# Capitated Payment Formulas for Public Housing

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# EXECUTIVE SUMMARY

Section 525 of the 1990 National Affordable Housing Act calls for a study of prospective, capitated payment systems for Public Housing Agencies (PHAs), which would incorporate federal payments for both operating and modernization expenses. In the health care field, prospective and capitated systems are used to pay hospitals and health maintenance organizations for providing services to eligible patients.

The purpose of this report is to examine the applicability of such funding schemes to public housing, and to assess the likely implications of funding public housing agencies on a prospective, capitated basis. This study is not intended to devise the actual parameters of a capitated funding formula nor does it provide a final formula for allocating funding to individual PHAs on a capitated basis. Instead, this report provides an exploratory assessment of 1) whether the capitated funding concept can be transferred from health care to public housing; 2) how different types of PHAs might be affected by such a system; and 3) the feasibility and impacts of a capitated funding system for PHA management, and public housing conditions.

The analysis reported here consists of two major components. The first component uses existing HUD data on PHA characteristics and funding levels to simulate the financial impacts of several alternative capitated funding systems on the allocation of federal subsidies among PHAs. The second, qualitative component of this study draws upon the informed opinions of knowledgeable public housing officials and observers to explore the broader implications of a prospective, capitated payment system for PHA management, performance, and housing quality.

## CAPITATED FUNDING IN THE PUBLIC HOUSING CONTEXT

In the health care field, capitated payment systems and prospective payment systems represent two distinct concepts. *Capitated* systems are used to establish payments to health maintenance organizations (HMOs). Specifically, an HMO receives pre-payment to provide all the health care services which an individual patient may need over the course of a year. *Prospective* payment systems are used by many insurers (both public and private) to set prices

in advance for hospital and nursing home services, not necessarily for a comprehensive bundle of services.

Transferring the concepts of capitated and prospective payment systems from health care to the public housing context would shift the basis of payment from units operated to households served, and would set payment levels in advance on the basis of the expected costs of delivering services. PHAs would receive funding at a predetermined rate for every household served, with different rates for households with different characteristics. The most immediate impact of such a change would be to penalize PHAs with high vacancy rates, and presumably to encourage PHAs to take steps to reduce their vacancy rates in order to obtain higher payment levels.

## FINANCIAL SIMULATIONS

Three basic capitated payment formulas are analyzed in this report. The first formula applies the capitated funding concept in its purest sense, allocating an equal subsidy payment to each household living in public housing  The second formula adjusts the per-household payment level for local cost conditions, so that the subsidy for households living in high-cost areas is greater than the subsidy for households living in low-cost areas. The third formula adjusts the per-household payment level for both local cost conditions and household size. Note that it might also make sense to adjust capitated payment levels for other factors that influence the cost of delivering housing services to an individual household, including characteristics of the household as well as characteristics of the housing unit and structure  Unfortunately, data necessary to make these adjustments were not available.

For each of the three capitated payment formulas analyzed here, three variants were implemented. The first variant of each formula would effectively replace both the Performance Funding System (PFS) and the Comprehensive Grant Program (CGP) with a capitated allocation of funding. Under the second variant, the backlog portion of modernization funding is retained in conjunction with a capitated payment for operating and accrual modernization funds  And under the third variant, only operating subsidies are included in the capitated payment, with all modernization funds allocated under the CGP formula system.

One way of thinking about the alternative payment formulas explored in this report is that they start with a "pure" per-household payment system, and that successive modifications make

this system more similar to the existing PFS  Specifically, the PFS differs from a pure capitated system in several key respects:   1) it pays for vacant units (within limits); 2) it treats modernization separately from operating costs; 3) it adjusts payment levels for local cost factors, 4) it adjusts payment levels for household characteristics that affect costs; and 5) it adjusts payment levels for structural factors that affect costs  Formulas analyzed in this report explore adjustments 2, 3, and 4 to pure, per household payment levels  Data were not available from HUD to adjust for structural factors  None of the formula variants explored here make payments of operating subsidies for vacant units.

None of the alternative formulas analyzed here is intended to represent the definitive or final specification for a capitated allocation system.  Due to data limitations, none of the formulas approaches the complexity and specificity of capitated funding mechanisms in the health care field, which incorporate diagnostic variables, patient attributes, hospital characteristics, and market factors.  Moreover, it is important to note that the simulations presented in this report focus exclusively on the costs to PHAs of delivering housing services; the costs of providing accompanying social services, which public housing residents may need, are not covered by HUD's existing formula system and have not been incorporated into this analysis.

The first set of simulations assume no change in the aggregate level of funding for PHA operating and modernization costs  These formulas simply show how the existing pool of resources would be reallocated if every PHA's funding level were determined on the basis of the number of households it serves rather than on the number and characteristics of units in its inventory.  An equal payment is made by the federal government for every household served, with no adjustments for variations among PHAs in the costs of doing business.  The primary impact of this approach would be a dramatic shift of resources away from extra large PHAs to medium and small PHAs.  PHAs with high vacancy rates would lose funding, while those with low vacancy rates would gain  But at every vacancy rate range, extra large and large PHAs would be more adversely affected than medium and small agencies.

The second set of simulations is similar to the first set in that no change in the aggregate level of federal funding is assumed, but there are adjustments for variations in local cost conditions.  As a result of these adjustments, this approach yields more moderate changes in the distribution of federal funding among PHAs in different size categories.  Nevertheless, extra large

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and large PHAs are still more likely to lose funding than medium and small agencies, even after controlling for vacancy rates

The third set of simulations estimate how *total* funding levels might be affected by a capitated system in which per household payments were based on independent estimates of the costs of delivering housing services. Capitated payment levels are based on local Fair Market Rent (FMR) levels, adjusted for tenant rent contributions and for the imputed value of debt service payments made by the federal government.

