Appendix F—The Impact of Project Characteristics and Practices on Administrative Error

Appendix F—The Impact of Project Characteristics and Practices on Administrative Error

The objective of this analysis was to determine how housing project characteristics and practices contribute to administrative errors. Project characteristics may directly affect administrative errors, or they may indirectly affect errors by influencing project practices. For example, the size of a project may influence the number of third-party verifications conducted by project staff, while the number of verifications in turn affects the number of administrative errors. To determine how administrative errors are related to project characteristics and practices, the analysis investigated these direct and indirect pathways leading from project characteristics through project practices to administrative errors, using a series of ordinary least squares and logistic regressions. Separate path models were estimated for three kinds of administrative errors—errors in calculating rent, errors in transcribing information from the tenant file to the 50058/50059 forms, and errors in the verification process. The unit of analysis for these models was the project. Analyses only included projects that completed the Project Staff Questionnaire (PSQ) and had no missing data on any of the variables included in the analysis (N = 404).

Measures. Measures included project characteristics, project practices, and the incidence of administrative errors.

Measures of *project characteristics* derived from PSQ data included the following:

- Project type: Projects were either public housing, PHA-administered Section 8 housing, or owner-administered housing.
- Project size: The total number of housing units administered by the project.
- Elderly/Disabled: Projects that served specifically elderly or disabled tenants.

An additional *project characteristic* was aggregated up to the project from the tenant-level file:

- Average number of sources of income and expenses per household (e.g., Social Security pension, asset income, medical expenses)

Three measures of *project practices* were obtained from the PSQ:

- Use of computers for interviewing tenants
- Use of computers to track the verification process
- Use of computers to calculate rent.

An additional *project practice* was aggregated from the household-level file:

- The average proportion of income/expense items for which written third-party verification was obtained per household.

The incidence of *administrative errors* was measured by calculating, for each project, the proportion of households (in the tenant-level file) with each of the following errors:

- Calculation errors based on the data recorded on the 50058/50059 forms
- Transcription errors in recording the information from tenants' documents onto the 50058/50059 forms
- QC errors involving mistakes in the verification process such as missing third-party verifications.

Model Construction. Two series of models were estimated. First, regression equations estimated the beta coefficients for project characteristics as independent variables against each of the project practices as dependent variables. Linear regression was used for continuous measures (e.g., proportion of items verified per household), while logistic regressions were used for the dichotomous measures (e.g., use of computers to calculate rent). A second set of linear regressions estimated beta coefficients for project characteristics and practices as independent variables against the measures of error as dependent variables.

Standardized betas are reported for linear regression results so that size of effect can be compared among different types of factors. Estimated odds ratios are reported for the logistic regressions results. The odds ratio indicates significant evidence of a relationship and can be interpreted as the variable's effect (increase or decrease) on the likelihood that the project uses the specific practice.

To control for differences due to project type, the models included two dummy variables for program type: public housing project versus Section 8 and owner-administered projects, and Section 8 project versus public housing and owner-administered projects. Generally, if a qualitative variable has *m* categories, the model must contain *m-1* dummy variables to represent the qualitative variable to avoid having a model with perfect multicollinearity (Gujarati, 1988[1]). The omitted category, in this case owner-administered projects, is referred to as the reference group because the model's comparisons are made with that category.

Results. Separate models were constructed for each type of error. These models indicate that some project characteristics and practices influence the amount of administrative errors. Exhibits F-1 through F-3 display the modeling results. Asterisks indicate the standardized coefficients or odds ratios that are significant at the .05 level or higher (two-tailed test).

[1] Gujarati, D. N. 1988. *Basic Econometrics.* Second edition. New York: McGraw-Hill Book Company.

Appendix F—The Impact of Project Characteristics and Practices on Administrative Error

Exhibit F-1
Project Characteristics Associated with Project Practices

Project Characteristics	Using Computers to Calculate Rent	Odds Ratio for Using Computers to Conduct Tenant Interviews	Using Computers to Track Receipt of Verifications
Public Housing Project	.568	2.91*	.494*
PHA-Administered Section 8 Housing	84.7	1.54	.528
Disabled/Elderly Project	1.43	.554	.663
Number of Units in Project	1.001	1.002*	1.001*
Average Income/Expense Types per Household	1.04	1.04	1.01

*Significant at p = .05

Exhibit F-2
Project Characteristics and Computer Uses Associated with Proportion of Household Income/Expense Items with Third-Party Verification

Project Characteristics and Practices	Standardized Coefficients
Public Housing Project	-.031
PHA-Administered Section 8 Housing	-.019
Disabled/Elderly Project	.022
Number of Units in Project	-.159*
Average Income/Expense Types per Household	-.077
Project Uses Computer to Conduct Tenant Interview	.058
Project Uses Computer to Calculate Rent	.158*
Project Uses Computer to Track Verifications	-.092

*Significant at p = .05

Appendix F—The Impact of Project Characteristics and Practices on Administrative Error

Exhibit F-3
Project Characteristics and Practices Associated with Administrative Errors

Project Characteristics and Practices	Standardized Coefficients for Verification Errors	Transcription Errors	Calculation Errors
PHA-Administered Section 8 Housing	-.032	-.103*	-.071
Disabled/Elderly Project	.035	-.001	-.024
Number of Units in Project	.103*	.290*	.369*
Average Income/Expense Types per Household	.351*	.377*	-.028
Project Uses Computer to Conduct Tenant Interview	-.113*	-.067	.027
Project Uses Computer to Calculate Rent	.071	.053	.081
Project Uses Computer to Track Verifications	-.052	.028	-.018
Average Percentage of Income/Expense Items with Third-Party Verification	-.230*	-.120*	.031
*Significant at p = .05	R^2 = .24	R^2 = .23	R^2 = .21

Project size is important. Project size was associated positively with using computers to interview tenants and to track verifications, but it was negatively associated with using computers to calculate rent and the proportion of items with third-party verifications. Project size was also directly related to all types of administrative error. Projects with more units make more administrative errors, even after controlling for project practices such as using computers for verification tasks. Further, project size had the largest effect of all measures on verification and calculation errors, as indicated by standardized betas.

Third-party verification contributes to fewer verification and transcription errors. The more items for which a project's households provided third-party verification, the lower the proportion of households with verification and transcription errors. Interestingly, the only project characteristic that was associated with higher levels of third-party verification was the number of units. Projects for which computers were used to calculate rents also verified a higher proportion of items per household.

Use of computers in conducting some (re)certification tasks reduces administrative errors. Using computers to interview tenants directly affected the level of verification errors. Using computers to calculate rent lowered transcription errors, but only indirectly through increasing the proportion of items with third-party verifications, which in turn lowered transcription errors. Using computers to track the verification process did not have an impact on any of the administrative errors.

More sources of income and expenses lead to more transcription and verification errors. Having to document more sources of income and expenses obviously increases the potential for

making transcription errors and verification errors. This relationship held true even when controlling for the proportion of items for which third-party verifications were obtained. The number of income/expense sources also mediated the impact of two project characteristics—public housing projects on average had more income/expense sources, while elderly/disabled projects on average had fewer sources.

Project type has little impact on administrative error. Public housing projects had a higher proportion of households with rent calculation errors compared with other project types, on average, and holding constant all other variables. PHA-administered section 8 projects had a lower proportion of households with transcription errors compared with other project types.

Figures F-1 through F-3 illustrate the significant pathways among the variables and each type of error. The arrows show connections among the variables. The causal flow moves from left to right in the figures; variables to the left may influence variables to the right, but not vice versa.

A caveat to interpreting the results of these models is that the independent variables in the models account for only about 24 percent of the variance for verification and transcription errors (R^2 = .24 for each). They account for even less in the calculation error model (R^2 = .21). The remaining variance in errors may be due to unmeasured project-level variables, tenant- and household-level factors, or some other unknown factors.

Appendix F—The Impact of Project Characteristics and Practices on Administrative Error

Figure F-1
Relationship Between Project Characteristics, Practices, and Verification Errors

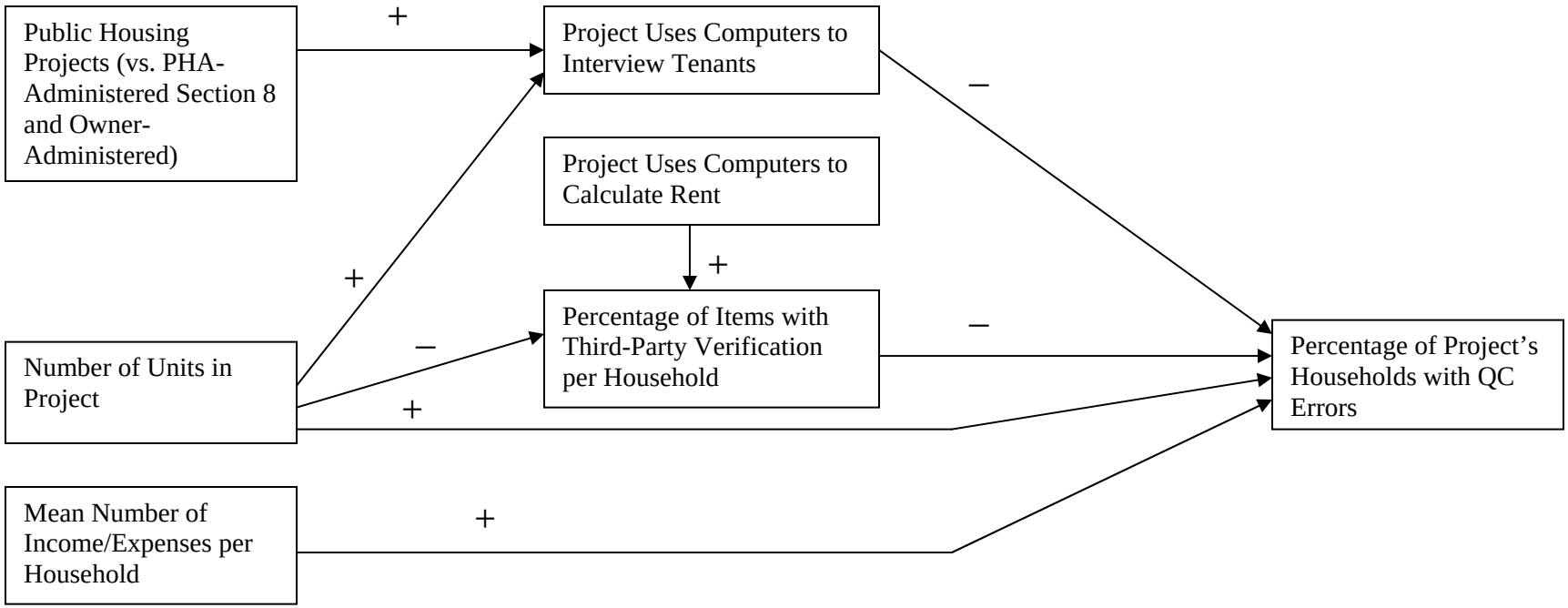


Figure F-2
Relationships Between Project Characteristics, Practices, and Rent Calculation Errors

