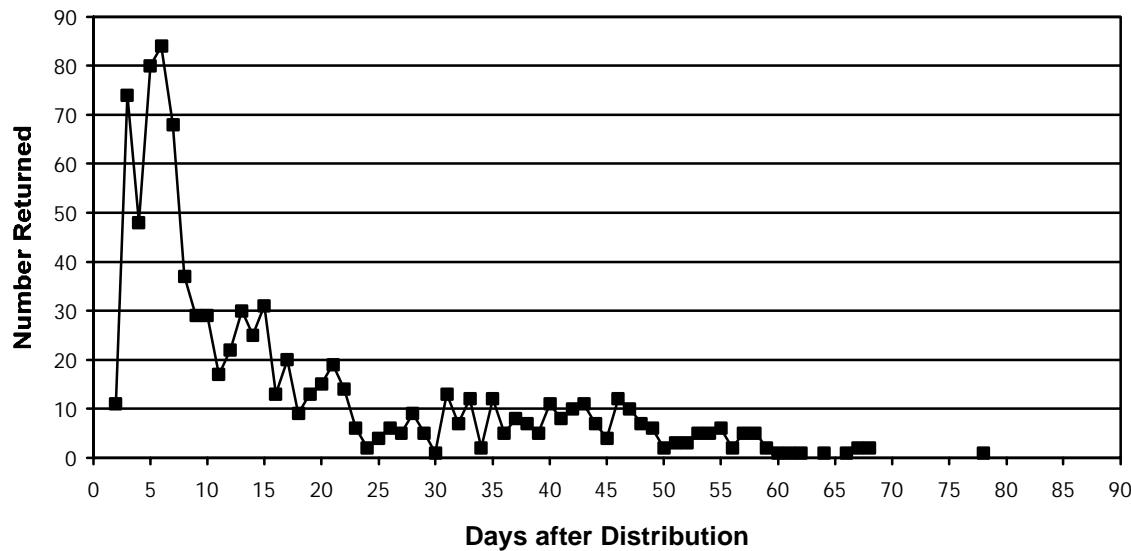
This study was to answer questions about the ability of a mail survey to obtain high rates of return from occupants of these two programs, and to obtain responses from residents that had high agreement with the observations of trained inspectors. This chapter describes what the study showed about using a mail questionnaire to assess the quality of FHA-assisted and public housing.

Return Time

Data that describe the return rates comes from the database of sampled residents. This was kept in a spreadsheet format and initially contained the resident name, street address, project name, etc. for each sampled resident. Subsequently new information was added to each resident's record describing the distribution method, dates of distribution, and return date. This data set was the basis for examining the time for responses to return and the response rate for each distribution type.

For each returned questionnaire the number of days between initial distribution date and return date was computed. Figure 3-1 shows the results of this. The x-axis shows the number of days after the original distribution. The figure shows that some people respond immediately, and about 20% of all returns are received in the first seven days that returns are received. There are clear increases in the number of returns at two points. These points follow the distribution of follow-up materials. The figure also indicates that the total time for response is 8 weeks or more.

Figure 3-1: Returns Received by Time



Rate of Return

In determining the rate of return for a survey it is sometimes useful to distinguish between gross and net return rates. A gross return rate is simply the ratio of returns with respect to the total distribution. However, some of those questionnaires in the initial distribution were not delivered to the intended respondents. Thus they could not be a part of the return rate. Some individuals in the sample may move, be evicted, etc., before distribution occurred.

A net rate of return can be calculated to correct the sample size for individuals that are known to no longer be present. A distinction can be made between the number of “distributed” and “net distributed” questionnaires. The number of “net distributed” excludes all units where it is known that the questionnaire could not be delivered.

As the process of questionnaire distribution proceeded, records were kept on the return of each questionnaire. When questionnaires were returned by the postal service or by property managers the reason for the return was recorded. A summary of the reasons for non-delivery are shown in Table 3-1. The most frequently identified reason for non-delivery was that the resident had moved. The next most frequent reason for non-delivery is surprising: “insufficient address” or “address unknown”. This is surprising because considerable time and effort was invested in obtaining mailing addresses from the individual housing authorities and management firms. The postal service may have used this explanation as a matter of convenience, but there appear to have been some instances of incomplete or inaccurate address information being provided by the local management organizations.

Table 3-1: Reasons for Non-Delivery

Reason	Number Returned	Percent From	
		PHA	FHA-assisted
Moved	96	62.5%	37.5%
Insufficient Address	66	78.8%	21.2%
Returned - No Explanation	51	56.9%	43.1%
Vacant	45	80.0%	20.0%
Deceased	9	33.3%	66.7%
Temporarily Away	5	60.0%	40.0%
Refused	5	80.0%	20.0%
Non-English Speaking	2	50.0%	50.0%
Evicted	2	0.0%	100.0%
Other	6	0.0%	100.0%
Total	287	65.5%	35.5%

The table also indicates the proportion of deliverable questionnaires from public and FHA-assisted housing. In all, 65.5% of the questionnaires returned as non-deliverable were from public housing sites. That represented an average non-delivery rate at public housing sites of 8.5%, while the non-delivery rate at FHA-assisted housing was only 5.9% of the initial distribution.

Table 3-2 shows that the net rates of return after taking the non-deliverables into account. Overall, this was 61.2%. In addition the table shows the net return rates for the public and the FHA-assisted portions of the sample.

Table 3-2: Net Rate of Return: Total Sample and by Housing Program

	Distributed	Undelivered	Net Distributed	Net Rate of Return
Total Sample	3894	287	3607	61.2%
Public Housing	2214	188	2026	56.6%
FHA-assisted	1680	99	1581	65.8%

Analysis of Group Differences

While the rates for public and FHA-assisted housing appear different in Table 3-2 the determination that the difference should be considered statistically significant depended upon further analyses. The methods used were based upon analysis of variance (ANOVA) since the response variables looked normally distributed with mean rates for sites ranging between 0.4 to 0.7. The analysis models had mixed effects with type of housing program and distribution variable as fixed factors. Respondent and site variables were treated as random effect.

An analysis of variance approach allows simultaneous examination of direct effects of variables (e.g., housing program), and the effect of the interaction of two or more variables being present (e.g., delivery type and address name). The analyses for this section were performed primarily with the GLM procedure in the SAS statistical analysis program. The following sections of this chapter discuss the return rates of specific groups, and combinations of groups, within this analysis, indicating when the return rates of different groups were found to be statistically different.

These analyses showed the presence of statistically significant direct and interaction effects.

Program Type

This study was concerned with the potential for a mail questionnaire to be used in the quality assessment of two major program: public housing and FHA-assisted. As Table 3-2 shows, when no other variables were considered, the rate of return was higher in FHA-assisted housing than in public housing. The analysis shows that the probability of this difference being due to chance is

less than 0.02.

Method of Distribution

It is possible to conceive of several methods of distributing a questionnaire in a housing development. After discussing many of these, two were chosen as being the most likely for any further distribution by HUD: direct mail and distribution by management. The specifics of each of these were discussed in Chapter 2. Table 3-3 shows that for the total sample the postal delivery appear greater. However, the subsequent analysis shows the probability of this difference being due to chance is not significant.

Table 3-3: Rate of Return by Distribution Method

Method	Rate of Return
Postal	63.8%
Management	61.1%

Resident Name

In a questionnaire distribution process HUD could choose to address questionnaires to residents by their name or in a more generic way, essentially name vs. no name. Sampled units in both the public housing and FHA-assisted housing programs were randomly assigned to either of these two conditions.