Although there may be significant cost differences between public housing and the private rental stock, FMRs provide a plausible benchmark for a capitated funding system for public housing. FMRs represent the per household revenues upon which private landlords rely to operate and maintain decent, standard quality rental housing. They vary with the size of the unit (and hence with the size of the household), as well as with local cost conditions. FMRs are used to determine federal subsidy payments for HUD-assisted households living in private rental housing, and it seems reasonable that the federal government should pay essentially the same amount to subsidize an eligible household's rent, regardless of whether that household lives in an apartment owned by a private landlord or by the local PHA.

Impacts on total funding levels of the FMR-based formulas depend upon whether or not modernization funding is included in the capitated payment:

- if the FMR-based payment replaced all federal operating and modernization funding, total federal contributions to PHAs would decline by almost a third,

- an FMR-based payment for operating subsidies and accrual modernization, supplemented by CGP funding for backlog modernization needs, would yield approximately the same aggregate level of funding as the current system;

- an FMR-based payment system for operating subsidies, supplemented by the current CGP formula allocation of modernization funding, would yield more than a 25 percent increase in total federal payments.

Unlike the other capitated funding alternatives simulated here, an FMR-based payment system would not result in the reallocation of funding from extra large and large PHAs to medium and small PHAs. Instead, vacancy rates would play the primary role in determining which PHAs gain funding and which PHAs lose. However, PHAs in the West experience substantial increases in

funding for every size category, suggesting that FMRs in the West are unusually high relative to public housing costs.

Impacts of the three basic capitated formulas differ across regions and across PHA size categories. There is no direct correlation between region and PHA size that fully explains regional gains and losses under these scenarios. In general, PHAs in the Central region would consistently receive less funding under a capitated system, while agencies in the West would gain substantially. Funding for PHAs in the Northeast would decline or remain constant, while funding for agencies in the South would increase or remain constant. Comparing outcomes by PHA size indicates that medium and small agencies would benefit from a capitated payment system, while extra-large and large agencies would lose funding. A relatively large share of public housing units in the Northeast are in extra-large or large agencies. This may help explain why Northeastern agencies are adversely affected under all three capitated scenarios. However, differences in funding outcomes for the South, Central and West regions are not explained by PHA size distributions. Thus, there are differences between regions in public housing expenditures and funding levels that remain unexplained by differences in PHA size distribution.[1]

Impacts of capitated formulas on funding levels were also compared for PHAs in metropolitan and non-metropolitan areas, after controlling for PHA size. In general, PHAs in metropolitan areas fared better under the capitated system (relative to current funding levels), than non-metropolitan agencies. The only exception was for large PHAs (agencies with 1,250 to 6,500 units each), where those in non-metropolitan locations consistently fared better under capitated payment formulas than those in metropolitan areas.

A final set of simulations estimates the impacts of the FMR approach after one year of operation and after five years of operation. These simulations assume that the FMR-based capitated system-supplemented by modernization funding would encourage (and enable) PHAs to reduce their vacancy rates. Under this approach, approximately 20,900 additional households would be served by PHAs after one year. To the extent that PHAs were able to serve more households, their funding levels would increase. Based on these assumptions, after five years of

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[1] It was beyond the scope of this study to analyze or explain regional differences in current funding patterns under the PFS and CGP formulas

vacancy reductions, the overall level of federal funding for public housing would exceed base case estimates by more than 10 percent, due to increases in the number of households served. An estimated additional 51,400 households would live in public housing after 5 years Slightly over half of all PHAs would be receiving more funding after five years of capitated payments than after five years under the current system.

## FEASIBILITY AND IMPACTS OF A CAPITATED PAYMENT SYSTEM

The second component of this report builds upon the results of the financial simulations to assess some of the implementation issues posed by a prospective, capitated system for funding public housing. This assessment draws upon the opinions of knowledgeable individuals in the field of public housing. Thirteen experts on PHA management and funding -- including PHA directors, HUD officials, public housing advocates, and PHA management consultants -- were interviewed about the applicability and possible impacts of a prospective, capitated funding system.

Many respondents' primary concern about the current funding system is that the operating environment for PHAs has changed radically since baseline costs were computed by the PFS in the mid-1970s. From this perspective, adjusting subsidy levels to fully reflect actual costs is the highest priority for reform. Respondents also expressed concerns about incentives for efficiency under the PFS, but only one of the respondents saw the prospective, capitated payment concept as a solution. Most respondents did not think that many PHAs would be able to plan and prioritize effectively if they were given discretion to allocate funds between operating and modernization needs.

The public housing experts offer several strong arguments that if a capitated payment system were implemented, HUD should retain a separate funding allocation for at least the backlog portion of modernization need. In other words, PHAs should receive funding based on needs to cover their backlog of modernization costs, even if all other federal funding were allocated on a capitated basis. In addition, careful discussion and data gathering would be required to determine whether social services and building security services for public housing residents should be included in a formula system or funded separately on the basis of demonstrated need

Regardless of what costs are included in a capitated payment scheme, some characteristics of the public housing inventory and of the households PHAs serve may make public housing more costly to operate than private market rental housing, in which case FMRs might be too low. To determine capitated payment levels, it would be essential to fully analyze public housing cost factors to ensure that sufficient resources were being made available. Moreover, respondents suggested that it may be necessary to treat utility costs separately under a capitated payment system; because in some PHAs, utilities represent a very large cost item, over which management has little control.

Finally, a capitated system of subsidy payments cannot guarantee that the quality of housing services delivered to public housing residents will be adequate. One way to heighten quality control in public housing is to give the recipients of services (the public housing residents) more control over the disposition of funding, possibly by allowing them to withhold the capitated payments HUD makes on their behalf if the quality of their housing is inadequate.