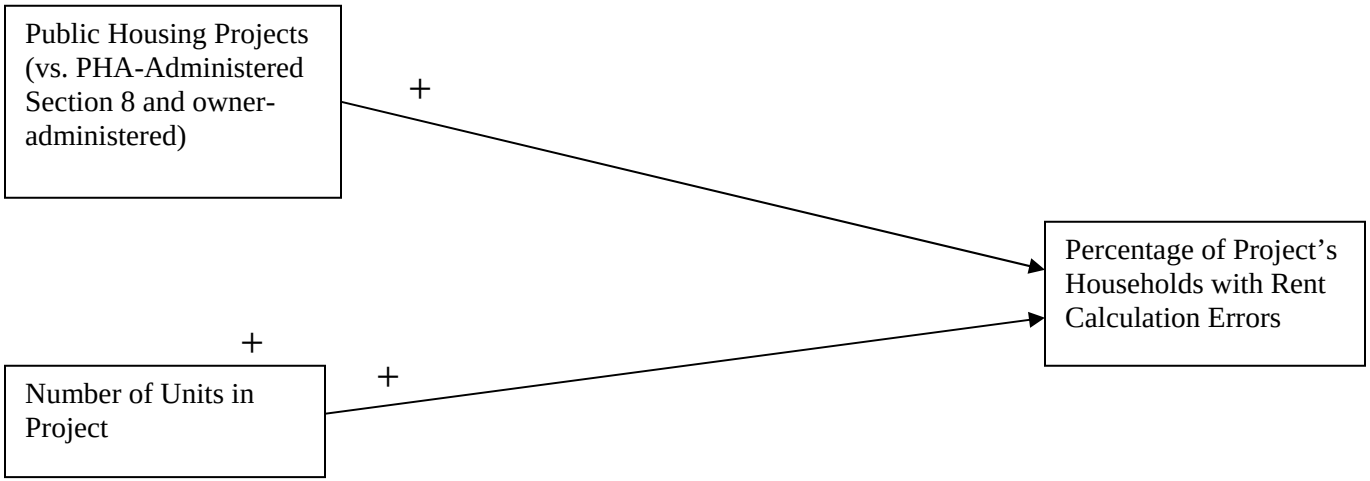
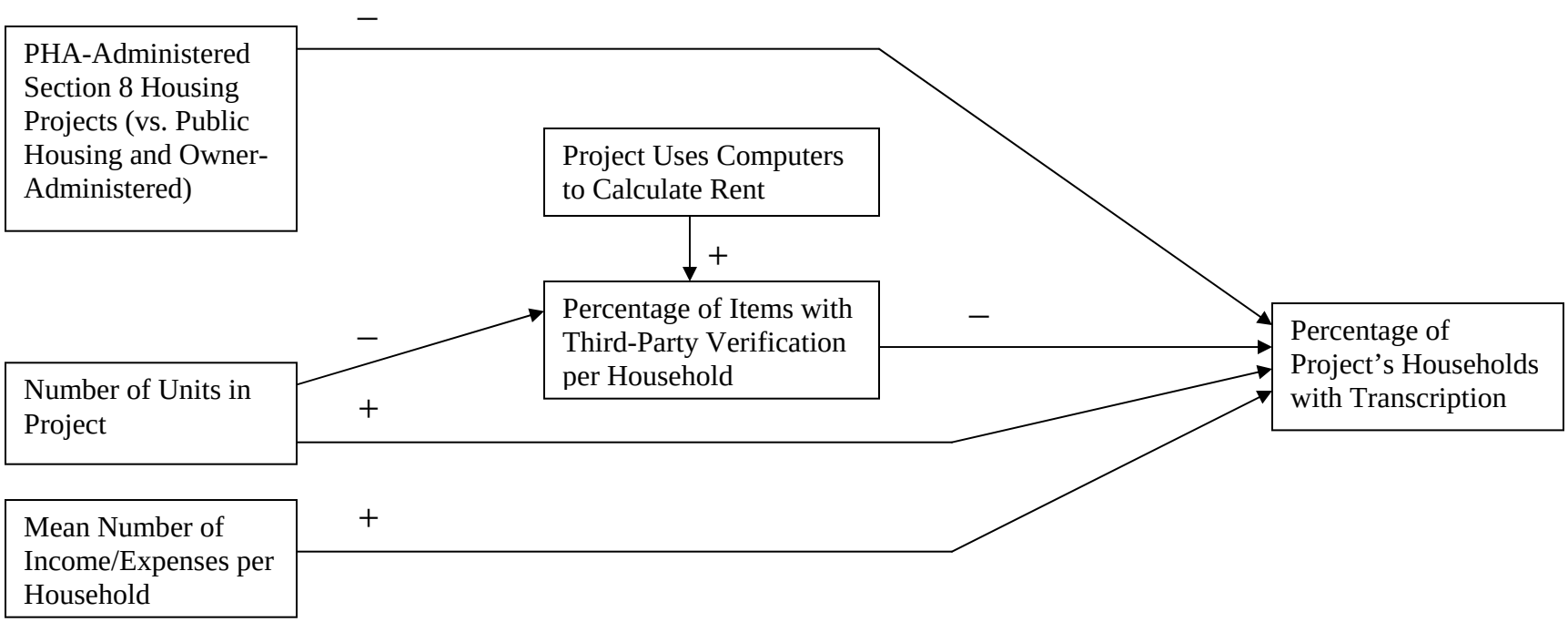


Figure F-3
Relationships Between Project Characteristics, Practices, and Transcription Errors



Appendix G—The Impact of Project Practices on Dollar Rent Error

Appendix G—The Impact of Project Practices on Dollar Rent Error

One of the objectives of the HUD QC Study is to provide information on the extent to which errors are concentrated in housing projects. The analysis discussed in this appendix aims to fulfill this objective and determine whether PHAs/projects with particular characteristics and practices are more prone to the assignment of inappropriate rents than are others. If so, then it may be possible to identify a set of "best practices" which, if adopted universally, could lead to a reduction in erroneous rent subsidies.

Tenants are an obvious source of error. If they fail to provide the proper information, the correct calculation of rental subsidies becomes problematic. However, the situation can be exacerbated by less-than-optimal practices on the part of PHAs/projects. A variety of straightforward methodologies were employed in an attempt to assess the extent of variation in rent error among PHAs/projects *and* the degree to which their administrative practices may contribute to rent error. The findings from this analyses conclude that—

- Rent error does not appear to be concentrated within certain projects. Instead, it appears that rent error is homogeneously spread between them.

- This homogeneity of error does not mean that the practices of PHAs/projects do not contribute to error, only that "best practices" (in terms of a reduction in error) are difficult to identify.

Intraclass Correlation of Rent Error

Measures of intraclass correlation attempt to gauge the degree to which study subjects express similar responses as a result of a common, shared characteristic. The shared characteristic(s) defines the "class" of respondent or subject. In this case, we are interested in the degree to which rent error is clustered within tenants who live in particular projects or primary sampling units (PSUs). Somewhat more formally, intraclass correlation can be defined as the percentage of total variation in responses that can be explained by a respondent's class membership.

Intraclass correlations at both the PSU and project level were calculated for gross rent error, net rent error, total dollar error, and largest single error. The results are displayed in Exhibit G-1.

For each error calculation, the total variance is displayed, followed by the variance at Level 2 (PSU or Project), and then the Level 1 variance (Tenant). The intraclass correlation is the percentage of total variance contained within Level 2. For all rent error measurements in the tables, the intraclass correlation at the level of the PSU is less than that at the level of the project. Given that each PSU contains more rental subsidy beneficiaries than does a single project, this is to be expected. The consistently low level of correlation at the level of the project confounds the task of identifying practices that can help reduce rent error.

The reader is reminded that the homogeneity of rent error within projects does not mean that the administrative practices at the project level do not contribute to error—only that if they are, they are doing so in an "equal opportunity" method.

Appendix G—The Impact of Project Practices on Dollar Rent Error

Exhibit G-1
Intraclass Correlation of Rent Error

Error Estimate	Correlation	Variance	Level 2	Level 1	Intraclass Correlation
Gross Rent Subsidy Error	With PSU	3899.27	42.958	3855.65	1.1017%
	With Project	3899.267	131.463	3769.4	3.3715%
Net Rent Subsidy Error	With PSU	4372.137	7.711	4364.432	0.1764%
	With Project	4372.156	65.802	4306.83	1.5050%
Total Dollar Rent Subsidy Error	With PSU	433526600	429129.5	433091000	0.0990%
	With Project	433527500	5412755	428217000	1.2485%
Largest Single Rent Subsidy Error	With PSU	425395100	204698.4	425189800	0.0481%
	With Project	425393700	3965302	421486200	0.9321%

Project Practices and Rent Error

Regression of Rent Error Measures on PSQ Responses. Having established that intraclass correlation is very low for measures of rent error, the knowledge that tenants are clustered within PHAs/projects is momentarily set aside so that the relationships between PHA/project responses to the Project Staff Questionnaire (PSQ) and the four overall measures of rent error (gross rent error, net rent error, total dollar error, and largest single error) can be explored. To do so, tenant rent error was summed within each sampled PHA/project, and then stepwise linear regression was employed using PSQ items as predictors of error. In many cases, PSQ items were recoded in a binary method to indicate the relevance of the item to the respondent.

The results of the regressions are mildly instructive. Exhibit G-2 displays the results of the regression for gross rent error, which explains a respectable 30 percent of total variation. On the basis of the size of the parameter estimates,[1] participation in the PHA-administered Section 8 program increases gross error by about $287. The practice of always verifying Social Security numbers produces a coefficient of about the same size but opposite in effect. "Always" verifying Social Security numbers reduces gross error by about $289. Similarly, "Always" verifying income from employment results in a $212 reduction in gross error. On average, gross error is also *reduced* by 1) the acquisition of information on HUD policy from "other" sources, 2) staff recognition that questions concerning income from self-employment and child support can be difficult for tenants to understand, 3) recognition of computer problems as a reason why some interviews take longer than others, and 4) identification of disability expenses as problematic to verify. PSQ items that *add* to gross error include 1) staff recognition that questions about

[1] The parameter estimates can be interpreted as the "on average" increase/decrease in gross error that results when the questionnaire item is a "true statement."

income received from absent family members are difficult for tenants to understand, 2) tenant needs for special accommodations during the interview process, 3) the use of computers to track

Exhibit G-2
Regression of Gross Rent Error on PSQ Variables

Variable	Parameter Estimated	Standard Error	*t* Value	Pr > |t|
Intercept	612.91155	112.09258	5.47	< .0001
Program Type				
Section 8	287.01286	24.61164	11.66	< .0001
Means of Acquiring Information About HUD Policy				
Staff get Internet/Web-based information	-73.09281	20.84831	-3.51	0.0005
Staff use "other" sources of information	-51.53780	23.54529	-2.19	0.0291
Questions That Are Most Problematic for Tenants to Understand or Answer During Interviews				
Staff recognize that questions about Income from self-employment are difficult for tenants to understand	-60.69399	24.19668	-2.51	0.0124
Staff recognizes that questions about "Child support" are difficult for tenants to understand	-71.31019	24.27705	-2.94	0.0035
Staff recognizes that questions about income received from absent family members are difficult for tenants to understand	53.25197	24.35005	2.19	0.0292
Reasons Some Tenant Interviews Take Longer than Others				
Computer problems	-60.21880	29.37606	-2.05	0.0409
Need for special accommodations	108.24388	30.94924	3.50	0.0005
Ways to Keep Track of When Verification Is Received				
Using computer tracking	73.48259	20.68168	3.55	0.0004
Verification of Specific Items				
Social Security numbers are always verified	-288.61991	90.38621	-3.19	0.0015
Income from employment is always verified	-212.19887	95.90175	-2.21	0.0274
Types of Income, Expenses, or Household Member Characteristics That Are the Most Difficult to Verify				
Disability expenses	-78.14592	27.26591	-2.87	0.0043
Child care expenses	73.65834	27.05345	2.72	0.0067
Procedures Followed When Verification Is Not Provided as Requested				
Accept other/less preferred verification	54.35000	21.55991	2.52	0.0120

Dependent mean – 161.92 R-Square – 0.3125 Adjusted R-Square – 0.2932

when verification is received, 4) acknowledgement that child care expenses are difficult to verify, and 5) the acceptance of other, less preferred forms of verification when verification is not provided as requested.

PHA/Project Staffing and Component Error. It is interesting that no regression identified staff size, or some transformation of staff size, as an important contributor to error. Therefore, component error—again summed over PHA/project—was correlated[2] with staff size. Correlations were also examined for the following:

- Total number of staff
- Total number of staff members working on certification/recertification tasks
- Total number of staff members working on certification/recertification tasks who work on these tasks at least 149 hours per month
- Total number of staff members working on certification/recertification tasks who work on these tasks between 86 and 148 hours per month
- Total number of staff members working on certification/recertification tasks who work on these tasks between 43and 85 hours per month
- Total number of staff members working on certification/recertification tasks who work on these tasks less than 42 hours per month
- Total number of units supported by staff.