The resident names were obtained from records provided by the specific housing management organization. As a result there was some uncontrolled variation in available names. In most cases the information given to us contained both a first and last name, however for a few sites only a first initial and last name was provided. For those cases where no name was used in the questionnaire distribution several choices were possible. After considering these the no name distribution was addressed to "Current Resident." Figure 3-2 gives examples of these address variations.

Figure 3-2: Examples of Two Name Conditions

Addressed by Name	Addressed by Generically
Mr. John Doe 832 N. Hudson Ave., 1010 Chicago, IL 60610	Current Resident 832 N. Hudson Ave., 1010 Chicago, IL 60610
Ms. Jane Doe Peppermill Farms 4327 Shady View Dr. Indianapolis, IN 46202	Current Resident Peppermill Farms 4327 Shady View Dr. Indianapolis, IN 46202

Table 3-4 shows that for the total sample addressing questionnaire to residents by name rather than generically resulted in higher return rates. Further, the difference is in the hypothesized direction, it was expected that the use of the resident's name would obtain a higher return rate.

The statistical analysis showed that this was almost significant, the probability of this difference being due to chance is 0.08.

Table 3-4: Return Rates Using Resident's Name

Resident Name	Rate of Return
Name	64.6%
No Name	60.4%

Name and Delivery

While the two methods of distribution (mail and management) produced equivalent return rates when considered by themselves, analysis shows that the combinations of name and distribution method did result in significant differences ($p < 0.019$). Table 3-5 shows the rates of return for the four combinations.

Table 3-5: Return Rates of Distribution and Name Combinations

Combination	Rate of Return
Name, Mail Delivery	68.0%
Name, Management Delivery	61.1%
No-Name, Mail Delivery	59.7%
No Name, Management Delivery	61.1%

Table 3-5 table shows that the highest rate of return (68.0%) came from the mail distribution with the resident's name in the address. This rate was significantly higher than the other three. There were no significant differences among the three remaining rates of return.

County

Early analyses showed that there were differences in return rates among the counties. To look at this more closely the counties in this study were placed into three groups: large cities, medium cities, and rural communities. Cook County, Marion County, and St. Louis County were grouped together as large cities. Kane County, La Porte County, Peoria County, and St. Joseph County were all grouped together as medium cities. Knox County was categorized as a rural community.

Table 3-6: Return Rates for County Types

County Type	Rates of Return
Large City	56.1%
Medium City	64.9%
Rural Community	66.3%

Table 3-6 shows the average return rates for these county groupings. Statistical analysis shows that the large cities had the lowest return rates, significantly different from the rural county. The statistical analysis also showed that “medium city” and “rural community” counties were not significantly different from each other.

Delivery and County

Some significant differences in return rates were seen for combination of county type and delivery method. Table 3-7 lists the return rates for these combinations.

Table 3-7: Delivery and County Type Combinations

Combination	Rate of Return
Mail & Large City	55.6%
Mail & Medium City	63.1%
Mail & Rural	72.8%
Management & Large City	56.7%
Management & Medium City	66.8%
Management & Rural	59.8%

Both delivery methods perform the same in large city counties and in medium city counties. Further, as the previous table suggested, the rates are higher in medium city counties than in large city counties. In a similar fashion, the rate for mail distribution increases even more in the rural county type. Surprisingly the direct management distribution in rural counties is lower. However, it should be remembered that there was only one county in this category. It would require testing in additional rural counties to confirm that mail is superior to management delivery in rural counties.

Name and County Type

Table 3-8 indicates that there may be some interaction of type of name used in the different types of counties.

Table 3-8: Return Rates for Name & County Type Combinations

Combination	Rate of Return
Name & Large City	59.7%
Name & Medium City	69.9%
Name & Rural	64.0%
No Name & Large City	52.5%
No Name & Medium City	66.8%
No Name & Rural	89.8%

Table 3-8 provides the rates of return for each of the name and county type combinations. The analyses indicate that within the large city and medium city counties, use of the resident's name obtained higher rates of return. Again surprisingly, the rural county shows the opposite pattern with a higher rate of return obtained by using "current resident." Again, there was only one county in this category. Additional counties of this type should be examined to confirm this pattern.

Housing Program, Name and Delivery

As indicated initially, the rates of return varied by housing program. The only interaction of program type that was significant was with the name and delivery combination. Table 3-9 shows the return rates for these combinations.

Table 3-9: Combinations of Program, Delivery & Name

Combination	Rate of Return
Public Housing, Mail, Name	62.4%
Public, Mail, No Name	57.7%
Public, Management, Name	59.3%
Public, Management, No Name	57.8%
FHA, Mail, Name	73.6%
FHA, Mail, No Name	62.9%
FHA, Management, Name	61.6%
FHA, Management, No Name	64.1%

The combination of FHA, mail distribution and resident name had the highest rate of return with seventy three point six percent, and was significantly different from all other combinations. There are no other significant differences in Table 3-9.

Elderly

There were several options available for examining the affect of elderly residents on the rates of return. The analysis used the elderly variable as a co-variate in the analyses. The results show that elderly will respond at a higher rate than non-elderly.

Return Rate Summary

The rate of return of a customer feedback questionnaire sent to residents of public and FHA-assisted housing can be high. Direct mail of a questionnaire with the resident's name and unit address produced the highest rates of return in both programs.

Agreement of Resident and Inspector Data

As described earlier, a questionnaire, containing 120 fixed response items and 3 open-ended items, was sent to a sample of public housing residents and a sample of FHA-assisted residents. 83 items were assessments of the conditions in their dwelling (e.g., “Do all of the stove burners work?”). 26 items were opinions about the home environment (e.g., “There are enough windows for good ventilation.”). The final 12 questions obtained demographic information (e.g., “What is your race?”). The open-ended items concerned numbers of children, items needing repair, and opportunity for other comments.

As described previously, 64 of the 83 direct assessment items were used to create an on-site inspection form. To the extent possible the inspectors were asked to assess the dwelling by questions identical to those asked of the residents. Thus, two data sets of 64 items were available for comparison.

Agreement of Dichotomous Items

This section compares the data obtained from on-site inspectors and residents for the total sample in this study. To begin with, Table 3-10 shows those 43 items where the responses were a dichotomous assessment of a characteristic being present or absent. The table presents these in the order they appeared on the questionnaire.