# 1. BACKGROUND AND INTRODUCTION

Public and Indian Housing Agencies (PHAs and IHAs) own and operate about 1.4 million units of rental housing for occupancy by low- and moderate-income households When the Low Rent Public Housing Program was established in 1937, the federal government's role was limited to paying off the capital costs of housing construction, through Annual Contributions Contracts (ACCs) Local housing agencies were then expected to maintain and operate the projects independently, collecting sufficient rent revenues to cover their ongoing costs.

Since the 1960s, the federal role in the Public Housing Program has expanded dramatically. Today public housing rent charges are set at 30 percent of household incomes, and PHAs are required to give priority to households on their waiting lists with the most urgent housing needs. To make up the difference between what public housing residents can afford to pay in rent and the allowable costs of delivering housing services, the federal government provides operating subsidies, which are allocated on a formula basis In addition, the federal government provides grants to PHAs to modernize run-down or obsolete projects and perform ongoing capital improvements that extend projects' useful life. In 1987-1988, the Department of Housing and Urban Development (HUD) began a process of public housing loan forgiveness, effectively paying off the existing ACCs. Thus, there are now two major streams of funding flowing from the federal government to Public and Indian Housing Agencies 1) the Performance Funding System (PFS), which provides annual operating subsidies to make up the difference between tenant rent contributions and the cost of operating public housing, and 2) the Comprehensive Grant and Comprehensive Improvement Assistance Programs (CGP and CIAP), which provide grants for public housing modernization. These streams are supplemented by funding made available for specialized programs and activities proposed by PHAs, such as drug elimination initiatives.

Both operating subsidies and modernization grants are currently allocated on a formula basis to most PHAs, in an effort to objectively match federal resources with needs The Performance Funding System (PFS) is the basis for determining the level of operating subsidies to PHAs that are not able to cover all their operating costs from rents paid by tenants Operating subsidies under PFS are calculated as the difference between allowable operating costs and

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estimated income (from tenant rents and other sources). Non-utility operating cost estimates are based on an Allowable Expense Level (AEL) for each PHA initially established on the basis of observed costs for a sample of well-performing PHAs, which has been adjusted annually for inflation and for changes in PHA characteristics. Utility expenses are estimated separately under rules that set consumption at the average of the prior three-year period.[2] The Comprehensive Grant Program (CGP), which is newly established as of 1992, also allocates federal funding on a formula basis. A PHA's share of total modernization resources is based on the estimated dollar value of its backlog and accrual modernization needs, given the age and condition of its inventory.[3] Prior to the implementation of the new CGP formula approach, PHAs applied to HUD for funding for specific modernization plans, and resources were allocated competitively under the Comprehensive Improvements Assistance Program (CIAP). Small PHAs will continue to receive modernization funding under CIAP, rather than converting to the CGP formula approach.[4]

Section 525 of the National Affordable Housing Act, passed in 1990, calls for a study of prospective, capitated payment systems for Public Housing Agencies (PHAs), which would incorporate Federal payments for both operating and modernization expenses. Specifically, the legislation requires HUD to:

> "examine methods of prospective payment, including the conversion of PHA operating assistance, modernization, and other Federal housing assistance to a schedule of steady and predictable capitated Federal payments to PHAs on behalf of low income public housing tenants."

In the health care field, both prospective and capitated systems are used to pay hospitals and health maintenance organizations for providing services to eligible patients Presumably, the

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[2] Subsequently, HUD reimburses PHAs for any increases in utility costs associated with changes in utility rates, and shares with PHAs any cost increases or savings associated with changes in utility consumption

[3] Backlog modernization needs include the costs of work required to meet HUD Modernization Standards, plus capital improvements and/or redesign necessary for long-term project viability Accrual needs include the costs of new modernization needs that constantly accrue as projects age See U S Department of Housing and Urban Development, *Report to Congress, on Alternative Methods for Funding Public Housing Modernization*, Washington, D C , 1990

[4] Currently, only PHAs with more than 500 units under management participate in CGP PHAs with 250 to 500 will be added to the program, while PHAs with fewer than 250 will continue to operate under the CIAP system

intent of Section 525 of the National Affordable Housing Act is that HUD explore the pros and cons of developing a similar system for funding both the operating and modernizations needs of Public Housing Agencies.

Therefore, the purpose of this report is to examine the applicability of such funding schemes to public housing, and to assess the likely implications of funding public housing agencies on a prospective, capitated basis. It is important to understand that this study is not intended to devise the actual parameters of a capitated funding formula nor does it provide a final formula for allocating funding to individual PHAs on a capitated basis. Instead, this report provides an exploratory assessment of: 1) whether the capitated funding concept can be transferred from health care to public housing; 2) how different types of PHAs might be affected if such a system were developed; and 3) the longer term consequences of a capitated funding system for PHA management and public housing conditions.

The analysis reported here consists of two major components, one quantitative and the other qualitative. The first component uses existing HUD data on PHA characteristics and funding levels to simulate the financial impacts of several alternative capitated funding systems on the allocation of federal subsidies among Public Housing Agencies. This component examines how federal operating and modernization funds might be reallocated if a PHA's funding depended upon the number and types of households it served rather than on the number and characteristics of units in its inventory. Several alternative versions of a capitated funding system are analyzed. However, all of these simulations are exploratory, they are not intended to represent fully specified formulas that determine precise funding levels for individual PHAs. Instead, their function is to illustrate the range of outcomes likely to occur if a capitated funding system were developed and implemented for the Low Rent Public Housing Program.

One way of thinking about the alternative payment formulas explored in this report is that they start with a "pure" per-household payment system, and that successive modifications make this system more similar to the existing PFS. Specifically, the PFS differs from a pure capitated system in several key respects: 1) it pays for vacant units (within limits); 2) it treats modernization separately from operating costs; 3) it adjusts payment levels for local cost factors; 4) it adjusts payment levels for household characteristics that affect costs; and 5) it adjusts payment levels for structural factors that affect costs. Formulas analyzed in this report explore

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adjustments 2, 3, and 4 to pure, per household payment levels. Data were not available from HUD to adjust for structural factors. None of the formula variants explored here make payments of operating subsidies for vacant units.