Component errors examined separately for over and underpayment errors, and separately for each program type (public housing, PHA-administered Section 8, and Owner-administered) were the following:

- Asset income error
- Child care allowance error
- Disability allowance error
- Dependent allowance error
- Earned income error
- Elderly/Disabled allowance error
- Medical allowance error
- Other income error
- Public assistance income error
- Pensions, etc. error.

The results of these tests were only rarely statistically significant, and significant correlations are almost surely the product of random chance. Moreover, when significant correlations are found, they are likely to infer counterintuitive relationships.

Multilevel Analysis of Tenant Characteristics Within Projects and Project Characteristics. Multilevel modeling involves the use of any number of commonly employed statistical techniques. To use these techniques in a multilevel setting, the error associated with each level

[2] Both Pearson and Spearman correlations were used. The former produces coefficients identical to ordinary least squares. The latter is a non-parametric, rank-order correlation.

must be disaggregated and, where appropriate, interlevel covariation must be accounted for. In the present case, tenants represent a level of respondents nested within a higher level (PHAs/projects).

To gauge the contributions of both levels of variables, tenants and PHAs/projects, multilevel logistic regressions were conducted. In all regressions, the outcome of interest was the probability that a gross rent error greater than $5 was committed. At the lowest level (i), tenant households were characterized by—

- The number of dependents
- The number of minors
- The number of disabled household members
- The number of full-time students
- The number of household members
- The number of ineligible noncitizens
- The number of eligible citizens
- Whether head of household is an eligible citizen
- Whether spouse of head of household is an eligible citizen
- The number of family members
- The number of eligible family members

Additionally, the presence or absence of the following errors for each household were included:

- Allowance calculation error
- Income calculation error
- Other calculation error
- Consistency error
- Any Form 50058/50059 error
- Transcription error
- Any administration error

At the level of the PHA/project (j), PSQ variables were recoded consistent with that used in the regression analyses. The type of program (public housing, PHA-administered Section 8, owner-administered) was also included.

Of all of the tenant-level variables, the number of family members and the presence of an "Other calculation error" are significant predictors (at traditional levels) of the probability of the commission of a gross rent error in excess of $5[3]. As family size increases, so does the probability of a gross rent error. Similarly, the probability of such an error increases in the presence of "Other calculation error[s]." The equation below depicts the relationship. qc_nmem_{ij} is the number of family members in unit *i* within PSA/Project *j*; cer_oth_{ij} takes a value of 1 if an "Other calculation error" was committed, and 0 otherwise.

[3] Other variables that are closely related to the number of family members are also reasonable predictors, but number of family members is the best among this group of related variables.

$$GrossFlg_{ij} \sim Binomial(Denom_{ij}, \pi_{ij})$$
$$logit(\pi_{ij}) = \beta_{1j}Cons + 0.155(0.031)qc\_nmem_{ij} + 0.611(0.142)cer\_oth_{ij}$$
$$\beta_{1j} = -1.126(0.086) + u_{1j}$$
$$\begin{bmatrix} u_{1j} \end{bmatrix} \sim N(0, \Omega_u) : \Omega_u = \begin{bmatrix} 0.249(0.076) \end{bmatrix}$$
$$var(GrossFlg_{ij} | \pi_{ij}) = \pi_{ij}(1 - \pi_{ij})/Denom_{ij}$$

Next, contextual variables were added. Variables that describe the PHA/project administrative environment within which tenants exist were added to the equation. These contextual variables are, of course, the PSQ questionnaire items; they were added in blocks in the presence of number of family members and "Other calculation error," and backwards elimination was then conducted. Each block represents a section of the PSQ.[4]

The results of this process were not very informative. Occasional, interesting relationships emerged, but never at any level of statistical significance.

Summary of Findings

The intraclass correlations indicate that rent error is *not* more highly concentrated in some PHAs/projects than in others. This should not lead us to conclude that PHA/project characteristics do not contribute to error; only that PHAs/projects contribute to error in a uniform way. Regressions indicate that program type is an important contributor to error. PHA-administered Section 8 units are significantly more likely to be associated with rent error than are public housing or owner-administered rental units. Other variables affecting the level of gross rental error include the following:

- Staff acquisition of information about HUD policies from the Internet reduces error by about $73. The use of "Other" sources of information reduces gross error by about $51.

- Staff's acknowledgement that questions about income from self-employment and child support can be difficult for tenants are associated with reductions in gross error ($61 and $71, respectively). On the other hand, staff's acknowledgement that questions about income received from absent family members can be problematic is associated with a $53 increase in gross error.

- Reasons for lengthy interviews were also significantly associated with changes in gross rent error. PSQ respondents who cited "computer problems" as a reason why some interviews took longer than others represented PHAs/projects with a $60 reduction in

[4] In order, the sections of the PSQ are Number and Types of Staff; Training; Information Transfer; Quality Control; Interview Guides and Worksheets; Automation; Tenant Interview; and Verification Procedures.

gross error, on average. Those who noted that tenants with needs for special accommodations could extend the duration of the interview represented PHAs/projects with a higher average gross error ($108).

- Keeping track of when verification is received, using a computer tracking system, is associated with a $73 increase in gross error.

- When Social Security numbers are "always" verified a reduction in error is found, on average; this is also true when income from employment is "always" verified (reduction of $288 and $212, respectively).

- The identification of disability expenses as difficult to verify is associated with an average reduction in gross error of $78 while, conversely, acknowledging that child care expenses are difficult to verify leads to an average increase in gross error of a similar scale ($73).

- Also, the practice of accepting other, less preferred evidence when verification is not provided as requested is associated with an average increase in gross error of $54 at the level of the PHAs/projects.

- The number of family members in a household is a strong determinant of the propensity for error. It may be associated with other project-level characteristics (the number of units, the number of items that need to be verified, duration of interview, etc.) and thus, may obscure the significance of the practices of individual PHA/project characteristics.

Appendix H—The Impact of Procedural Error and Component Error on Dollar Rent Error

Appendix H—The Impact of Procedural Error and Component Error on Dollar Rent Error

Objective. The primary purpose of this analysis is to investigate the relationship between procedural and component errors and provide insight on their effect on the level of QC Dollar Rent Error. This analysis intends to amplify and further explain the observations in Exhibit IV-12, Rent Components Responsible for the Largest Dollar Error, which shows the relative contribution of each of the rent components on QC Dollar Rent Errors.

Procedural errors result from mistakes in procedure. They consist of the following:

- Consistency errors
- Calculation errors
- Transcription errors
- Failure to conduct a recertification on time
- Failure to verify information

Of the five, we will concentrate on calculation errors, transcription (or documentation) errors, and verification errors, which are the three kinds of errors that can be ordinarily associated with particular fields.

Component errors are the 10 income and expense components used to calculate rent. The five income components are employment income, Social Security and pensions, public assistance, other income, and asset income. The five expense/allowance components are elderly/disabled allowance, dependent allowance, medical expenses, child care expenses, and disability expenses.

Administrative errors tell us when in the process the error occurred, while the component errors tell us which income or expense caused the error. It is the impact of the two combined on the level of QC Rent Error that we investigated during this analysis. We used multivariate regression to create the models that predict error.

This analysis is similar to the one conducted with the 2000 HUD QC data and presented in Appendix G of the *Quality Control for Rental Assistance Subsidies Determinations—Final Report* dated June 2001. There are however, some methodological differences between the two analyses. The most important one in that the previous report predicted rent error from the amount and direction of each error. This report predicts rent error from the presence of an error for each component.

Data Considerations. The unit of analysis was the household. The analysis included 2,400 households. All components of error were aggregated to the household level.

The model produced from this analysis excludes some other, more complex factors (e.g., number of sources of income). Other analytic approaches were used to help explain the causes of error in other parts of this report. Furthermore, the various components are intercorrelated. This means that often a type of error will not appear in the equation because usually when it was found, some other type of error existed as well. In addition, we only used coefficients at certain levels of significance in this analysis. Errors that seldom occur or that are clustered in certain primary sampling units (PSUs) may not appear in the equations.

Appendix H—The Impact of Procedural Error and Component Error on Dollar Rent Error

Dependent Variable. The dependent variable is the level of QC Rent Error. Gross Error is used to define QC Rent Error because it is a continuous variable, which allows us to finely measure changes in the dollar amount of QC Rent Error. The previous study used net error, which was appropriate, given that the predictors were defined in terms of dollar amounts, thus affecting the results in a given direction. Since this analysis uses the presence or absence of error as predictors, it is appropriate to use gross error.

Most of the errors stem from tenant underpayments rather than overpayments, indicating a distinct bias towards underpayment. Initially, one model was envisioned for all dollar errors. However, to determine whether the behaviors driving overpayment and underpayment are different, we developed three models: one for overpayments, one for underpayments, and one for total gross error.

Independent Variables. As discussed earlier in this report, data were collected from multiple sources including the following:

- The 50058/50059 form
- Other information from the tenant file used to document the income and expenses reported on the 50058/50059 form, including verification
- Verification from third parties (when the verification was not found in the tenant file)
- The household interview.

Each type of administrative error is identified by taking data from one or more of these different sources of data.

Calculation errors are also based on information from the 50058/50059 form. The information recorded on the 50058/50059 form was used to calculate the rent. An error occurred when the rent calculated using the rent components on the 50058/50059 form did not match the actual rent amount recorded on the 50058/50059 form. (Recalculated 50058/50059 components minus actual 50058/50059 rent components.)

Transcription errors were identified by comparing the information on the 50058/50059 form to other information found in the tenant file. The rent was calculated using the information from the tenant file. An error occurs if this information does not match the information on the 50058/50059 form. (File information minus 50058/50059 data.)

Errors resulting from *failure to verify information* were identified by comparing the tenant file information with the QC information. If the PHA/owner verified the information correctly, there is no error. If they did not, the error is based on failure to verify or use the verified information. (File information minus QC data.)

These three administrative errors—calculation, transcription, and failure to verify—can be associated with one or more of the rent components. Therefore, each of these administrative errors when combined with the rent components represents 10 different variables for a total of 30 independent variables. The predictor variables represent the presence or absence of error. There

are minor differences in how the variables used in this analysis were constructed compared with the data presented in Exhibit IV-12 of the report. For example, if the values on the 50058/50059 form corresponded to the QC (verified) values, no error was ascribed, even if the documentation showed a different amount.

Exhibit H-1 presents each of the independent variables based on combining rent component with administrative error.

Exhibit H-1
Administrative/Component Independent Variables

Component	Calculation(Errors identified using 58/59 data)	Transcription (Errors identified using file data)	Verification (Errors identified through the QC process)
Earned Income	Calculation—Earned Income	Transcription—Earned Income	Verification—Earned Income
Pension Income	Calculation—Pension Income	Transcription—Pension Income	Verification—Pension Income
Public Assistance Income	Calculation—Public Assistance	Transcription—Public Assistance	Verification—Public Assistance
Other Income	Calculation—Other Income	Transcription—Other Income	Verification—Other Income
Asset Income	Calculation—Asset Income	Transcription—Asset Income	Verification—Asset Income
Medical Expenses	Calculation—Medical Expenses	Transcription—Medical Expenses	Verification-Medical Expenses
Child Care Expenses	Calculation—Child Care Expenses	Transcription—Child Care Expenses	Verification—Child Care Expenses
Disability Expenses	Calculation—Disability Expenses	Transcription—Disability Expenses	Verification—Disability Expenses
Elderly/Disabled Allowance	Calculation—Elderly/Disabled Allowance	Transcription—Elderly/Disabled Allowance	Verification—Elderly/Disabled Allowance
Dependent Allowance	Calculation—Dependent Allowance	Transcription—Dependent Allowance	Verification—Dependent Allowance

Model Construction. One difficulty in developing a model using variables obtained with sample surveys is the need to take the weights and the sampling design into account. The procedure SURVEYREG in the SAS package allows regressions to be conducted using the sampling design and weights. This requires that the PSUs be defined; this was done as described in Appendix B on weighting. As in variance estimation, certainty PSUs were converted to strata, and projects in those PSUs were treated as if they were PSUs.