Table 3-10: Comparison of dichotomous assessment items, agreement of inspectors and residents

Questions	Both Positive	Insp. Positive	Tenant Positive	Both Negative	Overall Agree-ment
Do all of the stove burners work?	87.3%	4.1%	5.8%	2.9%	90.2%
Does the kitchen have a working oven?	97.1%	2.2%	0.3%	0.3%	97.4%
Does the refrigerator keep food cold enough?	97.0%	2.1%	0.6%	0.3%	97.3%
Does the sink have hot and cold running water? (Kitchen)	98.2%	1.0%	0.6%	0.2%	98.4%
Is there a working light fixture on the ceiling or wall?	94.0%	4.2%	1.7%	0.1%	94.1%
Is water leaking today from the sink or drain pipe? (Kitchen)	85.5%	9.6%	3.0%	1.8%	87.3%
Are all toilets working today?	96.2%	2.1%	1.4%	0.3%	96.5%
Do all sinks have hot and cold running water? (Bath)	97.9%	1.4%	0.5%	0.1%	98.0%
Do all showers or tubs have hot and cold running water?	96.7%	1.8%	1.2%	0.3%	97.0%
Is water leaking today from any sink or drain pipe? (Bath)	85.9%	9.3%	3.3%	1.5%	87.4%
Do the walls or floor near the tub or shower show water damage?	73.9%	12.9%	7.4%	5.8%	79.7%

Questions	Both Positive	Insp. Positive	Tenant Positive	Both Negative	Overall Agree-ment
Does the bathroom have either a window that opens or a ventilation fan that works?	69.7%	12.0%	6.7%	11.6%	81.3%
Is all the wiring concealed either in walls or metal coverings?	94.0%	4.1%	1.8%	0.0%	94.0%
Do all electrical outlets and switches have cover plates?	89.2%	7.5%	2.4%	0.8%	90.0%
Does each room, except the bathroom, have at least one working outlet?	97.5%	1.6%	0.8%	0.1%	97.6%
If the apartment comes with air conditioning, does it work correctly?	87.1%	5.4%	3.8%	3.7%	90.8%
Are there any holes where outdoor air or rain can come in?	87.3%	8.4%	3.0%	1.2%	88.5%
Are there any cracks or holes in the inside walls that are thicker than a dime on edge?	82.4%	10.4%	4.4%	2.9%	85.3%
Is there any paint that can be chipped or peeled by finger scraping?	71.4%	11.9%	10.0%	6.7%	78.1%
Is there any area of peeling paint or broken plaster bigger than the size of this page?	89.1%	5.1%	3.9%	1.9%	91.0%
Are the walls solid, straight, and flat?	89.5%	9.1%	1.2%	0.3%	89.8%
Can you see any place where the ceiling sags?	91.6%	6.5%	1.1%	0.8%	92.4%
Are there any signs of mildew?	85.0%	7.7%	4.8%	2.5%	87.5%
Is the floor uneven or damaged in ways that can cause someone to trip?	94.1%	4.5%	1.0%	0.3%	94.4%
Are there any signs of rats in the home?	94.1%	2.5%	1.1%	2.3%	96.4%
Are there any signs of cockroaches in the home?	77.5%	7.2%	5.8%	9.4%	86.9%
If applicable, are there safe handrails on all stairs and landings?	88.2%	8.5%	2.5%	3.3%	91.5%
Do all outside doors and windows have locks that work?	89.0%	4.9%	5.1%	1.0%	90.0%
Do all of the windows have locks that work?	87.0%	8.0%	2.4%	2.5%	89.5%
Do all bedrooms have a window that you can open?	90.8%	7.3%	1.4%	0.5%	91.3%
Does any window have broken glass that could cause cuts, or otherwise be dangerous?	94.4%	2.8%	2.2%	0.7%	95.1%
Is there a working smoke detector on each floor in the home?	90.0%	2.9%	6.1%	1.0%	91.0%
In case of fire are there at least 2 means of egress?	76.2%	7.7%	13.1%	3.0%	79.2%
Is the condition of any porch or balcony dangerous?	90.8%	5.8%	2.9%	0.6%	91.4%
Are any outside handrails, steps, or stairs unsafe?	1.0%	5.8%	9.4%	83.7%	84.7%
Are the sidewalks, driveways, and parking lots in good repair?	79.8%	10.4%	6.6%	3.2%	83.0%
Are any fences or gates in bad repair?	3.4%	8.4%	10.7%	77.5%	80.9%
Do you see any walls with missing bricks, siding, shingles, etc.?	92.6%	3.4%	3.0%	0.9%	93.5%

Questions	Both Positive	Insp. Positive	Tenant Positive	Both Negative	Overall Agree-ment
Are covered dumpsters or cans provided for your garbage and trash?	83.9%	8.5%	5.9%	1.6%	85.5%
By visual inspection, are the washers and dryers in the laundry room in good repair?	88.5%	9.5%	0.9%	1.1%	89.6%
Is there a community room for residents of the complex?	75.3%	9.0%	3.3%	12.4%	87.7%
Is the equipment in the community room in good working condition?	94.4%	4.5%	0.9%	0.2%	94.6%
Is there a play area for residents of this complex?	38.5%	6.9%	25.5%	29.1%	67.6%
Is the equipment in the play area in working condition?	68.0%	17.4%	5.5%	9.0%	77.0%

These comparisons of inspection data and questionnaire data are based on the data being matched to the same dwelling unit. Although there is item-by-item variation in the number of units with matched data (a result of missing data), there were over 1,500 dwellings where a questionnaire was returned and an inspection was completed.

In the left-hand column of Table 3-10, the specific questionnaire items are listed. The first four columns show: 1) the percent of units where positive assessments were obtained on both instruments; 2) the percent of units positive on the inspection and negative on the questionnaire; 3) the percent of units that positive on the questionnaire and negative on the inspection; and 4) the percent of units that had negative assessments on both the inspection and questionnaire. The last column shows overall agreement, the sum of the percent of units where both assessments were positive or negative.

The table shows that on an item-by item basis there is strong agreement between the findings of the inspections and the questionnaires. Twenty-four items Table 3-10 have rates of agreement greater than, or equal to, 90%. Fifteen items in Table 3-10 have rates of agreement between 80% and 90%. Four items have rates of agreement between 70% and 80% in Table 3-10. The average of these rates of agreement is 89 %. The 2 lowest rates of agreement address play areas on the site.

In addition to showing overall rates of agreement, Table 3-10 shows that the inspectors and residents generally agree on their positive assessments of the housing study. And, because of the random sampling and high rates of return, it is an indication that public and FHA-assisted housing generally are of good quality. More specifically, 17 of the 45 items in Table 3-10 were assessed positively by inspectors and residents over 90% of the time. Another 15 items were assessed positively by both groups over 80% of the time.

The “Inspector Positive” column gives an indication of where resident assessments were more severe than the on-site inspectors. Water leaking from sinks or drain pipes, water damage near tubs and showers, bathroom ventilation, and walls being flat were among those items seen more negatively by residents than by inspectors. On the other hand adequate means of egress, and safety of external stairs were often seen more negatively by inspectors than by residents.

Agreement of Non-Dichotomous Items

There were 20 items where the residents or the on-site inspectors had more than two choices for their assessment. In some cases, both groups were allowed to respond, “quickly,” “slowly,” or “clogged” in response to the question, “Does the sink drain quickly?” In other cases the residents were given an additional response choice compared to the inspectors. For example, residents could respond to the question, “Is the tap water discolored?” with “sometimes,” as well as “yes” or “no.” The result is that for these items the rate of overall agreement is the clearest indicator of agreement.