The qualitative component of this study draws upon the results of the various financial simulations outlined above to explore the broader implications of a prospective, capitated payment system for PHA management, costs, and housing quality. Among the issues considered are:

■    incentives and/or disincentives created by a capitated payment system;

■    alternative sources for estimating the real cost per household of serving public housing residents;

■    whether all PHAs should be eligible to participate in a capitated system or whether special treatment should be provided to those in financial distress;

■    quality control and monitoring issues raised by a capitated payment system, and

■    the role public housing residents should play in the release of capitated payments to PHAs.

In-depth interviews have been conducted with individuals knowledgeable about public housing funding and operations to provide a range of informed opinion on these issues.

The remainder of this report consists of three chapters. Chapter 2 outlines major concerns about the existing public housing funding system which a capitated system might be expected to address, and explores the transferability of capitated funding concepts from the health care field to public housing. Chapter 3 presents findings from the first major component of the overall analysis, reporting the results of financial simulations for PHAs of different types and sizes. Finally, Chapter 4 describes the conclusions drawn from expert interviews about the likely implications and implementation issues of a capitated payment system for public housing operations and modernization Appendix A describes the HUD data used to develop financial simulations of the impacts of capitated payment systems, and Appendix B specifies the procedures used to simulate each of the alternative formulas.

# 2. CAPITATED PAYMENT SYSTEMS AND THEIR APPLICABILITY TO PUBLIC HOUSING

Over the two decades that the PFS has been used to allocate operating subsidies to PHAs and IHAs, it has been the subject of numerous criticisms. Concerns about the PFS fall into two basic categories: 1) adequacy of payment levels; and 2) incentives for efficient provision of housing services. Although it is not the purpose of this report to exhaustively review all criticisms of existing public housing funding systems, major concerns about the PFS are briefly summarized below.[5] In addition, this chapter describes capitated funding systems developed in the context of public payments for health care services, and explores the applicability of this type of funding system to public housing operating and modernization subsidies.

## Public Housing Funding Issues

The first set of criticisms regarding the PFS involve the adequacy of payment levels. Allowable Expense Levels (AELs) under the Performance Funding System were originally based upon expenditure patterns of PHAs that were judged to be well-performing. A multivariate equation was estimated to predict reasonable expenditure levels as a function of project and market conditions, and this equation is adjusted annually for inflation and for changes in a PHA's characteristics. The resulting AELs are intended to represent what it should cost a PHA to operate its inventory if it is efficient and well managed.

However, critics argue that the formulas originally used to calculate AELs did not fully reflect all of the contributors to operating costs, and that as a result some PHAs have never received sufficient funding to cover their actual and legitimate costs. Specifically, when the PFS was initially implemented, some PHAs appeared to have excessively high expenditure levels, and were forced by the PFS to cut back, even though their expenditures may have been legitimate.

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[5] Many of the concerns about the existing funding system that are summarized here were articulated by the public housing experts who were interviewed about the feasibility and impacts of a capitated funding alternative See Chapter 3 for a description of these interviews

Other PHAs may have received excessively high AELs when the PFS went into effect, and have been able to operate without effective cost constraints over the intervening years.[6]

In addition to the concern about baseline AELs, some critics of the PFS argue that inflation adjustments may not always have been sufficient to keep up with actual increases in the costs of delivering housing services. Moreover, some PHAs have had to assume responsibility for performing new functions, such as providing security services, in order to respond to changing neighborhood conditions, and AELs have not always been adequately adjusted to reflect these increased cost requirements.[7] Finally, there have been two years in which operating subsidies were not funded at the full level calculated by the PFS. In FY 1988, the PFS was funded at 99.34 percent of eligibility, and in FY 1990 it was funded at 95 percent. In these years, PHAs had to make do with operating subsidies that fell short of the levels that the PFS estimated were necessary for efficient project management and maintenance.

Thus, even in cases where baseline AELs were adequate, real funding levels (relative to PHA costs) may have declined over the years. Some analysts attribute deferred maintenance, deteriorating physical conditions, and an accumulating backlog of modernization needs to inadequate operating funding levels over the last two to three decades.[8] It is very difficult to assess the extent to which PHAs receive adequate revenues to cover reasonable and appropriate costs of delivering housing services, since there is no independent source of data on public housing operating costs. In addition, private housing providers may not serve as a fair basis of comparison because they differ significantly from PHAs in the types of residents they serve and the quality of housing stock they own, and (for unsubsidized providers) in the types of residents they serve.

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[6] U S Department of Housing and Urban Development, *Alternative Operating Subsidy Systems for the Public Housing Program.* Washington, D C U S Department of Housing and Urban Development 1982, and A W Kuhn, "PHA Management Are the Critics Right," *Journal of Housing* March/April 1988 67-74

[7] Raymond J Struyk, "Reforming Public Housing The Administration's Fair Market Rent Proposal," Washington, D C The Urban Institute, 1983 U S Department of Housing and Urban Development, *Alternative Operating Subsidy Systems for the Public Housing Program* Washington, D C U S Department of Housing and Urban Development 1982.