The major difference between survey regression and ordinary regression is that ordinary regression presupposes a random sample and allows one degree of freedom for each responding unit. In survey regression, however, the model takes into account that entire PSUs, not individual units, were initially selected, and hence counts one degree of freedom for each PSU.

One difficulty with this procedure, as found in SAS, is that is does not allow for the automatic selection of variables through a stepwise method. A second difficulty is that with fewer degrees of freedom, fewer variables will enter the equation with an appropriate level of significance. While this second difficulty is an apparent disadvantage, it actually prevents the inclusion of variables that enter the equation by chance.

Appendix H—The Impact of Procedural Error and Component Error on Dollar Rent Error

Three final equations were obtained: one for gross error, one for underpayment of rent and one for overpayment of rent. For each equation, the following procedure was implemented.

To select the variables for the equation we designated the 30 potential dichotomous variables (presence or absence of an error) as predictors in a stepwise regression, treating the data as if they were obtained from an unweighted random sample. Variance due to program type was removed by creating two dummy variables (for two of the program types) and forcing them into the equation. We required a significance level of .01 for inclusion or exclusion of a variable from each equation. The predictors thus selected were then included in a survey regression with the same dependent variable. PSUs and weights were identified for this equation, as described in the weighting section. Since we now had only a total of 114 degrees of freedom (54 original non-certainty PSUs and 60 projects in certainty PSUs), we allowed any variables whose regression coefficients had a significance level of .10 to stay in the equation. The survey equations also controlled for program type.

When developing a model for one payment type, the data with the opposite sign were set to zero so as not to reduce the sample size. Models were checked afterwards (without the extra data) to ensure that including the extra households did not influence the fit of the model. Only errors greater than ± $5 constituted an overpayment or underpayment.

Overpayment Model (Undersubsidy)

The equation that predicts overpayment from the unweighted data selected eight variables at the .01 level. The value of R-square was .11. Exhibit H-2 presents the variables:

Exhibit H-2
Unweighted Regression Predicting Overpayment of Rent

Variable	Component	Parameter	S.E.	F	p
Intercept		2.11	0.77	7.52	0.0061
Public housing		-1.01	1.01	0.99	0.3210
Owner-administered		-1.12	1.03	1.19	0.2753
Verification	Child care allowance	17.79	2.68	44.06	0.0001
Verification	Dependent allowance	9.23	2.48	13.85	0.0002
Verification	Earned income	7.59	1.65	21.13	0.0001
Verification	Medical allowance	8.34	1.18	49.70	0.0001
Transcription	Child care allowance	24.46	4.30	32.29	0.0001
Transcription	Earned income	8.54	1.48	33.17	0.0001
Transcription	Other income	8.47	1.74	23.72	0.0001
Transcription	Public assistance	7.66	2.14	12.84	0.0003

The second equation was at the survey level, and it indicated a value of .10 for R-square.

Exhibit H-3
Survey Regression Predicting Overpayment of Rent

Variable	Component	Parameter	S.E.	F	P
Intercept		2.25	0.59	14.35	0.0002
Public housing		-1.01	1.28	0.61	0.4347
Owner-administered		-1.42	1.15	1.54	0.2166
Verification	Child care allowance	21.58	4.64	21.68	0.0001
Verification	Earned income	8.36	3.26	6.56	0.0118
Verification	Medical allowance	9.26	1.48	38.91	0.0001
Transcription	Earned income	9.50	2.52	14.26	0.0003
Transcription	Other income	9.66	5.17	3.49	0.0644
Transcription	Public assistance	10.66	4.50	5.61	0.0196

In Exhibits H-2 and H-3, the coefficients show a surprisingly small effect on overpayment error. The unstandardized coefficient is the dollar effect that a kind of error has in describing overpayment error, regardless of the magnitude of the component error. Thus, failure to verify child care allowance contributes $21.58 to the overpayment of rent. Transcription errors in child care allowance appeared in the first model and not in the second, suggesting that such errors were concentrated in certain PSUs, and that the contribution of this type of error to the equation, although apparently substantial, is not statistically significant when we take into account the research design.

The coefficients indicated a contribution to rent error every time the verification or transcription error occurs. It does not mean that most errors are due, for example, to child allowance. The reason is that a particular error (e.g., child allowance) may occur infrequently but result in an increase in rent error whenever it occurs.

Underpayment Model. As with the overpayment model, variables were screened using stepwise regression without weights of sample design variables. The R-square was .15.

Exhibit H-4
Unweighted Regression Predicting Underpayment of Rent

Variable	Component	Parameter	S.E.	F	P
Intercept		4.39	1.65	7.11	0.0077
Public housing		0.39	2.17	0.03	0.8589
Owner-administered		-2.67	2.18	1.50	0.2213
Verification	Dependency allowance	24.78	5.36	21.40	0.0001
Verification	Earned income	46.93	3.37	194.00	0.0001
Verification	Elderly allowance	21.15	7.85	7.26	0.0071
Verification	Other income	32.39	4.30	56.69	0.0001
Verification	Public assistance	18.93	5.88	10.37	0.0013
Verification	Pensions	22.43	2.40	87.23	0.0001
Transcription	Pensions	-11.03	2.97	13.83	0.0002

The final model had an R-square of .16 and was as follows:

Exhibit H-5
Survey Regression Predicting Underpayment of Rent

Variable	Component	Parameter	S.E.	F	P
Intercept		4.63	1.29	12.87	0.0005
Public housing		-0.26	2.23	0.01	0.9078
Owner-administered		-3.10	1.94	2.54	0.1137
Verification	Dependency allowance	24.13	9.91	5.93	0.0165
Verification	Earned income	52.60	6.49	65.64	0.0001
Verification	Other income	33.86	7.98	18.00	0.0001
Verification	Public assistance	16.69	7.99	4.36	0.0391
Verification	Pensions	22.00	4.02	29.91	0.0001
Transcription	Pensions	-10.15	2.72	13.91	0.0003

The underpayment model has a characteristic not present in the overpayment model: a component with a negative coefficient. It also happens to be the only transcription error in the model. The coefficients seem to tell us that a verification error in pensions without a transcription error results in a larger rent discrepancy than does a pension error involving both. This issue will be explored in a subsequent section.

Appendix H—The Impact of Procedural Error and Component Error on Dollar Rent Error

Gross Error Model. One final set of models was derived, predicting the amount of rent error from the presence or absence of the different component models. The dependent variable in this case was the sum of the underpayments and the overpayments. In other words, they constituted the number of misallocated dollars. The value of R-square for this model was .21.

Exhibit H-6
Unweighted Regression Predicting Gross Rent Error

Variable	Component	Parameter	S.E.	F	P
Intercept		5.82	1.73	11.28	0.0008
Public housing		-0.16	2.23	0.01	0.9415
Owner-administered		-2.78	2.24	1.54	0.2155
Verification	Child care allowance	27.99	5.90	22.49	0.0001
Verification	Dependency allowance	32.36	5.52	34.38	0.0001
Verification	Earned income	53.01	3.63	213.49	0.0001
Verification	Elderly allowance	23.06	8.06	8.19	0.0042
Verification	Other income	33.89	4.46	57.75	0.0001
Verification	Public assistance	16.96	6.15	7.59	0.0059
Verification	Pensions	26.95	2.48	118.27	0.0001
Transcription	Child care allowance	37.26	9.47	15.48	0.0001
Transcription	Earned income	9.15	3.26	7.90	0.0050
Transcription	Other income	11.44	3.94	8.44	0.0037
Transcription	Public assistance	12.68	4.79	7.02	0.0081
Transcription	Pensions	-12.05	3.13	14.82	0.0001

The value of R-square for the survey regression was .22. For both models, the same phenomenon occurred for pension transcription errors and for underpayments. The models also reflect more variables than do the underpayment and overpayment models.

Appendix H—The Impact of Procedural Error and Component Error on Dollar Rent Error

Exhibit H-7
Survey Regression Predicting Gross Rent Error

Variable	Component	Parameter	S.E.	F	P
Intercept		6.41	1.36	22.28	0.0001
Public housing		-0.62	2.23	0.08	0.7796
Owner-administered		-3.27	1.98	2.73	0.1013
Verification	Child care allowance	30.33	10.73	7.99	0.0056
Verification	Dependency allowance	27.20	9.31	8.54	0.0042
Verification	Earned income	61.53	6.20	98.36	0.0001
Verification	Elderly allowance	26.55	15.77	2.83	0.0952
Verification	Other income	35.02	8.63	16.47	0.0001
Verification	Public assistance	14.88	8.91	2.79	0.0977
Verification	Pensions	26.32	3.78	48.49	0.0001
Transcription	Child care allowance	49.24	26.30	3.51	0.0638
Transcription	Other income	11.41	5.03	5.14	0.0253
Transcription	Public assistance	13.54	7.17	3.57	0.0615
Transcription	Pensions	-10.65	3.03	12.39	0.0006

The Negative Coefficients. As stated above, the negative coefficients associated with pensions must be examined. We created a table (Exhibit H-8) presenting cases with zero, positive, and negative pension transcription and verification error, and we obtained average overpayment and underpayments for each group.

As seen in Exhibit H-8, the largest underpayment occurred when there was a negative verification error in the pension field and no transcription error. The largest overpayment occurred when there was a positive verification error and no transcription error. Further examination of the table shows that of cases with both transcription and verification error, 54 were in the same direction while 84 were in opposite direction. This tendency of errors to cancel each other out probably explains the reason for the negative coefficients.

Appendix H—The Impact of Procedural Error and Component Error on Dollar Rent Error

Exhibit H-8
Interaction of Pension Transcription and Verification Error

Transcription	Verification	Overpayment	Underpayment	Average Transcription	Average Verification	n
ZERO	ZERO	$5	$10	$0	$0	1761
ZERO	NEG	$4	$46	-$1,976	$0	227
ZERO	POS	$17	$4	$569	$0	80
NEG	ZERO	$6	$3	$0	-$2,443	98
NEG	NEG	$1	$21	-$826	-$2,931	40
NEG	POS	$13	$1	$340	-$1,815	36
POS	ZERO	$3	$6	$0	$2,125	96
POS	NEG	$12	$6	-$3,034	$3,220	48
POS	POS	$9	$18	$311	$1,667	14

Summary and Conclusions. The first thing to note is that recalculation errors did not enter any of the equations. While they exist, they do not seem associated with rent error to any great degree.

In interpreting the equations, one must not confuse the magnitude of the coefficient with its effect. The overpayment equation contained both transcription and verification errors, suggesting that both kinds of error contribute to tenants paying more than the law requires. The child care allowance initially seemed to account for the largest error for both verification and transcription, but the transcription coefficient lost its significance in the weighted survey.

Underpayments presented a different picture. With the exception of pensions, verification errors are most closely associated with underpayment. For overpayments, sometimes proper documentation exists and it is transcribing that documentation to the forms that leads to rent error, while other times it is unacceptable documentation or income discovered during the interview that is related to the error. For underpayments, the bulk of the errors are related to verification.

Looking at the gross error equation, we find that earned income verification error presents the largest coefficients, all of it verification error. Child care allowance error has the largest combination of transcription and verification error.

One must take care not to confuse the coefficient, which is an estimate of the rent dollar amount associated with each kind of error, with the significance. A variable may have a large coefficient and not have a significant *F* ratio. This would mean that there may be a few outliers, without which the coefficients would be much smaller.

Appendix H—The Impact of Procedural Error and Component Error on Dollar Rent Error

Appendix I—The Prediction of Rent Error from Tenant Characteristics

Appendix I—The Prediction of Rent Error from Tenant Characteristics

The incidence of rent error may be related to tenant characteristics, project characteristics, or both.