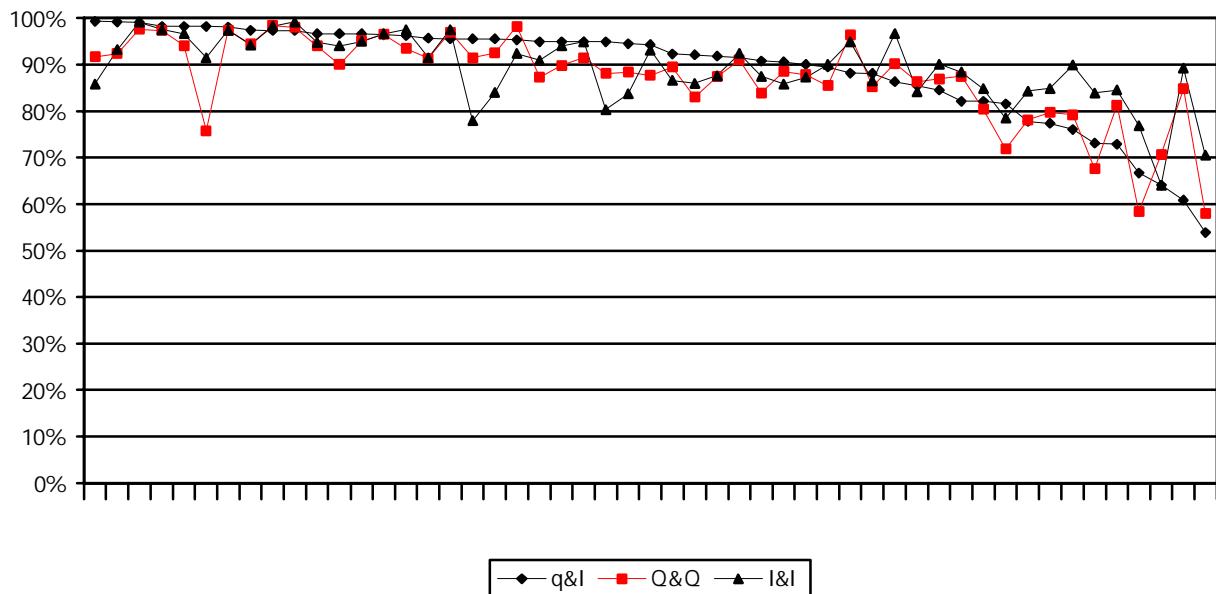
Table 3-11: Comparison of Non-Dichotomous Items, Agreement of Inspectors and Residents

Questions	Overall Agreement
Does the tap water have a bad odor?	91.5%
Is the tap water discolored?	91.7%
Does the sink drain quickly? (Kitchen)	83.9%
Is there a working exhaust fan for the stove/range?	88.8%
How many working wall outlets are in the kitchen?	88.4%
Is any bathroom sink, tub, or shower clogged?	71.9%
Do all ceiling and wall mounted lights work?	91.5%
Is there a heating supply to every room?	75.8%
Can the heat be adjusted from within the unit (thermostat, valve)?	87.8%
Are there signs of water leakage?	80.4%
Are there any missing or warped floor boards or floor tiles?	86.3%
Is there any torn or loose carpeting or linoleum?	88.1%
Do you smell bad odors such as sewer, natural gas, etc.?	92.5%
How many homes or apartments are in the building?	81.8%
Does the building have a working elevator?	98.2%
Is there a laundry room?	84.2%
Do you see any problems with the roof?	60.8%
Is there trash or junk on nearby streets, sidewalks, or adjacent property?	58.4%
Are any buildings in your neighborhood entirely vacant?	65.8%
What is the condition of the neighborhood streets?	52.7%

Table 3-11 shows the overall agreement between the assessments of residents and the assessments of the on-site inspectors for these 19 items that are without dichotomous response categories. In this case the range of rates of agreement is from 98.2% to 52.7%. Five items had rates of agreement greater than 90%; 9 had rates of agreement between 80% and 89%; 2 had rates between 70% and 79%; and 4 had rates below 70%. The 2 items with the lowest rates of agreement, “buildings ... vacant” and “condition of ... streets,” required greater judgement than most other items.

In the previous chapter figures showed the rates of agreement of residents completing the questionnaire twice for units inspected twice (Figures 2-1 and 2-2) of residents and inspectors. With the data in Tables 3-10 and 3-11 the rates of agreement of inspectors and residents can be compared to the rates of the inspectors to themselves and residents to themselves. This is done

Figure 3-2: Comparison of Agreement Rates



in Figure 3-2. The x-axis represents individual questions and is ordered by the rates of agreement in Tables 3-10 and 3-11. In almost all cases the agreement of residents and inspectors is as good, or better, than obtaining the data two times from an inspector or a resident.

Sources of Differences in Agreements

The data were examined to see if the differences in the rates of agreement could be attributed to any of six factors: 1) type of housing program; 2) type of county; 3) gender of respondent; 4) elderly/non-elderly status; 5) ethnicity of respondent; and 6) the presence of children in the household. The statistical methods used to do this were based on analysis of variance (ANOVA). Each item was analyzed separately with the item agreement of inspector and respondent as the dependent variable. The models in these analyses had mixed effects, with program type and county type as fixed factors, and gender, elderly status, ethnicity, and presence

of children as random factors.

The analysis looked for direct effects and two-way interaction effects. While the complete analysis are available on request, Table 7-3 summarizes the results of the ANOVA for each question. The columns show the direct effects of: type of county (T); type of housing program (H); the interaction of county type (TH); direct effect of gender (G); the interaction of county type and gender (TG); housing program and gender (HG); elderly status (A); interaction of county type and elderly status (TA); housing program and elderly status (HA); gender and elderly status (GA); ethnicity (E); interactions of county type and ethnicity (TE); housing programmed ethnicity (HE); gender and ethnicity (GE); elderly status and ethnicity (AE); children present and the interaction effects of county type and children (TC); housing program and children (HC); gender and children (GC); elderly status and children (AC); and ethnicity and the presence of children (EC).

For each direct or interaction effect there is an indication of the level of significance revealed in the analysis. When the analysis of an individual question revealed statistically significant effect, those effects were noted in the appropriate column. Significance is shown at four levels: 0.05, 0.01, 0.005, and 0.001.

Table 7-3: Significantly Different Rates of Agreement

	T	H	T H	G	T G	H G	A	T A	H A	G A	E	T E	H E	G E	A E	C	T C	H C	G C	A C	E C
Do all sinks have hot and cold running water? (B)																					
Do all showers or tubs have hot and cold running water?																					
Is water leaking today from any sink or drain pipe? (B)																					
Is any bathroom sink, tub, or shower clogged?																					
Do the walls or floor near the tub or shower show water damage?																					
Does the bathroom have either a window that opens or a ventilation fan that works?	*																				
Is all the wiring concealed either in walls or metal coverings?																					
Do all electrical outlets and switches have cover plates?																					
Does each room, except the bathroom, have at least one working outlet?																					
Do all ceiling and wall mounted lights work?																					
Does the heating system provide enough heat in every room?																					
If your apartment comes with air conditioning, does it work correctly?																					
Can you adjust the heat when it is too hot or cold?																					
Are there any holes where outdoor air or rain can come in?																					
Are there any cracks or holes in the inside walls and ceilings that are thicker than a dime on edge?																					
Is there any paint that can be chipped or peeled by finger scraping?																					
Is there any area of peeling paint or broken plaster bigger than the size of this page?																					
Are the walls solid, straight, and flat?																					
Can you see any place where the ceiling sags?																					
Are there any signs of mildew?																					
Are there signs of water leakage?																					
Are there any missing or warped floor boards or floor tiles?																					
Is there any torn or loose carpeting or linoleum?																					
Is the floor uneven or damaged in ways that can cause someone to trip?																					
Have you seen a rat in your home this week?																					
Have you seen many cockroaches in your home this week?																					
In your home, do you smell bad odors such as sewer, natural gas, etc.?																					