[8] A W Kuhn, "PHA Management Are the Critics Right," *Journal of Housing* March/April 1988 67-74, and Rachel G Bratt, "Public Housing The Controversy and Contribution," in Bratt, Hartman, and Meyerson, eds, *Critical Perspectives on Housing* Temple University Press 1986

The second broad category of criticism regarding the PFS is that it fails to create incentives for efficient delivery of housing services. The current system imposes no market-based cost constraints, with the result that some public housing residents live in poor quality units in bad neighborhoods at a larger cost to the federal government than the Section 8 Existing Housing Assistance Program. Moreover, PHAs receive operating subsidies for all the units in their inventory, even if they are vacant for all or part of a year. PHAs with vacancy rates greater than 3 percent forego a portion of their operating subsidies, because income from tenant rents is estimated on the assumption that 97 percent of a PHA's units are occupied.[9] Thus, HUD provides subsidies for vacant units, but for vacancies beyond 3 percent, the subsidy does not compensate for the tenant rent that would have been collected had the units been occupied. This system creates rather weak incentives for PHAs to prepare units promptly for turnover once they have been vacated, aggressively market units for which there may not be an immediate demand, or bring deficient units up to par so that they can be occupied. It has been suggested that some PHAs may actually be able to improve their financial situation by sealing off an entire building, thereby minimizing the costs of operating it while still collecting partial operating subsidies.[10]

## Capitated and Prospective Payment Systems for Funding Health Care

In the health care field, capitated payment systems and prospective payment systems represent two distinct concepts. A *capitated* system is used to establish payments to health maintenance organizations (HMOs). Specifically, an HMO receives pre-payment to provide all the health care services which an individual patient may need over the course of a year. HMO payment levels in Medicare, for example, are based on actuarial estimates of the likely cost of

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[9] PHAs calculate an estimated income figure, which will be deducted from their AEL (plus utility allowance) to determine subsidy levels. This income estimate must be based on an assumption that only 3 percent of available units are vacant. Units scheduled for modernization and some other categories of units (which are not, in effect, available for occupancy) are excluded from this calculation. If more than 3 percent of available units are actually vacant, the PHA will receive subsidy for the excess vacancies, but the subsidy payment is effectively reduced by the tenant contributions that would have been received had these units been occupied. Note that some larger PHAs have been granted waiver relief from this regulation, and are using their actual occupancy percentages.

[10] HUD requires that any PHA with vacancy rates above 3 percent of available units prepare Comprehensive Occupancy Plans, which outlines the agency's strategy for reducing vacancies over a five year period.

serving the patient, given age, sex, disability status, and other characteristics [11] Depending upon actual events, the HMO may or may not have to deliver as many services as originally anticipated. Thus, there is no incentive for the provider to deliver more services than a patient actually needs, but there may be some incentive to reduce services as a patient's needs approach (or exceed) the limits of the agreement.

*Prospective* payment systems are used by many insurers (both public and private) to set prices in advance for hospital and nursing home services, not necessarily for a comprehensive bundle of services. Under a prospective system, the amount a provider will receive per admission or per hospital day, for example, is set in advance To illustrate, the Medicare program pays hospitals for inpatient services through the Prospective Payment System (PPS). Under this system, each hospital receives a fixed, predetermined amount for each patient it treats with a particular diagnosis. Patients in a diagnostic group expected to require greater consumption of hospital resources are assigned higher payment amounts, but the prospective payment covers all services a given patient receives once he or she has been admitted.[12]

Two concerns appear to motivate capitated and prospective payment systems for health care. First, the delivery of potentially unneeded health care services is a significant issue for both private and public insurers Specifically, under traditional fee-for-service systems, providers are thought to prescribe tests and procedures that may not really be necessary because the costs are largely borne by an insurer. Capitated and prospective payment systems are designed in large part to counteract this tendency, with payment levels set in advance based on expected service needs. A provider who over-prescribes tests and procedures will realize less profit under such a system than a provider who limits tests and procedures to the minimum required.

The second concern motivating these systems is cost containment Under earlier fee-for-service and cost-based reimbursement systems, health care providers and hospitals had little

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[11] Gerard F Anderson et al "Setting Payment Rates for Capitated Systems A Comparison of Various Alternatives," *Inquiry* Fall 1990 27 225-233

[12] It is important to note that Medicare's Prospective Payment System incorporates a large number of factors that reflect the operating cost environment, as well as factors reflecting patient characteristics and the costs of meeting their diagnostic needs Specific factors include a local wage index, a measure of the mix of patients and conditions treated by a hospital, a measure of the share of patients treated who are in poverty, and a hospital-specific measure of costs per case in the base year See Prospective Payment Assessment Commission, *Report and Recommendations to the Secretary, U S Department of Health and Human Services*, Washington, D C U S Government Printing Office 1985

incentive to deliver services efficiently. Instead, they simply passed all of their costs through to private insurers and public sector payers. Thus, a key principle for both capitated and prospective payment schemes in the health care field is that payment levels are set in advance · on the basis of reasonable expectations about the actual cost of delivering services, and that providers are then left to deliver the needed services within this budget constraint.

## Applicability of a Capitated System for Public Housing

Public Housing Agencies (PHAs) receive federal funding to deliver housing services to low-income households. As discussed earlier, the level of operating funding for a PHA is determined by the Performance Funding System (PFS), which was originally designed to reflect the costs of operating public housing for a well-performing PHA and which has been adjusted annually by an inflation factor. In effect, the PFS is a prospective system, similar to the PPS used by Medicare to pay for inpatient hospital services. Key differences include retrospective adjustments under PFS to cover unanticipated changes in utilities and some other cost items, and partial payment for vacant units in a PHA's housing inventory. Starting in Fiscal Year 1992, funding for the modernization of public housing projects will also be allocated on a prospective formula basis for most PHAs, using factors that reflect a PHA's backlog of modernization needs as well as modernization needs that accrue annually. Both the PFS and the CGP formula for allocation of modernization funding are driven by the size, composition, and condition of a · PHA's housing stock. The number, characteristics, and housing needs of residents have no impact on funding levels