There is an advantage to predicting rent error from tenant characteristics found in the 50058/50059 Form. This permits auditors, owners, or housing authority officials to quickly select and focus quality control measures on cases that are more likely to be in error.

An analytical approach known as Chi Square Automatic Interaction Detector (CHAID) was used to predict rent error using 50058/50059 variables. CHAID creates a tree diagram where at each node two or more groups are defined by a variable so that the groups are as different as possible in terms of average error. This results in a series of groups, some with very large average errors and some with very low errors. This process is done by first selecting the best variable for creating two or more groups significantly different from each other in the dependent variable. Then each group is in turn split, just as the entire population was. The process continues until no more splits can be made.

Among other uses of the model are the following:

- Every tenant can be classified into one and only one of the groups using the tree diagram. The average error of this group can serve as a guideline for whether to review the case or not.

- The cases can be prioritized by checking the most error-prone households. This is similar to the previous use, but it entails a work plan before proceeding with quality control methods.

- By looking at all the splits, variables associated with error can be considered when preparing quality control procedures rather than just targeting tenants for review.

CHAID. Chi-square **A**utomatic **I**nteraction **D**etector is an exploratory data analysis method used to study the relationship between a dependent variable and a series of predictor variables. CHAID modeling selects a set of predictors and their interactions that optimally predict the dependent measure. The developed model is a classification tree (or data partitioning tree) that shows how major "types" formed from the independent (predictor or splitter) variables differentially predict a criterion or dependent variable.

CHAID is an exploratory data analysis method used to study the relationships between a dependent measure and a large series of possible predictor variables that themselves may interact. The dependent measure may be a qualitative (nominal or ordinal) one or a quantitative indicator. For qualitative variables, a series of chi-square analyses are conducted between the dependent and predictor variables. For quantitative variables, analysis of variance methods are used where intervals (splits) are determined optimally for the independent variables so as to maximize the ability to explain a dependent measure in terms of variance components.

This is particularly applicable to the problem at hand. It is likely that some predictors of error may interact. Having either of two types of expenses may not be error-prone, but having both may be. Having three persons who live in a unit or having single adults living in the unit may not be error-prone, but having three persons and no children may be. CHAID is particularly good at sorting out this type of problem.

Appendix I—The Prediction of Rent Error from Tenant Characteristics

CHAID or its predecessor, AID has been used for error–prone profiling since the 1970s. Today, social research and market segmentation have also become important uses. CHAID is not the only decision tree method available today, but it offers a simple and understandable algorithm and yields a tree diagram that is easily interpreted and tells the story.

CHAID diagrams should be thought of as a "tree trunk" with progressive splits into smaller and smaller "branches." The initial "tree trunk" includes all of the tenants in the study. A series of "predictor" variables are assessed to see if splitting the sample based on these predictors leads to a statistically significant discrimination in the dependent measure. In this case, the variables are fields in the 50058/50059 Form. One of the dependent variables is gross rent error; the others are underpayment of rent and overpayment of rent, respectively.

The "most significant" predictor variable defines the first split of the sample or the first branching of the tree. Then, for each of the new groups formed, one would ask if the subgroup could be further split significantly by another of the predictor variables. After each split, the program determines if the new subgroup can be further split on another variable so that there are significant differences in the dependent variable. The result at the end of the tree-building process is a series of groups that are maximally different from one another on the dependent variable. At each step, statistical tests are conducted to determine if a significant split can be made (correcting very conservatively for the fact that we are examining many possible ways of splitting the data at one time).

Setting Up the Data. The objective of this analysis was to determine how various tenant characteristics were related to the magnitude of rent error. In particular, this analysis was designed to develop profiles of tenant characteristics that are associated with error. Different combinations of tenant characteristics may impact the incidence of rent errors. For example, elderly tenants may have multiple sources of medical expenses. The amount of effort required to verify these expenses is greater for these households than it is for elderly households without medical expenses. It is reasonable to expect that each additional source of medical expenses presents more opportunities to make mistakes. In other words, we would expect households with multiple sources of medical expenses to have more rent errors than would those without medical expenses. It is this type of relationship to rent error that this analysis investigated.

The household was the unit of analysis. This analysis included 2,400 households. Of these, one-third were conventional public housing tenants, one-third were PHA-administered Section 8 tenants (vouchers and moderate rehabilitation), and one-third were in owner-administered (Section 8, Section 202, and Section 811) projects.

Measures of Rent Error. The gross dollar amount of rent error was used in this analysis. This is the absolute value of the difference between the rent the tenant was paying and the value of the dollar amount of the rent the tenant should have been paying. The difference, of course, could have reflected an underpayment by the tenant, hence a subsidy greater than it should have been, or an overpayment by the tenant, hence a subsidy smaller than it should have been. Because these two types of errors may be related to different predictors, two additional models were derived, each using one of these two variables as a dependent variable.

Appendix I—The Prediction of Rent Error from Tenant Characteristics

Measures Used as Predictors. The predictor measures were variables found in both the 50058 and 50059 Forms and applied to every program type. In some cases, the information was collected from one field on the 50058 Form and several fields from the 50059 Form, or the other way around. The variables used included the number of bedrooms, members of the household, and dependents of the householder; as well as the number of various income sources and household expenses. Specifically, it included the amount of earned income, asset income, pension income, and other income, as well as the amount of medical and child care expenses. The amount of income and expenses was used instead of the simple presence or absence of the type of income or expense so it would distinguish between tenants with values that had little effect on the rent and tenants whose large reported values could have affected the rent if in error. This type of variable structure yields more specific results, and, if the item is not important, is still able to distinguish between the presence or absence of the variable of interest. If a value was missing for one of these variables, it was set to 0.

The 50058/50059 tenant rent, program type, and 50058/50059 Form type were also included among the predictors. Some values that appear in the forms only under certain conditions (e.g., 3 percent of gross annual income) and variables reflecting rent adjustments were omitted.

CHAID treats categorical predictors differently than quantitative ones. If a variable such as earned income is used in a split, the nodes (i.e., the set of tenants grouped together at the split) will have values within an interval. For example, a split may yield one group with 0, missing, or negative earned income; one with incomes of $1 to $20,000; and one with incomes of $20,001 and over. For categorical variables, any combination of values may be used. The only categorical predictors used were 50058/50059 Form type, program type, and type of action (recertification, new certification, etc.).

The analysis was completed without weights, as weights would complicate the CHAID algorithm. Each node was required to have a minimum of 100 tenants. Each split had to be statistically significant at the .05 level.

Variables in the Models. The variables that appear in the models are listed below.

Exhibit I-1
Model Variables

Variable	Description	Model		
		Gross Error	Underpayment	Overpayment
ac_adjrt	Gross Annual Income		X	X
ac_nai	Adjusted Annual Income			X
ac_nbr	# of Bedrooms	X	X	
ac_ndep	# of Dependents	X		
ac_nmem	# of Household Members	X	X	X
ac_rent	Tenant Rent			X
ac_ttall	Total Allowances	X	X	X
ac_ttp	Total Tenant Payment		X	
ac_util	Utility Allowance			X

Appendix I—The Prediction of Rent Error from Tenant Characteristics

The Gross Error Model. Figure I-1 presents the Gross Error Model. The average gross error (unweighted) was $19. The analysis yielded 12 nodes, 9 of which were not split. The average gross error for the final groups ranged from $6 to $41, meaning that the high-error groups have a dollar error that is more than twice that of the population at large and more than eight times larger than that of the group with the smallest error.

The first split was based on the number of bedrooms. Households with more than three bedrooms formed a terminal node (Node 3), with the second-largest average rent error of the lot. Of the 2,400 tenants, 120 had more than three bedrooms; their average gross error was $40.

A second group (Node 2) with two or three bedrooms was further split using number of household members. There were 111 households with two or three bedrooms and more than four household members. These formed Node 10 and had an average gross error of $39.

Another group (Node 9), derived from Node 2, was further split; this time using the number of dependents. This yielded the most error-prone group in the study (Node 11). This group had 132 households and an average gross error of $41.

The households with one or no bedrooms (Node 1) were less error-prone, with an average gross error of $10. Among these, only one group had an average gross error greater than or equal to that of the 2,400 combined. This group (Node 4) was defined as tenants with no more than one bedroom and with total allowances no greater than zero. It had 145 tenants and an average gross error of $19.

The model tells us that if we wish to review cases most likely to have large errors, we need to focus on larger households. In particular, the three groups of households that have the largest errors are—

1. Households with more than three bedrooms
2. Households with two or three bedrooms and more than four household members
3. Households with two or three bedrooms and two, three, or four household members and no dependents.

The Underpayment Model. The bulk of gross errors consists of underpayments; so, it is not surprising that the underpayment model resembles the gross error model. Figure I-2 presents this model. There were 16 nodes, and 10 of them of them were split no further. The unweighted average for underpayments was $13 and the average for the terminal nodes ranged from $41 down to $2.

The first split was also based on the number of bedrooms; but here the three groups were one or zero bedroom, two bedrooms, and more than two bedrooms. The group of more than two bedrooms (Node 3) was further split into Nodes 9 and 10. Node 9 consisted of households with more than two bedrooms and a total tenant payment of no more than $50. This group had exactly 100 households and an average underpayment of $41, the largest of all the groups.

The households with more than two bedrooms and a total tenant payment greater than $50 (Node 10) were further split according to number of bedrooms. The households with more than three bedrooms and total tenant payment of more than $50 (Node 16) had an average underpayment of $32.

The low error nodes are important as well. The lowest error group (Node 12) has an average underpayment of $2 and yet consisted of 493 households, slightly more than 20 percent of the total. This group is defined as households with no more than one bedroom, total allowances of $1 to $1,342, and gross annual income of more than $6,768. Low error groups are of interest if the intention is to review most households and omit the least error-prone households.

The Overpayment Model. The overpayment model is presented in Figure I-3. This model is the simplest and probably the least informative of the three. It indicates that tenants whose rent is the greatest (above $289) are most likely to make overpayments. This is a terminal node (Node 3) with 482 households (about 20%) and a $14 average overpayment (as opposed to $6 for all the households). Not surprisingly, tenants with rent less than or equal to zero and adjusted annual income no greater than $1,692 had an average overpayment close to 10 cents.