	T	H	T	G	T	H	A	T	H	G	E	T	H	G	A	C	T	H	G	A	E	C
	H		G	G			A	A	A	A		E	E	E	E	C	C	C	C	C	C	E
In your home, are safe handrails on all stairs and landings?																						
Do all outside doors have locks that work?																						
Do all windows have locks that work?																						
Do all bedrooms have a window that you can open?																						
Does any window have broken glass that could cause cuts, or otherwise be dangerous?	Red	Red	Red																			
Is there a working smoke detector on each floor in the home?		Red	Grey													Red						
In case of fire do you have at least 2 ways to get out of your home?																						
How many homes are in the building you live in?																						
Does the building have a working elevator?																						
Is the condition of any porch or balcony dangerous?																						
Are any outside handrails, steps, or stairs unsafe?																						
Are the sidewalks, driveways, and parking lots in good repair?																						
Are any fences or gates in bad repair?																						
Do you see any problems with the roof?																						
Do you see any walls with missing bricks, siding, shingles, etc.?																						
Are covered dumpsters or cans provided for your garbage and trash?																						
Is there a laundry room for you?																						
Are the washers and dryers in the laundry room in good working condition?																						
Is there a community room for residents of the comple?																						
Is the equipment in the community room in good working condition?																						
Is there a play area for residents of this comple?																						
Is the equipment in the play area in working condition?																						
Is there trash or junk on nearby streets, sidewalks, or adjacent property?																						
Are any buildings in your neighborhood entirely vacant?																						
What is the condition of the neighborhood streets?																						

Written Comments

The questionnaire ended with two open-ended questions. These questions were included partly to allow residents an opportunity to express themselves beyond the limits of the structured

questions. The first question allowed residents to identify repairs that were needed; the second open-ended question merely asked if there was anything else they would like to tell us. Given this opportunity almost 30% of the respondents listed one or more repairs as needed, and 44% added some comment when asked for “anything else.”

Although it is unlikely that these open-ended questions would be used in an on-going program of resident assessment, examining them at this time can provide some useful information. All of the responses were transcribed into two text data files. Individual responses were separated by respondent identification numbers. These files were then examined by the computer program “Text Smart.” This program examines the frequency with which words occur. It first removes words that can be considered. In this analysis verbs such as “fix” and “repair,” articles such as “the” and “this,” adjectives such as “good” and “little,” adverbs such as “now,” and prepositions such as “in” and “for.” were all excluded. This left the focus on specific elements of the dwelling, nouns such as “sink” and cabinet. It then grouped synonymous words, for example, “rug” and “carpet” (The analyst can decide that these might be words which are not synonymous.). The output of TextSmart includes a listing of the non-excluded words and the number of times that they occurred. Because a respondent may have used the same word more than once, this is not the basis for the proportion of residents giving a specific response.

An analysis of responses to the invitation to list necessary repairs for the public housing respondents was made. The most frequently occurring word group was door, with 129 occurrences. Comments on bathrooms were next, with 112. Comments on windows and kitchens each had over 90 comments. There were over 200 other words that referred to parts of the dwelling in the comments of the public housing residents.

Also analyzed were the responses to the invitation to list necessary repairs for FHA respondents. Complaints including the word “door,” again were given by seventy-one respondents. As was the case for public housing this was the most frequently mentioned part of the dwelling. “Bathroom,” “kitchen,” “rug,” and “floor” were all mentioned over 60 times. There were over 200 words that occurred five times or less, e.g., “foundation,” “mirror,” and “restroom.”

Upon reflection most of the items in the two preceding tables appear to be addressed in the questionnaire. However, the high frequency of comments about doors suggests that any revision of the questionnaire should carefully examine whether the problems related to doors are included. Screens were mentioned in 37 responses from public housing and twenty-one responses from FHA-assisted. This may be another item to review prior to any questionnaire revision.

DISCUSSION

This chapter describes a high degree of agreement between the assessments of on-site inspectors and those of respondents using a mail-administered questionnaire. This section discusses some considerations when there was not agreement.

Chance

It is important to remember that multiple tests for significant differences need to be looked at differently than a single test. Saying that any single test has a probability of 0.05 means that the difference between the proportions is so large that it could have occurred by chance only five times in a hundred. On the other hand, if multiple tests for significance are performed we should be prepared to realize that some non-significant differences will be indicated as significant. If one hundred comparisons are tested for significant differences at the 0.05 probability level, then we should expect to find five differences simply by chance.

Time

Some differences between the results of the on-site inspections and the respondent completed questionnaires are attributable to the different times at which the data were collected. It was expected that this could be the case. As a result, efforts were made to minimize the time differences between the completion of the questionnaire and the on-site inspections. Still, the need to notify residents of the inspection and the time required for the postal service to deliver the inspection notification, as well as the time required to deliver the returned questionnaire, resulted in at least two weeks between the two data collection events.

At the conclusion of each inspection the inspector asked residents about changes that had occurred since they had completed the questionnaire. Of the 1,276 residents that were available at the time of inspection, 11% reported that some repair had occurred since they filled out the questionnaire. In addition, 9.5% reported that something had broken or fallen into disrepair since completing the questionnaire. Only 32 individuals reported both, that they had a repair and a failure. Thus, in 14.8% of the units where the inspectors could ask the resident they were told that there had been a change in the dwelling since the questionnaire was completed.

SUMMARY

In comparing the inspection and questionnaire data, agreement is generally high. Items concerned with peeling paint (both inside and out) and smoke detectors had the lowest rates of agreements, around 65% to 70%. There are plausible explanations that indicate some disagreement may be due to other factors, for example changes in dwelling units between the time the questionnaire was completed and the on-site inspections.

The agreements do appear to be higher in FHA-assisted housing than in public housing. Additionally, there do not appear to be patterns in the data that suggest that the questionnaire works better for one demographic group than another. This analysis indicates that and HQS mail questionnaire can be another tool for HUD to use in monitoring FHA-assisted and public housing.