Over-provision of services does not immediately come to mind as a problem in public housing. Unlike doctors and hospitals, PHAs have never operated under a fee-for-service system; they do not automatically obtain reimbursement for every service they deliver. As a result, PHAs are not subject to incentives to deliver costly, unessential services to their residents. However, under the existing funding system, it is possible for PHAs to provide more housing than is necessary, and, in fact, there may be an incentive to do so. For example, a single individual living in a two- or three-bedroom apartment is receiving more housing than necessary. The tenant's contribution for rent is the same (30 percent of income), regardless of the size of the unit. AELs, however, are higher for larger units, partly because families are more costly to serve

than single individuals. Thus, a PHA with small households living in large units may be minimizing its operating costs and maximizing its revenues. Moreover, since the PFS essentially covers the difference between rental income and allowable operating costs, a PHA has little incentive to be sure that all persons living in a unit are on the lease, and contributing 30 percent of their income to rent. Some large units may have only one resident on the lease, despite the fact that other individuals, not on the lease, are permanent residents. A capitated system which sets subsidy levels on the basis of household characteristics might provide an incentive for PHAs to match units more closely to household needs, and to get all eligible household members on the lease so that the PHA could get full subsidy for serving large households

*Efficiency of Service Delivery.* Health care's second concern is also relevant to public housing. Specifically, in both systems, public payers are trying to control costs by maximizing provider efficiency -- the goal is to create incentives for needed services to be delivered at the lowest possible cost. By setting hospital reimbursement levels in advance, based on historic data about the cost of serving different diagnostic groups, Medicare's Prospective Payment System controls costs and creates incentives for hospitals to deliver services more efficiently.

Public housing's PFS is, in effect, a prospective payment system and is comparable in many respects to the Medicare system. Payment levels were set on the basis of historical cost levels experienced by PHAs that were considered well-performing. Adjustments were made to reflect characteristics of the public housing operating environment that influence costs, such as structure type, structure age, and unit mix. Subsequently, payment levels have been adjusted annually to compensate for inflation. At the start of each year, HUD provides PHAs with estimates of their Allowable Expense Levels (AELs), based on the PFS. PHAs are expected to operate their projects within the limits of these AELs, although there are some adjustments made retrospectively for unanticipated costs.

The primary difference between Medicare's Prospective Payment System and HUD's Performance Funding System is that Medicare makes its payments *per hospital admission*, while HUD's payments are not directly contingent upon occupancy of public housing units by eligible residents. Thus, PHAs receive operating subsidies even when units are vacant; hospitals receive no Medicare payments for empty beds Thus, transferring Medicare's prospective payment approach to the public housing context would shift the basis of payment from units operated to

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households served. More specifically, PHAs would be compensated at a predetermined rate for every household served.

The most immediate impact of such a change would be to penalize PHAs with high vacancy rates, and presumably to encourage PHAs to take steps to reduce their vacancy rates in order to obtain higher payment levels. It is interesting to note that some hospitals have high vacancy rates. Under Medicare's Prospective Payment System, no allowance is made for vacant beds, and hospitals with high vacancy rates experience below-average profit levels as a result. If vacancy rates are high primarily because a PHA is slow in turning units over, a per household payment system might increase efficiency in this aspect of PHA operations, thereby increasing the total number of households served by the existing public housing stock. However, if most vacant public housing units are uninhabitable (in need of modernization), and if modernization funds as well as operating funds were allocated on a per household basis, such a system might make it impossible for a PHA to fund the modernization necessary to reduce vacancies Therefore, an alternative approach would be to fund only operating costs (or operating costs and the accrual portion of modernization costs) on a capitated basis, while funding modernization costs separately.

*Adequacy of Payment Levels* Another concept that can be transferred from Medicare's Prospective Payment System to the public housing context is to vary payment levels with households' needs. The PFS assumes that operating costs are sensitive to variations in the operating environment (such as building type and local wage rates) Medicare's Prospective Payment System also includes factors of this type, which reflect a hospital's operating environment, but in addition PPS allows payments to vary with a patient's service needs Specifically, a patient in a diagnostic group expected to require greater consumption of hospital resources is assigned a higher payment amount.

In the health care context it is very clear that measurable client characteristics (particularly a client's diagnosis) are key determinants of the cost of providing services. Do the costs of delivering housing services also vary with resident characteristics? At the most basic level, operating and maintenance costs are presumed to be higher for families with children than for elderly individuals. If so, PHAs serving large numbers of families could potentially receive higher funding levels under a capitated system than PHAs serving comparable numbers of elderly

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residents. Other resident characteristics that might affect the costs of delivering housing services include physical disabilities, single parent status, age and capabilities of the household head, age of children, extent to which children are unsupervised, and drug or alcohol addiction among family members  However, not all of these client characteristics are measurable at the time a PHA admits a household, and the cost impact of various household attributes relative to characteristics of the building and unit have not been systematically documented. Therefore, both the conceptual and empirical basis for varying public payments with client characteristics are less compelling in the public housing context than in health care.[13]

The health care experience provides only limited help to public housing with respect to methods for setting and adjusting payment rates  Medicare sets its capitated payment rates to HMOs at 95 percent of the amount they would have expected to pay had a beneficiary been treated by fee-for-service providers located in the same geographic area. Actuarial methods are used to predict an average per capita cost which is then adjusted for differences in fee-for-service costs related to age, sex, disability status, Medicaid status, and institutional status. A different set of rates is computed for each county in the U.S.

Prospective payment schedules for inpatient hospital care under Medicare are based on historical data regarding costs of treating patients in various diagnostic groups, and are adjusted for inflation, local area wage levels, and several other factors related to an individual hospital's characteristics.  In other words, both capitated and prospective payment formulas in health care are as complex (and as potentially controversial) as the Performance Funding System.  To date, the adequacy of payment levels under the established health care payment schedules has apparently not been an issue, and there has been no perceived need to restart the system from scratch, based upon independent data about the real costs of service provision.