Appendix I—The Prediction of Rent Error from Tenant Characteristics

Figure I-1: Gross Error Model

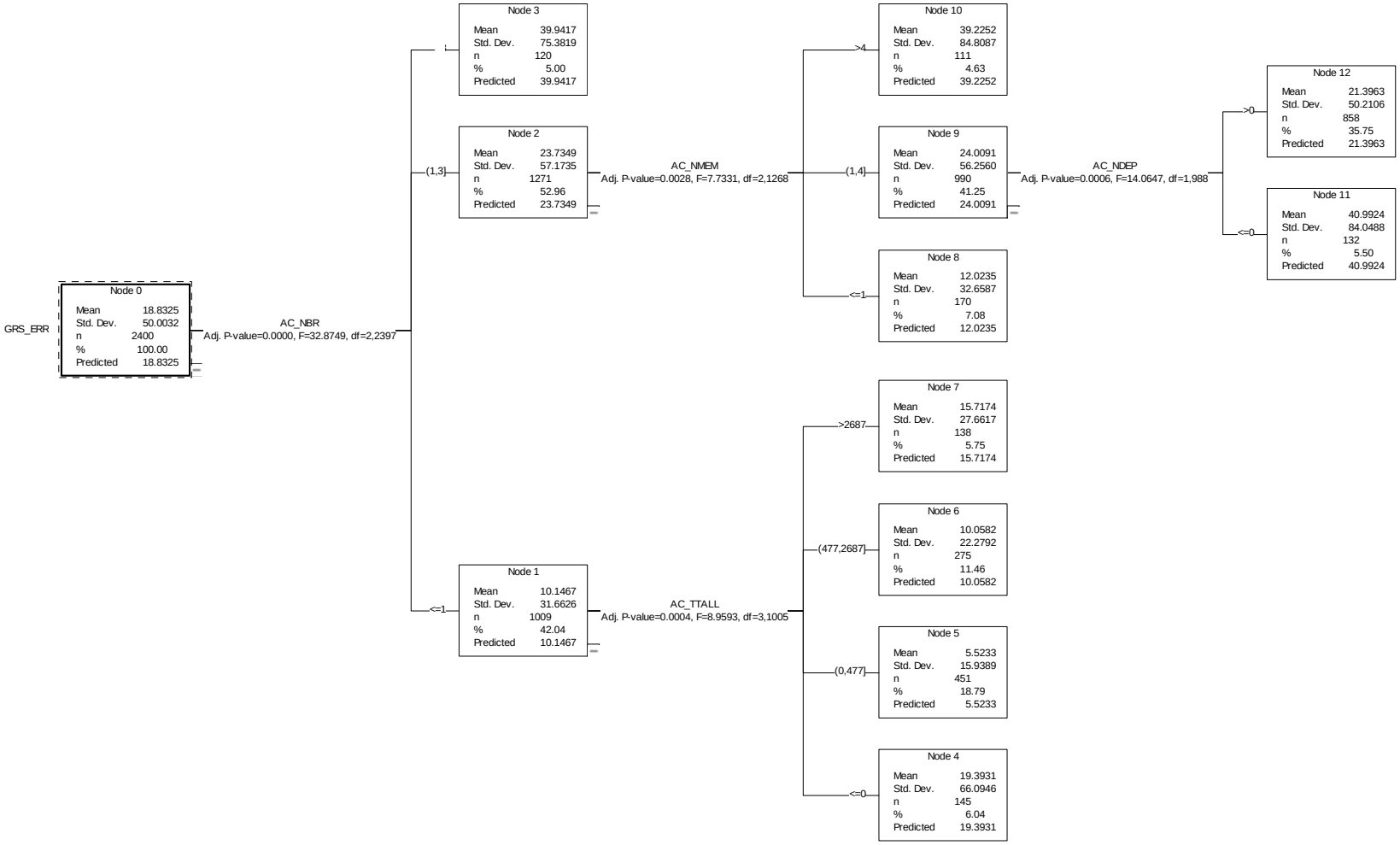
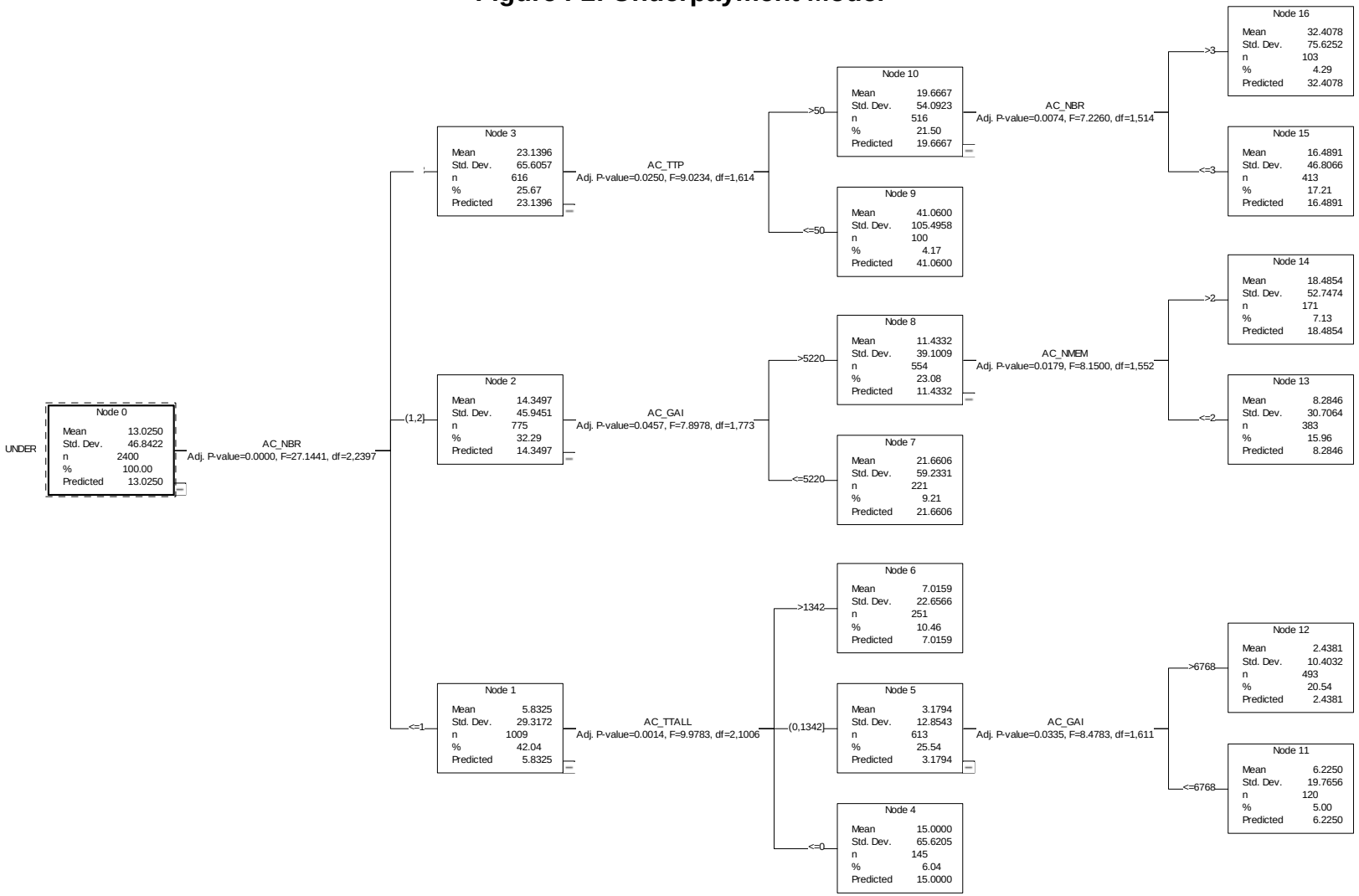
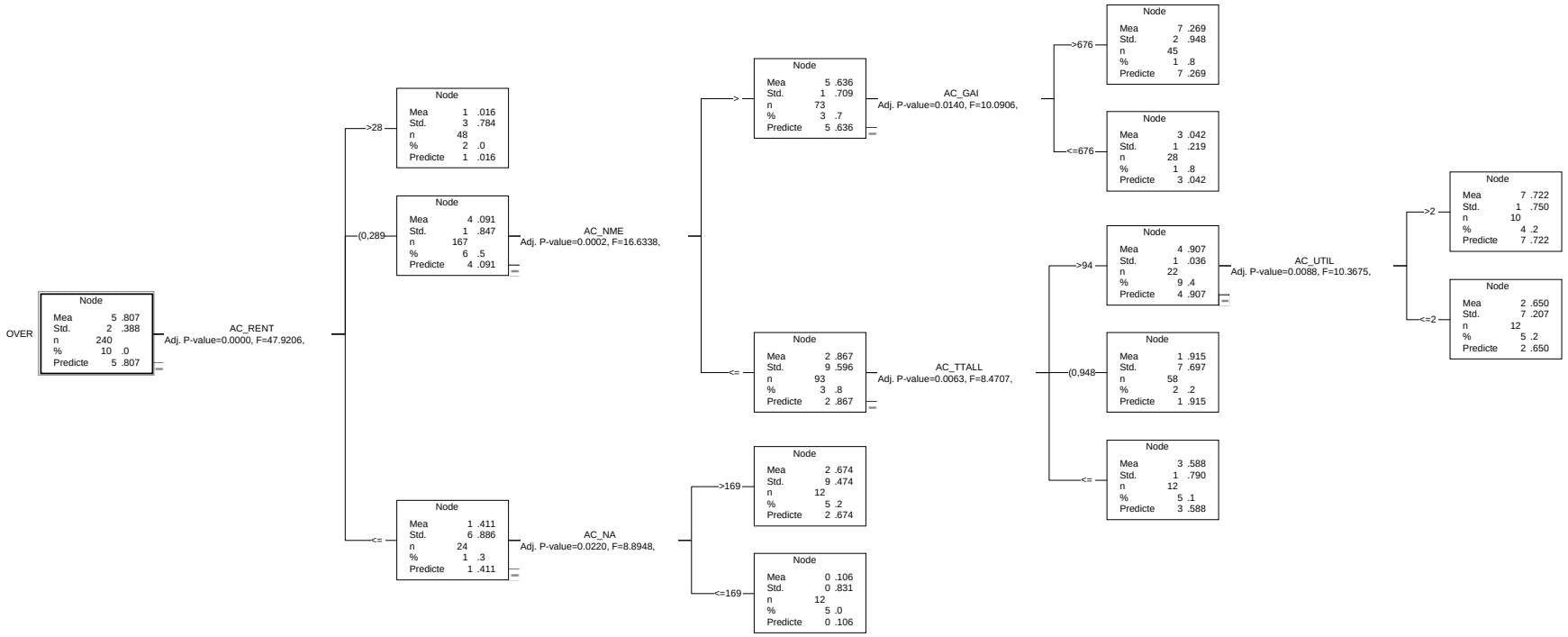


Figure I-2: Underpayment Model



Appendix I—The Prediction of Rent Error from Tenant Characteristics

Figure I-3: Overpayment Model



Appendix J—Utility Allowance Analysis

Appendix J—Utility Allowance Analysis

I. Introduction

Background. A utility allowance (UA) is an amount equal to the estimate made by a Public Housing Agency (PHA) of the monthly cost for the reasonable consumption of basic utilities (except telephone, cable TV, Internet access, etc.) for a particular assisted unit in the Housing Choice Voucher Program. The cost of tenant-paid utilities not included in the rent is the responsibility of the assisted family. The utility allowance is a part of the housing assistance payment formula. A proper determination of the utility allowance is an important step in the calculation of the tenant rent.

Landlords also benefit from correct utility allowance determinations in two ways. First, the amount of the utility allowance can affect the maximum rent that an owner may receive for a unit. Second, a tenant's failure to make monthly utility payments may be considered a lease violation, similar to not paying rent. If a utility is shut off due to the assisted family's non-payment, a landlord's Housing Assistance Payment (HAP) contract may be suspended or terminated. In addition, a landlord may face liability if a tenant family uses improper heating equipment, causing injury. Failure to maintain proper utilities (heat in the winter, for example) can sometimes cause damage to the rental unit. Thus, an accurate determination of utility allowance is an important component in the leasing process.

PHAs administering voucher programs must follow procedures established by the Department of Housing and Urban Development (HUD) and use the required forms when determining the utility allowance. These procedures include—

- Maintaining a utility allowance schedule for all tenant-paid utilities.
- Determining allowances on the basis of the typical cost of utilities and services paid by energy-conservative households that occupy housing of similar size and type in the same locality as the assisted dwelling unit.
- Reviewing the utility allowance schedule each year and revising the allowance for a utility category if there has been a change of 10 percent or more in the utility rate since the last time the utility allowance schedule was revised.
- Using the appropriate utility allowance for the size and type of dwelling unit actually leased by the family when determining the tenant rent to owner.[1]

Analysis. ORC Macro began the analysis of utility allowance information by attempting to determine whether the correct utility allowance was used by PHA staff to when determining the tenant rent to owner. The goal of this analysis was to assess the dollar value of error associated with the use of incorrect utility allowances. However, because of great variability in how PHAs

[1] Upon request from a family that includes a person with disabilities, the PHA must approve a utility allowance that is higher than the applicable amount on the utility allowance schedule if a higher utility allowance is needed as a reasonable accommodation, in accordance with 24 CFR Part 8 to make the program accessible to and usable by the family member with a disability.

document the utilities for which the tenant is responsible and the actual utility allowance determination, the specific information needed to assess dollar error was not available without substantial additional work on the part of the field interviewer. Therefore, we took this opportunity to document the information that was available and the issues associated with that information.