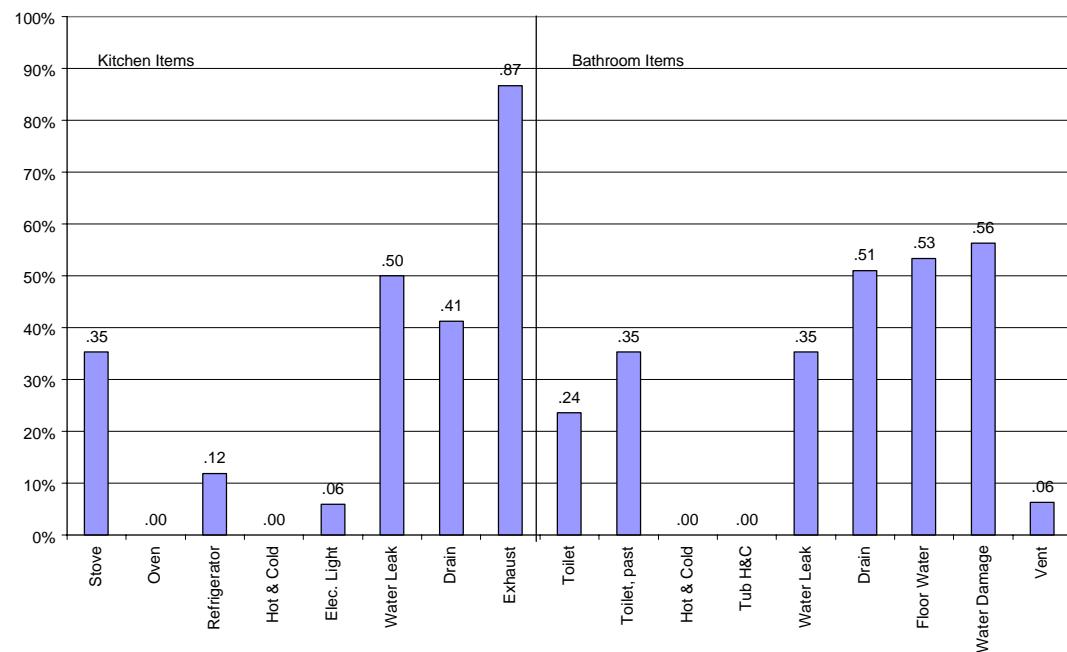
4: For the Future

There are lessons from this study that can be useful for future HUD activities. Taken together with the previous pilot study of a mail survey to Section 8 residents, this study shows that a mail survey can be used to obtain valuable assessments of residential quality. It also shows that assessments from a structured mail-delivered questionnaire can be as reliable as observations from trained inspectors.

The types of analyses presented so far in this report are intended to describe the characteristics of the questionnaire. Once these are established it is much more important that the questionnaire be able to describe the characteristics of the housing for individual HAs, states, and the nation. This chapter will provide examples from the pilot study data of those results could be presented and used.



Figure 4-1: Percent with Specific Problems, Kitchen & Bath, Site 101



Describing a Development

In this study of FHA-assisted and public housing nearly 100 developments were studied. Each of these developments can be individually described in terms of the data. A common and easily understood statistic for description would be the percent reporting problems with specific items on the questionnaire. Figure 4-1 provides an example of this for one site in the study. The figure includes several kitchen items on the left side of the chart and for several bathroom items on the right side. The scale goes from 0% for no problems, to 100%, indicating that all respondents

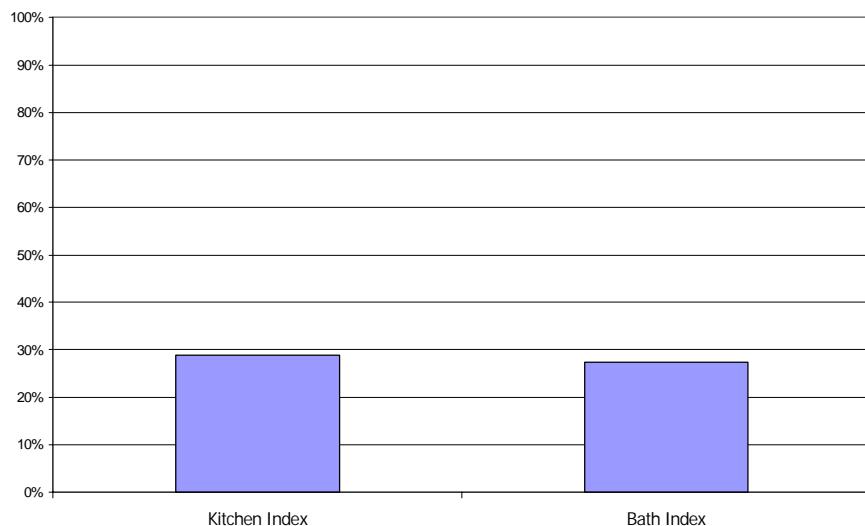
reported a problem. The decimal value of the item is shown above each bar. The value of .12 indicates that 12% of the respondents reported a problem.

It has been said that, “knowledge is knowledge of differences” (Runkel and McGrath, 1972). With that in mind one way to learn from the results of the survey is to compare the averages such as those in Figure 4-1. The figure allows us to see that, for this site, residents have no problem with hot and cold water. Within the kitchen it shows that working exhaust fans in the kitchen are a concern. It also shows that within the kitchen there are more problems with the stove than with the refrigerator, and that the ovens are currently all working.

However, it is difficult to get from this figure a sense of whether the bathroom or the kitchen has more problems. It is not always necessary to look at individual questions to obtain an assessment of conditions. An overall assessment might be seen more easily by looking at an index of related items. An example is an index that is the simple average of the percentages of the individual items. Figure 4-2 compares indices for the bathroom and kitchen items at this site. In this case the indices show that the conditions of these two rooms are essentially equal at this site.



**Figure 4-2: Comparison of Indices of Bath & Kitchen,
Site 101**

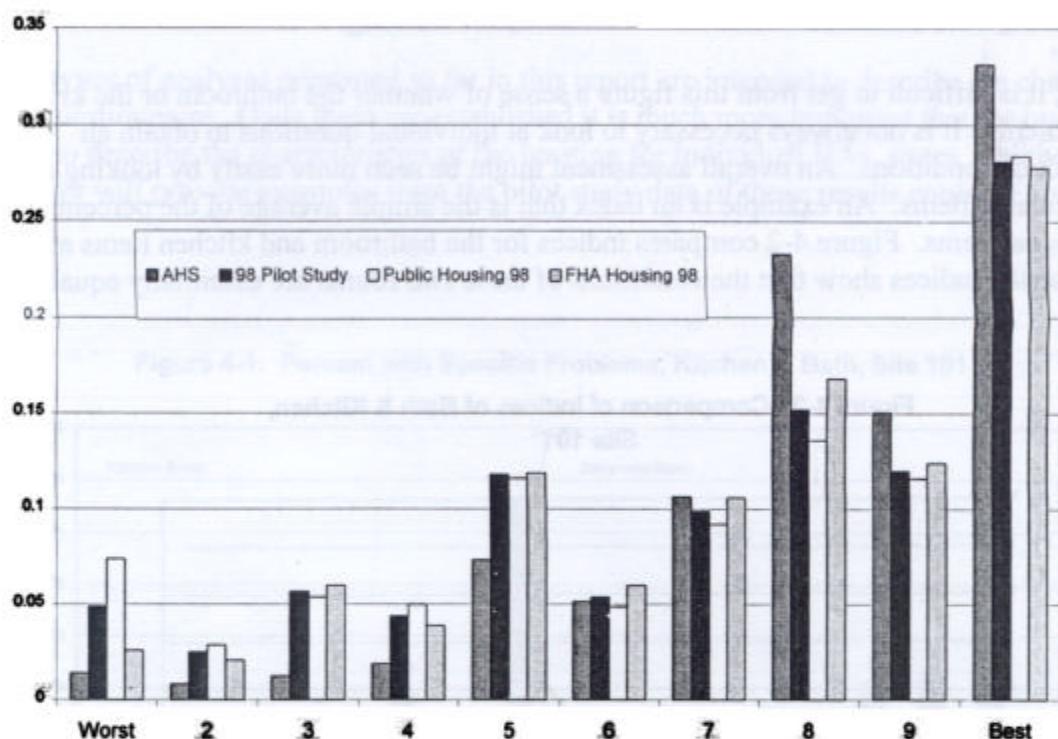


American Housing Survey

The American Housing Survey (AHS) is a nationwide survey of basic housing conditions. It is the data that can be said to best describe the “state of the nation” with respect to housing. It describes the absence or presence of specific housing characteristics, as well as resident evaluations of their housing and neighborhood.