*Quality of Services.* There are three fundamental differences between hospitals that serve Medicare recipients and PHAs that serve low income households, which limit the transferability of health care concepts to the public housing context.  First, hospitals that serve Medicare

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[13]Potentially, the prospective, capitated approach could be expanded to encompass a broader range of social services needed by public housing residents, such as child care, health care, counseling, job training, and the like  If this broader mix of services were incorporated into a funding formula, delivery costs would clearly be influenced by resident characteristics  However, such an expansion in the scope of services would represent a substantial expansion of the functions PHAs are expected to perform and the funding responsibilities of HUD

recipients (and receive payment under the Prospective Payment System) also serve privately insured patients. Moreover, non-Medicare patients can be billed at different rates than Medicare patients, so hospital operating budgets are not fully constrained by Medicare's estimates of the costs of serving various diagnostic groups. All tenants living in public housing are, by definition, subsidized; they would not be living in public housing if they were not eligible for assistance. Consequently, PHAs lack any independent (market-based) stream of reimbursement for the services they deliver. Second, Medicare recipients can choose virtually any hospital; their subsidy accompanies them to whatever facility they select. Public housing residents, on the other hand, lose their subsidy benefits if they move away. Finally, hospitals are subject to malpractice litigation and to censure by medical review boards, requiring them to maintain acceptable standards of care regardless of Medicare's cost limitations. No comparable penalties are imposed on PHAs that fail to deliver decent quality housing services.

These differences between hospitals and PHAs suggest that quality control issues may not be comparable. Moreover, the health care experience suggests that a capitated payment system, in itself, cannot solve quality control problems In fact, one of the major concerns about capitated and prospective payment systems in the health care context is the potential that the quality of care may be compromised In a capitated system, providers may be motivated to limit access for some patients in order to avoid costs in excess of pre-payment levels Similarly, hospitals receiving prospective payments may provide lower quality services if their costs exceed the prospective payment level for most diagnostic groups. Medicare established Professional Review Organizations to monitor behavior that might lower quality or inappropriately enhance revenues Although no evidence has been found of a major deterioration in quality, patients are being discharged "quicker and sicker" than they were when hospitals were reimbursed on the basis of actual costs incurred. In other words, if a capitated payment system were developed for public housing, the need for effective quality control mechanisms would remain.

# 3. FINANCIAL SIMULATIONS

This chapter presents an exploratory analysis of the financial impacts of a capitated funding system for public housing. The purpose of these simulations is to estimate the range of possible outcomes that might result from such a system. Specifically, how would federal funding for public housing be reallocated among PHAs of different types and in differing circumstances if a capitated formula system were adopted? What types of PHAs would receive more funding than they do now, and what types would receive less?

As discussed earlier, the alternative formulas analyzed here are not intended to represent complete or final specifications for a capitated allocation system, but rather to provide an initial exploratory assessment of the implications of such a system. All of the alternatives are compared to the current distribution of operating and modernization subsidies, as reported by the Department of Housing and Urban Development (HUD). This report does not analyze or evaluate the current distribution of funding.

Due to data limitations, none of our formulas approaches the complexity and specificity of capitated funding mechanisms in the health care field, which incorporate diagnostic variables, patient attributes, hospital characteristics, and market factors. In fact, household size is the only client characteristic incorporated in these exploratory simulations. Clearly, more exhaustive analysis of the impact of household characteristics on public housing costs is needed if the capitated funding concept receives serious consideration for implementation. Finally, it is important to note that the simulations presented in this report focus exclusively on the costs to PHAs of delivering housing services, the costs of providing accompanying social services which many public housing residents need are not covered by HUD's existing formula system and have not been incorporated into this analysis

## Formula Definitions

Figure 3.1 provides an overview of the alternative formulas tested in this analysis. Three basic formulas are analyzed, with three variants implemented for each formula, yielding a total of nine financial simulations. The allocation of federal funding among PHAs under each formula is compared to a base case allocation which consists of actual operating subsidies provided under

Figure 3.1
Capitated Funding Formula Alternatives

| | 1. All Operating & Modernization Funding Capitated | 2: Backlog Modernization Funding Held Constant | 3: All Modernization Funding Held Constant |
|---|---|---|---|
| A: Constant Capitated Payment per Household; No Change in Total Federal Spending | A1. Total Current Pool of Operating and Mod Funds Allocated Equally Across Occupied Units | A2: Current Pool of Operating Funds plus Accrual Portion of Mod Funding Allocated Equally Across Occupied Units, Backlog Portion of Mod Funding Allocated by CGP Formula | A3: Current Pool of Operating Funds Allocated Equally Across Occupied Units; All Modernization Funding Allocated by CGP Formula |
| B: Capitated Payment Adjusted for Local Cost Variation; No Change in Total Federal Spending | B1: Total Current Pool of Operating and Mod Funds Allocated Among Occupied Units, with Payment Adjusted by Local R.S. Means Index | B2: Current Pool of Operating Funds plus Accrual Portion of Mod Funding Allocated Among Occupied Units, with Payment Adjusted by Local R.S. Means Index; Backlog Portion of Mod Funding Allocated by CGP Formula | B3: Current Pool of Operating Funds Allocated Among Occupied Units, with Payment Adjusted by Local R.S. Means Index; All Mod Funding Allocated by CGP Formula |
| C: Capitated Payment Based on Fair Market Rent Levels | C1: FMR-based Payment Replaces all Current Operating and Modernization Funds | C2: FMR-based Payment Replaces Current Operating Funding plus Accrual Portion of Mod Funding; Backlog Portion of Mod Funding Allocated by CGP Formula | C3: FMR-based Payment Replaces Current Operating Funding; All Mod Funding Allocated by CGP Formula |

FY 1992 PFS plus modernization funding provided under the FY 1992 CGP and CIAP formula system.[14] Appendix A identifies the data sources and variables used for these simulations, and Appendix B details the methodology used to construct each formula. As indicated earlier, none of these scenarios is intended to specify the actual funding levels PHAs would receive under a capitated funding system, but rather to provide an initial basis for assessing how the distribution of resources might be changed if PHA funding were provided primarily on a per household basis.