Our original analysis plan assumed that *each* case file would contain some type of worksheet itemizing utilities and showing a total allowance; either using a standardized form, such as HUD Form 52667, Allowances for Tenant Furnished Utilities and Other Services, or a document with handwritten calculations, perhaps specifically tailored by the PHA. We also expected that each file would contain a copy of the original lease/lease addendum or HAP agreement that could be reviewed for calculating utility allowances. Our goal was to enter specific utility values and total UAs from worksheets and other documents into a spreadsheet to calculate the correct quality control utility allowance (QC UA), provide quantitative results showing frequencies of incorrect determinations and the reasons why, and calculate the rent error associated with the incorrect UA.

However, as the review process proceeded, it became clear that a quantitative analysis would not be feasible due to a lack of standardization in how PHAs document their process of determining utility allowances, lack of understanding of the nuances of PHA-level policies when determining the UA, and inadequate documents to understand how the utility allowance had been calculated. Therefore, we revised our procedure to conduct a qualitative analysis summarizing the issues found with the documents provided, calculate the QC UA for a portion of the cases to identify the types of discrepancies, and make recommendations for refining collection of utility information in future studies to obtain quantifiable results.

II. Methodology

A total of 110 PHAs and 780 households were sampled to represent the Housing Choice Voucher Program (HCVP) in the HUD QC study. As part of gathering Project Specific Information (PSI), ORC Macro requested a utility allowance schedule for each unit type from each PHA to determine the utility allowance for households. All but three PHAs provided a copy of their utility allowance schedule. Field interviewers were instructed to copy materials from case files for households selected to participate in the study. They were advised to review the tenant file for the following items:

- A utility allowance worksheet that supports the utility allowance on the 50058 form from which data had been abstracted or any document with handwritten calculations showing how the utility allowance was calculated
- A lease document or lease addendum
- HUD Form 52517—Request for Tenancy Approval (RTA)

For the lease and RTA, field interviewers were instructed to photocopy only the pages that applied to utility payment information. Copies were sent to ORC Macro periodically throughout the 4 months of data collection. As documents were received and reviewed, field interviewers

were verbally instructed to collect other documents, including the HAP Contract. ORC Macro headquarters staff reviewed the documents to determine the following:

- Which documents were received
- Whether the utility allowance recorded on the selected 50058 form matched the amount on the documents from the tenant file
- Whether the QC UA calculated by ORC Macro, based on the documents from the tenant file and the utility allowance schedule sent by the PHA, matched the amount on the 50058 Form.

Two worksheets were developed to guide ORC Macro staff through the review of the documents for each household and summarize the findings at the PHA level. The household-level worksheet was used to record individual case information. The PHA-level worksheet was used to summarize information for an entire PHA. The PHA-level worksheet allowed ORC Macro staff to better understand regional and PHA-related issues. Copies of the two worksheets are provided at the end of this appendix.

Household-Level Worksheet. The household-level worksheet was used to record the following:

- Tenant-specific information from the 50058 Form—the effective date of action, number of bedrooms (actual), utility allowance, and tenant rent
- PHA categories on the utility allowance schedule used to calculate the tenant utility allowance
- Effective date of the utility allowance schedule used by PHA staff to calculate the utility allowance
- Form date—the date the PHA staff either completed or printed the HAP, the RTA, lease or worksheet used to determine the rent.

Specific data were recorded and compared in four columns, as described below.

1. **Utilities per Lease/RTA/HAP—**used to determine the official tenant-paid utilities not included in the rent. It listed the type of utility and possible fuel option for each utility.

2. **Value per PHA Worksheet—**used to record the amount for each utility used to determine the utility allowance on the 50058 Form.

3. **Value per ORC Macro Reading of PHA Worksheet—**the utility allowance schedule copied from the tenant file was used to determine the allowance, on the basis of information from column 1 (Utilities per Lease/RTA/HAP).

4. **Value per PSI Utility Allowance Schedule—**the utility allowance schedule received from the PHA staff was used to determine the allowance, on the basis of information from column 1 (Utilities per Lease/RTA/HAP).

The 50058 utility allowance (number 2) and the QC utility allowance (number 4) were compared to determine whether the two amounts matched. If the amounts did **not** match, issues associated with the case were recorded.

PHA-Level Worksheet. The PHA-level worksheet was used to record the following items:

- PHA categories on the Utility Allowance Schedule
- Effective date of the schedule received from the PHA
- Information about the documents obtained from the tenant files listing the utilities paid by the tenant, unit type, number of bedrooms, and whether the utilities paid by the tenant were clearly defined
- Documents used to calculate the utility allowance, whether it was hand or computer calculated, the effective date, and unit-specific information
- Summary of issues found in the cases, such as unclear unit type, utility responsibility unclear, calculation error, etc.
- Number of cases where the field interviewer reported no utility allowance information in the file
- Whether the utility allowance calculated by ORC Macro matched the utility allowance on the 50058 Form.

III. Findings

Characteristics of PHA Utility Allowance Schedules. The schedules used by PHAs varied in complexity. ORC Macro used the following categories to determine how the PHA calculated the utility allowances:

- Number of bedrooms
- Type of utility
- Type of unit
- Geographic region
- Utility company

PHAs received one point for each of the above categories used when determining the utility allowance. Type of utility was a general classification, such as heat, cooking, etc., that was further divided into subcategories by type of fuel such as electricity, natural gas, propane, and coal. (ORC Macro did not assign a point for type of fuel.) The following table illustrates a breakdown of the number of categories used by PHAs.

Exhibit J-1
Utility Allowances Categories

Number of Categories Used to Determine the Utility Allowance	Number of PHAs	Percentage of PHAs
2	24	22%
3	69	63%
4	12	11%
5	2	2%
Missing	3	3%
Total	110	101%*

* Will not add to 100% due to rounding

The most common combination of the three categories used in the 69 PHAs referenced above was type of utility, type of unit, and bedroom size.

While our process of collecting utility tables from PHAs at the onset of the study generally resulted in only receiving the most recent utility allowance table, we were often able to review a series of updated tables, particularly in PHAs where more than four cases were included in the sample. The most frequent observation was that PHAs updated their utility allowance schedules annually. However, we did find PHAs who appeared to be using older utility allowance schedules. The frequency of updating schedules varies by PHA and may be dictated by regional utility cost factors. Most of the tables were sent to ORC Macro during June, July, and August 2004. At least one PHA noted that it was currently in the process of updating its schedule. At least one PHA stated that it conducts a review and tries to determine whether updates are needed at the end of or beginning of the fiscal year. There were 13 PHAs (12%) whose schedules did not clearly indicate the effective date.

Characteristics and Completeness of Case-Specific Documents Reviewed. From the 780 voucher households reviewed, the following findings were observed:

- A total of 129 (17%) of the cases were considered complete, meaning that they contained one (or more) documents that included an itemization of each utility amount, number of bedrooms, and the unit type.
- We were able to calculate the utility allowance for 178 (23%) of the total cases reviewed. This number is slightly higher than the number of completed cases because there were some cases where we received everything needed for the calculation except the number of bedrooms. For those cases, we used the number of bedrooms from the 50058 Form.
- Of the 178 cases for which a QC UA was calculated, 66 percent matched the amount on the 50058 Form. The remaining 60 cases were discrepant for the reasons given in Exhibit 2.

Exhibit J-2
Incidence And Types Of QC UA Discrepancies

Number	Percentage	Outcome
3	5%	Discrepancy in number of bedrooms
4	7%	Discrepancy in unit type
27	45%	Discrepancy in specific utilities
26	43%	Other discrepancy*

- Other reasons included using an outdated utility allowance schedule, calculation errors, a discrepancy fuel source and transcription errors.

Documents Used to Determine the Amount of the UA, as Calculated by Project Staff. These documents fell into the following three categories:

1. HUD Form 52667—Allowances for Tenant Furnished Utilities and Other Services

The majority (51%) of worksheets used by PHA staff to calculate the utility allowance were the HUD Form 52667. This is a HUD-required form that must be used to determine utility allowances. Our review showed that most PHAs used an exact reproduction of the form, inserting their PHA's allowances for each type of utility shown in columns representing monthly dollar amounts for range of bedroom sizes. The standardized form allows PHAs to enter the following items:

- Locality within the geographic area
- Unit type (e.g., apartment, single family, mobile home, etc.)
- Date (most often reflects the effective date of the initial lease or annual renewal, but some PHAs entered the date of action—the date the utility allowance was calculated)
- Name of family
- Address of unit
- Number of bedrooms
- Summary table to enter specific monthly costs and total utility allowance

PHA staff typically either circled each applicable amount on the table and recorded the calculation at the bottom of the form or attached an adding machine tape showing the calculation. Some forms displayed circled items in multiple columns, representing the values for two units with a different number of bedrooms, indicating perhaps that an error had been made and corrected on the same sheet.

2. Computerized Worksheets

Fifteen percent of the worksheets obtained from tenant files were computer-generated. They consisted of various forms. Some PHAs prepared an exact replica of HUD Form 52667 electronically rather than complete the form by hand. Other PHAs used software to create a uniquely tailored form modeled after HUD Form 52667, reflecting only the utilities and respective individual allowances for the appropriate bedroom size.

3. Other Worksheets

Seventeen percent of the worksheets were original designs. Some were streamlined so that all unit types appeared on one page. Another allowance worksheet design expanded the usability of the form by decreasing the size of the "table" portion of the form and adding other key items to the sheet, such as the value of the HAP contract, contract rent, and gross rent.

We found sites that included an additional utility or service, such as a gas or electric tax, electric and gas meters, base rate for power or electric companies, or fee for usage of city water. Other items included city fees such as a code enforcement program and rent stabilization fee. Examples of appliances specified in the "Other Allowance" category were garbage disposal, dishwasher, and washer/dryer hookups.

For the most part, these allowance forms were filled out completely and clearly, although there were instances where the following occurred:

- Effective date was unclear or missing.
- Type of unit was unclear or missing.
- Bedroom size was unclear or missing.
- Family name or address was missing.
- Total utility allowance was missing; only the individual entries were marked.
- Some forms showed corrections where originally included items were scratched through and a different type of utility was marked. It should be noted that if the PHA did not use the "calculation box" at the lower-right corner of the form, it was sometimes difficult for ORC Macro staff to determine, by reviewing a photocopy, which item was the original selection and which item was the corrected one.

Documents Used to Determine the Utilities for Which the Tenant Was Responsible. Three types of documents were found. They were the following:

1. Leases

The review of leases (and lease amendments) included checking the tenant's name, address, and effective date against the utility allowance schedule to be sure that the addresses matched, and that the utilities reflect the circumstances for the 50058 Form selected for our study. Leases rarely indicated the type of unit. Some lease documents were quite clear as to which utilities were paid by the owner and which ones were paid by the tenant. These versions often had check boxes or a delineated section (much like the HAP contract section described below) printed in the lease to mark the appropriate designations. Many leases simply contained a short statement listing utilities in a section designated for utilities and appliances. Leases that were very general could not be used alone to confirm the utility designations. We also noted that some PHAs appeared to use a standard lease for all or most of the cases we selected.

2. HUD Form 52517—Request for Tenancy Approval

This form was reviewed to match the tenant's name, address, requested beginning date of lease (we considered this the effective date), number of bedrooms, type of unit, and which utilities are

paid by the tenant. Since the specifications for fuel type place oil and electric together, with one check box shown for heating, cooking, and water heating, most PHAs placed a check next to that designation; some also circled oil or electric to clearly identify the exact type. Since this form is submitted by tenants to PHAs after they have found a suitable unit and the owner has agreed to lease the unit under the voucher program, we understand that PHAs must approve the tenancy before a final contract is made. Field interviewers were advised to locate and photocopy this form; however, we did not always receive the reverse of the form showing PHA approval and the signatures of all parties.

3. HUD Form 52641—Housing Assistance Payment Contract

The HAP contract was considered the primary source to substantiate which utilities should be used to determine the utility allowance. This is because the execution of this document is the final step in the leasing process. We asked our field interviewers to photocopy only the pertinent pages of this 10-page document, since the key items we need are in the first two pages. During review, we checked the tenant's name, unit address, term of the lease (effective date), utility and appliance designations indicating whether the owner or tenant pays, and the signature date, to ensure that the contract applies to the timeframe of the case under study. The documents reviewed were complete and clear.