The AHS can be examined in a number of ways: urban-rural, state, metropolitan areas, renter, owner, etc. However, the AHS does not provide a picture of the state of the nation of HUD's specific housing programs. In order to do this, a more specific set of data would need to be collected representing specific housing programs. The data from the pilot test questionnaire can provide such a specific set of data.

Figure 4-3: Example Comparison to AHS: Neighborhood Evaluation



The pilot test questionnaire intentionally included several important items from the AHS. This allows an assessment of the HUD programs with respect to housing in the nation. As an example, Figure 4-3 compares all 1995 American Housing Survey (AHS) respondents in rental housing with the current survey of public and FHA-assisted housing. (The AHS data could have been partitioned in several other ways.) The bar on the left of each group is the percent of AHS responses in that category. The next bar shows the percent of responses from this study that chose that category. The two bars on the left of each group show percent of public housing and FHA-assisted respondents from the current study.

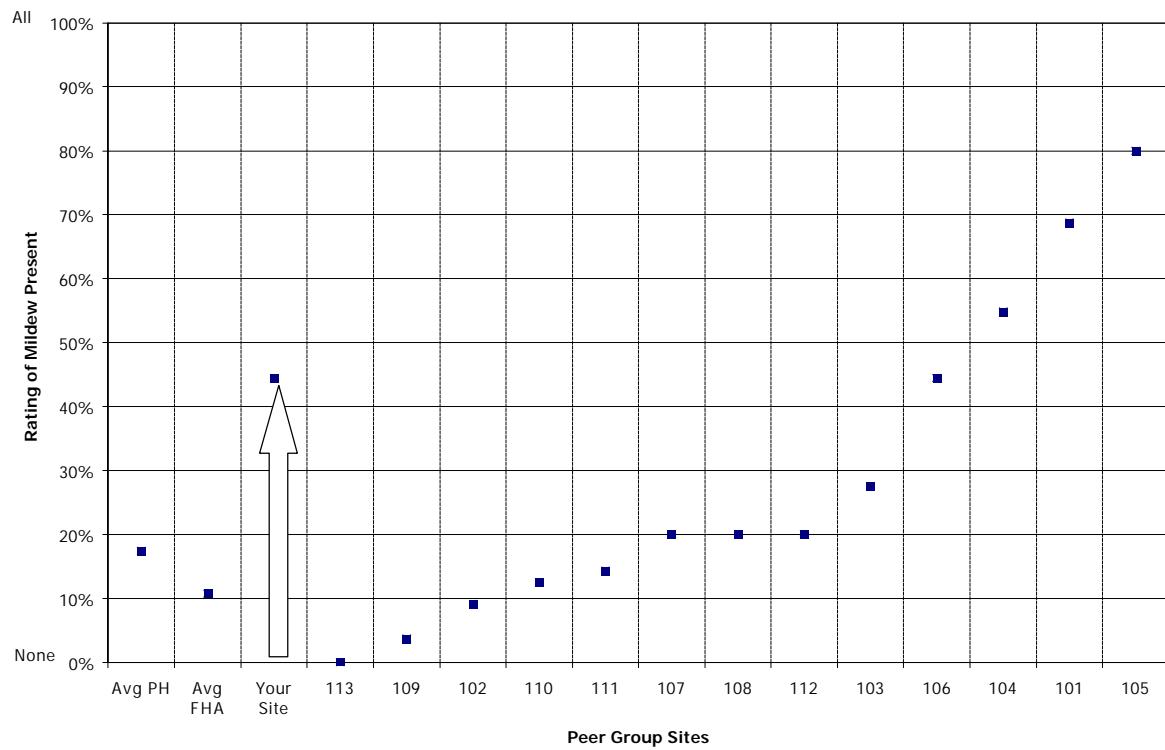
The question, taken from the American Housing Survey, asked respondents to rate their neighborhood from 1 to 10, with 10 being the best. In this case the figure shows that public housing received more "worst" evaluations than FHA-assisted housing, or the all-rental housing (as represented by AHS data). It also shows that there were more "best" evaluations in the national AHS survey than in either public or FHA-assisted housing. Obviously there are other comparisons that could be made to the AHS data. Individual HAs or management firms could be compared, as well as individual developments.

Help for Housing Agencies

Most individual HAs do not have the resources to develop and test an efficient and effective customer assessment strategy on their own. Further, it would be extremely redundant and inefficient to have them do so. The questionnaires resulting from this study and the previous study of Section 8 housing provide HAs with tools to use in a resident assessment program. This study presents a tested process for distribution, tracking, receipt, and data entry. HAs can use all of this to undertake valid customer feedback programs.

However, there are clear inefficiencies in having each HA conduct its own program of resident assessment of housing as a customer feedback mechanism. HUD can collect the data and present the results in ways that economically and efficiently provide a service to individual HAs. Each HA could receive aggregate results for their jurisdiction, while HUD could assure confidentiality to individual residents by maintaining control of the responses. In addition, HUD could provide aggregated scores on items and indices so that HAs could compare themselves to their peers and to the national program.

Figure 4-4: Comparison of Reports of Mildew Present to Peer Sites



HUD could aggregate data by region and agency size. For example, a large northeastern HA may want to compare their results with other northeastern HAs of similar size. This peer data will provide HAs and HUD a way to examine relative performance.

Figure 4-4 shows the results for the survey question that asked about the presence of signs of mildew on walls and ceilings. The first point on the left (18%) is the average of the percentages reporting problems for all public housing units in this study. The next value is the average percentage for FHA sites in this study, the third value is for a specific housing agency. The remaining values are for other, unnamed, housing agencies in the same region. These are displayed after being sorted of the item. The HA administrator can immediately see how he compares to a peer group of other agencies. Three other sites had greater reports of problems with mildew.

The most important use of the data from the questionnaires developed in the 1995 study and in this study could come from providing annual data for comparison over time. This could allow identification of trends at a site, in an HA, a region, or in a national program. It could allow HUD and HAs an opportunity to more easily comply with the directions in GPRA and Executive Order 12862 and establish program goals and measures of performance as a part of their budgeting processes.

HUD already has an existing mechanism to use for reporting resident assessments to HAs. It is the Multi-Family Tenant Characteristics System (MTCS).

MTCS Reporting of Resident Assessments

The Multifamily Tenant Characteristic System (MTCS) is the HUD database that contains information about families participating in rental subsidy programs. Access to MTCS data is via the Internet. Currently the data in MTCS is limited to items contained on Form HUD-50058. HAs enter the data from this form for each household that receives assistance under public housing, Indian housing, and Section 8 programs. They enter the data into their local files for new admissions, reexaminations, move-outs, and similar events. They submit these files to HUD on a periodic basis.¹ The collected data are stored in the MTCS database and used to generate reports for HAs and HUD staff.

MTCS performs a monthly summarization of the database. This summarization includes the calculation of the percentages and averages needed in any of the proforma reports. Thus the data reported by MTCS is based upon all of the data reported during the previous month.

Access to MTCS is generally through a web browser. Entry is through a password protected individual login.² There are four levels of access to the data. At HUD Headquarters access may be allowed to all MTCS proforma reports³. A second level of access allows creation of customized reports. Field Office personnel may be given access to all summary reports and the ability to create customized reports for projects with Field Office jurisdiction. Finally Housing Agencies are allowed access to summary and reports and detailed reports of program participants within their jurisdiction.

¹ For HAs greater than 100 units this submission will be monthly, for others it will be quarterly.