Issues in Determining QC UAs. As stated in the methodology section, we carefully reviewed leases, HAP agreements, RTAs, and other documents provided to determine the final contractual agreement made regarding which utilities are paid by tenants and thus should be part of the total utility allowance. For cases where the contractual documents were received, we encountered the following issues:

- *Cases where the lease and RTA form differed*. The types of discrepancies varied. Frequently discrepant items were trash collection, water, and sewer. Since RTA forms are prepared at the onset of the process, tenants may wish to locate a site where these utilities are paid by owners; but once a unit is selected, the utility agreement is different and the change may not be made on the RTA form.

- *Cases where the lease and HAP agreements differed*. This occurrence was observed very rarely and seemed to occur when dates on the forms were different. The addresses of the unit on both forms were double checked to ensure that there had not been a change of address. In these instances, the correctness of the utility allowance schedule prepared by the PHA could not be determined.

- *Some documents were unclear or differed regarding whether the tenant or owner was responsible for utilities*. Instances where these designations were unclear were most often noted when a "cell" was left blank on one of the forms but had been filled in on another. In instances where there was only a worksheet and one other document such as the RTA form, there was no "official" form to substantiate the amount. Specific examples included the following:

  - Some PHAs included items in the "Other Electric" utility designation other than those described in HUD's instructions. We observed items included in this category, either

on the form or in accompanying explanatory documents. According to the instructions on the back of HUD Form 52667, the "Other Electric" utility category is designated to include electric lighting, refrigeration, and appliances. We observed a base charge added to this category, and a few PHAs include air conditioning rather than using a separate allowance for air conditioning. When this occurs, it becomes difficult to compare these forms to other documents.

- Certain utilities (air conditioning in particular) are sometimes difficult to compare when reviewing the utility allowance schedule with other contractual documents. It is understood that allowances for air conditioning must be established only for communities where the majority of units in the market provide centrally air-conditioned (A/C) units or appropriate wiring for tenant-installed A/C units. Many leases reviewed in this study gave general descriptions of the tenant's utility responsibilities (for example, tenant provides electric, gas, and owner provides sewer and water). With this type of lease, it was difficult to confirm whether the air conditioning allowance should be given. Another observation was that there were instances where an RTA form was submitted that did mark air conditioning down as the tenant's responsibility, but this utility was not specifically listed on the utility allowance schedule.

- Some items added to the "Other" utility category on HUD Form 52667 could not be confirmed, since documentation about PHA practices was not routinely collected. Some PHAs added city fees (for example a fee of $1.00 for both "code enforcement program" and "rent stabilization fee"). Another PHA added two rows for "base charges:" one for electric and one for gas. These charges were the same for all bedroom sizes, but varied by region. While this is shown on the PHA's worksheet, there was very little information to explain under what circumstances these allowances were given.

♦ *Differences in the type of unit.* There were some cases reviewed where the unit descriptions appeared to show that an incorrect schedule had been used. One example was a case where the PHA's worksheet referenced a "house-detached;" however, the RTA form prepared for the same effective date was clearly marked for a "semi-detached/row home." This example highlights one of the difficulties in interpreting how PHAs have defined unit types. Our review in this example revealed that the PHA did maintain a separate schedule for "duplex/row/townhouse," so it appeared that the wrong form had been used.

♦ *Cases where unit type has not been clearly identified.* Some documents did not clearly specify the unit type. In instances where a lease was the only document to compare with the worksheet, most often the type of unit was not specified; so there was no way to ascertain whether the worksheet reflected the appropriate type of unit. The HAP contract also does not contain a section to identify the type of unit; so when the HAP contract was the only supportive document, again, there was no confirmation of the unit type. The RTA form does provide a section to specify the type of unit, but when this field was not completed there was no confirmation of the unit type.

- *Some cases showed that an older utility allowance schedule had been used after the PHA had updated the allowances.* Although we had not collected specific information from PHAs regarding when their utility allowance tables had been updated, within any set of cases studied in a PHA there were usually a sampling of cases with effective dates falling within the early months of the fiscal year (fall 2003) and the latter months of the fiscal year (summer 2004). Thus, we often saw at least two different updated schedules. By comparing the effective date of the PHA's schedule that had been sent to us with the effective date on the schedule prepared for each case, we could determine if the PHA used the appropriate schedule. We found some cases where the PHA clearly used an outdated schedule to calculate the utility allowance.

IV. Recommendations

PHA-Level Information. From the wealth of information obtained during this analysis, we have determined that more specific instructions are needed for identifying the documents and corresponding information needed to determine the accuracy of the utility allowance. To follow PHA procedures correctly when calculating the QC UA, more detailed information from PHA staff will need to be gathered before data collection. The required information is described below.

1. *PHA policies on how utility allowances are calculated and recorded*. This includes the types of documents that have the most complete information about the utilities paid for by the tenant. If a PHA uses computer codes to determine the utilities paid by a tenant, then a key or explanation to decipher those codes will be needed, as well as an explanation on how the information is input in the computer.

2. *The PHA's definitions of unit types*. Some PHAs have multiple categories for one "unit type," such as low-rise apartment, high-rise, garden apartments. To calculate the QC UA, a clear definition of each unit type is needed, including information about how ORC Macro staff can determine the appropriate unit type. If that information is not recorded on the HAP contract/lease, then the document that includes that information will be needed.

3. *Official documentation containing the number of bedroom and type of unit.* We observed that the number of bedrooms and unit type is NOT typically listed on the HAP contract or lease/lease addendum; however, to calculate the QC UA, the official unit type and number of bedrooms is required. PHA policies on where this information is recorded will be needed to collect the appropriate documents from the tenant file.

4. *Policies regarding PHA-specific allowances such as flat fees or taxes credited to the tenant not included on the UA schedule when determining the tenant allowance*. For example if a PHA adds an additional flat fee to a utility allowance paid by the tenant, that flat fee amount and information about when that fee is included in the tenant utility allowance will be needed. This information will ensure that those special fees are included in the QC UA when appropriate.

5. *Whether utility allowances differ by region or utility company.* Information about how ORC Macro staff can determine the appropriate region/utility company will be needed.

6. *The two most recent utility allowance schedules should be collected.* Utility allowance schedules are not updated on any regular basis; therefore, to accommodate the timeframe used during data collection, obtaining more than one schedule should accommodate a sufficient time period to cover cases selected in the QC study within a fiscal year.

Tenant-Level Information. To calculate and compare the utility allowance on the 50058 Form with a QC UA, more information from the tenant file and the PHA staff is needed. Most PHAs use a PHA-specific utility allowance schedule. Schedules were typically prepared for the various unit types to determine the utility allowance for tenants. PHAs use different schedules and rules to calculate allowances; for example, including a standard allowance for utilities that are not indicated on the HAP contract, such as a flat fee for electric). To calculate the QC UA, the following information will be needed from the tenant file:

1. *The HAP agreement or the addendum.* This document, updated each year, should indicate the utilities paid by the tenant (including details about the type of fuel used).

2. *The lease/lease addendum.* This document contains unit-specific information that might be missing from the HAP agreement. To ensure that ORC Macro has all the necessary data, both the HAP and lease are needed if key information is missing from one document. This will also ensure that the QC UA is calculated for the same unit as on the 50058 Form.

3. *The schedule of Allowances for Tenant-Furnished Utilities and Other Services*. Most PHAs record the type of unit and the number of bedrooms on this form. However, it is unclear if this is the final document used to determine the number of bedrooms, unit type, and utilities paid by the tenant. Discussion of how this form is used in conjunction with other documents in the final leasing process would be helpful.

4. The cover page from the *inspection report* that includes unit type and actual number of bedrooms, such as the HUD Form 52580-A.

Household-Level Worksheet

Tenant Name: _____ **PHA Code:** _____ **C/P/C:** _____ **QCM:** ___/_____

Type of Utility Allowance Table: ___ Bedroom Size ___ Utility ___ Unit Type ___ Region
(check all that apply) ___ Utility Company ___ Family Size ___ Other (see below)

A. 50058 Item	B. Item	C. Utilities per Lease/RTA ^	D. Value per PHA Worksheet (w/s)*	E. Value per ORC Macro Reading of PHA (w/s)	F. Value per PSI Utility Schedule
2b.	Effective Date[2]				
5d.	# of bedrooms				
	Form Date[3]				
	Unit Type:				
	Address: ___ Same, ___ Different, ___ Not Indicated				
	Type of Utility				
	Heating				
	Natural Gas				
	Bottle Gas/Propane				
	Oil				
	Electric				
	Other Specified:				
	Cooking				
	Natural Gas				
	Bottle Gas/Propane				
	Oil				
	Electric				
	Other Specified:				
	Water Heating				
	Natural Gas				
	Bottle Gas/Propane				
	Oil				
	Electric				
	Other Specified:				
	Other Electric				
	Water				
	Other				
	Sewer				
	Other Specified:				
	Trash Collection				
	Other Specified:				
	Air Conditioning				
	Refrigerator				
	Range/Stove				
	Microwave				
	Other Specified:				
12m.	**Total UA**				
12v.	**Tenant Rent**				

^ Check all that apply __ HAP agreement __ Lease __ Tenancy Approval __ Rent Reasonableness __ Other

* Check one ____ Computer Calculated ____ Hand Calculated

___ PHA used different bedroom size ___ PHA used different UA Schedule ___ Unit Type not clearly identified
___ PHA made calculation error ___ PHA used different unit type ___ Lease and RTA are discrepant
___ Not able to determine if T or O is responsible for the utility. ___ UA table was not found in the tenant file.
___ ORC Macro used different utilities than the PHA based on the Tenancy Approval form/Lease Agreement
___ Effective date of the UA used by the PHA is 12 months or more prior to the lease transaction Comments

[2] Enter the date the form becomes effective. If no date, write "none."
[3] Enter either the date the form was completed or the date the form was generated by the computer. If no date, write "none."

PHA-Level Worksheet

ORC Macro ID**:** PHA Code:

A. *Criteria (bedroom size, utility type, etc.) used by the PHA to determine the utility allowance*:
- Effective date of the utility allowance schedule __/__/___
- Utility Allowance Schedule Criteria (check all that apply): ___ Bedroom Size __ Utility ___ Unit Type ___ Region ___ Utility Company ___ Family Size ___ Other

B. Documents from the file listing the utilities that tenants are required to pay.
Include documents such as lease, RTA,[4] HAP agreement,[5] other.
Include responses to the following questions: "Were multiple documents used for this purpose? If so, did they match? If not, which appeared to be correct? Were utilities clearly defined in lease? Was there a date on the form(s)? Was the number of bedrooms indicated? Was there an address?"

C. Document used by the PHA to calculate the utility allowance.
Note whether computer-generated or hand-calculated.
Include responses to the following questions: "Were multiple documents used for this purpose? If so, did they match? If not, which appeared to be correct? Was there a date on the form(s)? Was the number of bedrooms indicated? Was there an address?"

D. Summary of Issues found in the cases (check all that apply):

___ PHA used different bedroom size ___ PHA used different Utility Allowance Schedule
___ Unit type not clearly identified ___ PHA made calculation error
___ PHA used different unit type ___ Lease and request for Tenant Approval are discrepant
___ Not able to determine whether T or O is responsible for the utility.
___ ORC Macro used different utilities than the PHA based on the Tenancy Approval form/Lease Agreement
___ Effective date of the UA used by the PHA is 12 months or more before the lease transaction date
___ Check whether a UA table was found in the tenant file.

E. *Number of cases where field interviewer reported no utility allowance information in the file?*

F. Does the utility allowance that ORC Macro calculated match the utility allowance on the 50058 form? If not, why?

G. Recommendations for the 2005 study.

[4] RTA = Request for Tenancy Approval Form # 52517
[5] HAP agreement = Housing Assistance Payment Form # 52641