² The general public may access the *Resident Characteristics Report* from the HUD website without an ID and password.

³ Performa reports are those that are automatically prepared and presented

The MTCS web browser is structured so that the user initially selects the level of reporting in two ways: by subsidy program and by level of aggregation. In general, once the parameters of the request are defined, the user is presented with a menu of available reports. These reports are grouped into summary reports for all programs, summary reports for the program of interest, and detailed reports.

Existing reports on MTCS display actual counts, percentages, or averages. Comparisons are often to the next highest level of aggregation. Thus the data for a city within a state will be displayed with the data for the state. MTCS is an ideal environment for reporting customer survey results to HAs and staff of HUD Headquarters. It provides a link to other existing data and it provides a reporting format that is familiar to current users and easily learned by others.

Placing Resident Assessment Data into MTCS

Inclusion of resident assessment (RA) data into MTCS should be done in several ways. First there should be a proforma specifically for the RA data. This proforma should be aggregated in the same ways that other reports are, e.g. nationally, state, city, HA, etc. However, it will also be useful to HAs if the data is aggregated to provide comparison data with HAs that could be considered to be peers, as is done in Figure 4-4.

Table 4-1: Example of Levels of Aggregation in RA MTCS Report to a Specific HA.

Resident Questions, percent positive	Nation⁴	IL	HAs with 500-1000 Residents	Specific HA
Stove Burners Work	91.5%	87.3%	89.4%	86.2%
Oven Works	97.2%	96.9%	96.9%	96.7%
Refrigerator Cold Enough	97.6%	97.0%	97.3%	96.7%
Etc.				

The numbers in the columns of this table could be the average scores, as was the case in Figure 4-3, or it could be the percent replying in a positive manner. In the illustrative table presented here the numbers will represent the percent responding in a positive manner. In this example, with data taken from the pilot test survey, the specific HA could set a goal of inspecting and maintaining the burners on kitchen stoves.

While HAs can obtain some guidance from an examination of the data from their agency and comparing it to the percentage for larger groups, there are other alternatives for displaying the data. One alternative that is easily understood is the concept of rank. Thus, a table could provide the percent for a specific HA and then its rank in larger groups. Table 4-2 provides a hypothetical example of how this might be presented. Because the number of HAs involved will get to be large at the national level, and perhaps at other levels of aggregation, rank may not be

⁴ No data currently exists for the nation. This figure is for all units in this pilot study. The IL figure is for the Illinois units in this pilot study and the average and individual site numbers also come from this study.

as useful as the concept of decile rank. Exact ranking may be unnecessarily precise. There may be little to distinguish a rank of 79 from a rank of 80, in a group of over 1,400.

Table 4-2: Rank as a Means to Provide HA Comparison.

Resident Questions	Rank in Nation ⁵	Rank in IL	Rank in HAs with 500-1000 Residents	Percent Positive Specific HA
Stove Burners Work	xxx	Xxx	xxx	86.2%
Oven Works	Xxx	Xxx	Xxx	96.7%
Refrigerator Cold Enough	Xxx	Xxx	xxx	96.7%
Etc.				

Table 4-3 shows the percent data for an HA and the hypothetical presentation of decile ratings for aggregated data.

Table 4-3: Decile Rank as a Means to Provide HA Comparison.

Resident Questions, Decile Rank	Rank in Nation ⁶	Rank in IL	Rank in HAs with 500-1000 Residents	Percent Positive Specific HA
Stove Burners Work	1	2	2	86.2%
Oven Works	2	3	4	96.7%
Refrigerator Cold Enough	3	3	3	96.7%
Etc.				

Graphic presentations such as in Figures 3 and 4 quickly show an HA its relative level compared to several groups. A particular HA may be ranked higher in some comparison groups than in others. Tables can also do this, but tables with many rows may not communicate as quickly to the user. The illustration shows the rows sorted on the national values. Other sorting patterns may also be desirable, e.g., by state, by size of authority, etc.

MTCS Comparisons over Time

Currently none of the proforma reports available from MTCS provide any comparisons with previous periods of time. However, for HAs to use a system such as MTCS for planning and change it is important to be able to see changes in values. This allows HAs to assess and verify the impact of local programmatic changes.

⁵ No data currently exists for the nation. This figure is for all units in this pilot study. . The ranks are hypothetical for the nation, state and peer group. The individual site numbers also come from this study.

⁶ No data currently exists for the nation. The decile ranks are hypothetical for the nation, state and peer group. The individual site numbers also come from this study.

The increment of time that will be useful is one year. This is the increment that is used for budgeting and planning purposes. However, since the MTCS data is updated on a monthly or quarterly basis, the comparisons should be updated on that same basis.

The reporting comparisons over time can be done in several formats. However, it is probably useful to remain consistent with other MTCS proforma reports. That consistency suggests that there might be a reporting of comparison at the next larger level of aggregation, or a reporting of comparison at the national level. An example is given in Table 4-4.

Table 4-4: Changes Over Time, Hypothetical Presentation.

Resident Questions, Decile Rank ⁷	Previous Year	Current Year
Stove Burners Work	88.5%	86.2%
Oven Works	93.3%	96.7%
Refrigerator Cold Enough	96.5%	96.7%
Etc.		

An internal test of significance could be computed for tables that present information about change in the HAs data. If the test shows a level of significance of 0.05 or less, then the value could be shown in bold, as is the case with *Oven Works* in Table 4-4.

An alternate approach would be to use a note in a column to indicate successes as well as problems. In this case MTCS would do a statistical test of the difference between the two percentages and examine if the difference was greater, *or less*, than what might occur by chance. If the difference was greater than chance and the HA percentage was below the national (or peer group) percentage then a concern would be noted. If the opposite was true and the percentage was above the national percentage that would also be noted. Table 4-5 shows this.

Table 4-5: Indicating concerns and successes from Customer Survey questions.

Customer Survey Items ⁸	National percent positive	HA percent positive	Note
Do all stove burners work	93.3%	86.2%	Concern
Is there a working oven	98.9%	96.7%	
Refrigerator keeps food cold enough	98.1%	96.7%	Success

Indices Reflecting Several Customer Survey Items

While the individual items on the customer survey are important and some may want to go directly to them, another proforma report should be based upon reporting summary indices. These indices would be based upon a set of topically related items, e.g., kitchen, bath, security, etc. Figure 4-2 gave an example of indices based upon items measuring the conditions of the kitchen and bathroom.

⁷ Note, the previous year percentages in this table are hypothetical. No prior scores are available.

⁸ Note, the national percentages in this table are hypothetical. No national scores are available until a larger survey is implemented.

Summary

The need for resident assessments of housing has been recognized for over thirty years. An array of research has looked at using resident assessments to evaluate housing and to provide information about issues that are important to residents. Now the directions set forth in GPRA and Executive Order 12862 suggest that resident assessments are the mechanism to obtain customer feedback about HUD assisted housing programs.

The 1995 pilot study of Section 8 housing and this pilot study of FHA-assisted and public housing have developed specific tools for obtaining resident assessments. They have also tested the procedures for obtaining these assessments and confirmed that the proper procedures can obtain high rates of return.

The Internet and HUD's experience with the existing MTCS system provide a mechanism for making the results of resident assessments available to HAs in a convenient and secure manner. Timely presentation of resident assessments is important if those assessments are to be a part of program planning at either the local or national level. The MTCS example shows that timely presentation is now possible.

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