*Formula A: Fixed Payments Per Households.* The first set of simulations (A1, A2, and A3) assume no change in the aggregate level of federal funding for PHA operating and modernization costs. This set of formulas makes no attempt to estimate an appropriate per household funding level, or to acknowledge differences among PHAs in the cost of doing business. Instead, they simply show how the existing pool of resources would be reallocated if every PHA's funding level were determined on the basis of the number of households it serves rather than on the number and characteristics of units in its inventory, with an equal federal payment for every household served.

*Formula B. Local Cost Adjustments.* The second set of simulations (formulas B1, B2, and B3) is similar to the first set in that no change in the aggregate level of federal funding is assumed. Again, these formulas show how the existing pool of resources would be reallocated under a capitated system. The second set of simulations differ from the first in that they adjust for local cost conditions. Specifically, these formulas recognize that allocating the same level of funding for every household living in public housing may be unreasonable, since some PHAs are located in high cost areas while others face much lower costs for labor, supplies, materials, and services. Therefore, the per household subsidy payment (calculated under formula A) is adjusted by the R.S. Means Index for each PHA, which measures place-to-place variations in building materials and supplies.[15]

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[14] For PHAs with under 500 units, CGP formula shares are used to estimate base case modernization funding, even for those PHAs still participating in CIAP

[15] Consideration was given to an alternative adjustment factor, reflecting variations in local government wage rates. This factor may be a better indicator of variations in operating costs, while the R S Means Index may be more applicable to modernization costs. However, simulation results were not sensitive to the choice of adjustment factors, so only results using the R S Means Index are reported here. It is important to note that although the R S Means index adjusts for variations among PHAs in the costs of building materials and supplies, it does not reflect the full range of variations in local operating conditions that may affect the costs of delivering housing services. The existing PFS incorporates a more extensive set of local cost indicators, as does Medicare's PPS, which determines the amounts that

*Formula C: Fair Market Rents.* The third set of formulas (C1, C2, and C3) simulate how *total* funding levels might be affected by a capitated system in which the per household payments are based on independent estimates of the costs of delivering housing services. Unlike formulas A and B, these formulas are not constrained by the existing level of national funding for public housing, but rather provide a rough estimate of the financial implications of a funding system that reimbursed a PHA at market rates for delivering housing services to each resident household. A critical input to these simulations is, of course, the estimated cost per household of delivering housing services to low-income residents. There are three basic strategies for arriving at per household cost estimates: 1) rely on the recent cost experience of PHAs; 2) analyze cost patterns in private housing developments that serve a comparable client group; or 3) apply private market rent levels. Each of these strategies has significant pitfalls, both in conceptual and in practical terms, as discussed further in the next chapter of this report.[16]

The existing Performance Funding System (PFS) relies on the cost history of PHAs for estimating what individual agencies should be reimbursed for operating costs. However, a primary problem with using the PFS to determine the appropriate funding level for public housing is that by now it may have become a self-fulfilling prophecy. Specifically, because PHAs have had to operate within the budget constraints imposed by the PFS for over a decade and a half, their actual cost experience now conforms to PFS predictions, regardless of whether these predictions actually yield the "correct" level of resources. And because there are virtually no PHAs operating outside the PFS environment, and since no PHA residents pay "market" rents, there is no independent check on the actual level of operating expenditures PHAs need to make to operate effectively.

Therefore, it makes sense to look beyond the public housing inventory to determine how much it costs to deliver housing services to public housing's clientele. Private market rent levels provide one possible benchmark for public housing operating costs. Private landlords receive no income for vacant units, and must cover both routine operating costs and capital improvements

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hospitals and nursing homes receive per admission or per hospital day

[16] The challenge of establishing appropriate cost levels for public housing is not unique to capitated funding formulas. Any formula system designed to compensate PHAs for reasonable expenses that they cannot recover from rent revenues requires estimates of what it actually costs to provide decent, safe, and sanitary housing to low-income households

(or replacement reserves) from rent revenues. Thus, private market rents correspond quite closely to the *concept* underlying the capitated payment approach. In many markets, however, there may be significant differences between public housing and the private rental stock. For example, public housing projects may be older and larger than conventional apartment buildings; they may be located in poorer or more dangerous neighborhoods; and they typically serve a poorer segment of the renter population

Despite these differences, there are strong arguments for considering the Fair Market Rents (FMRs) used by the federal government to determine subsidy levels for households living in private housing. Under the Section 8 Certificate and Voucher Programs, subsidized households live in existing, privately owned rental units. As for public housing residents, the federal government makes up the difference between 30 percent of the Section 8 household's income and the unit rent, paying up to a locally determined Fair Market Rent [17] FMRs are based on rent levels for decent quality housing units at the forty-fifth percentile of the rent distribution for recent movers. In other words, in a given housing market, 45 percent of standard quality rental units that recently became available for occupancy have rents below the FMR. Thus, the FMRs represent the per household revenues upon which private landlords rely to operate and maintain decent, standard quality rental housing. In addition, they vary with the size of the unit (and hence with the size of the household), as well as with local cost conditions. Finally, it seems reasonable that the federal government should pay essentially the same amount to subsidize an eligible household's rent, regardless of whether that household lives in an apartment owned by a private landlord or by the local PHA

Therefore, for purposes of this analysis, capitated payment levels are based on local Fair Market Rent (FMR) levels, adjusted for tenant rent contributions and for the debt service payments made by the federal government More specifically, the total market rent revenue to which a PHA is entitled is calculated by multiplying occupied units, according to size category,

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[17] The subsidy computation differs somewhat between the Certificate and Voucher Programs Under the Certificate Program, households are constrained to find units that rent for no more than the FMR They then pay 30 percent of their income toward rent and HUD makes up the difference Under the Voucher Program, households can choose units at any rent level, but HUD's subsidy is set at the difference between the applicable FMR and 30 percent of the household's income

by the applicable FMRs.[18] Then, tenant contributions and the estimated value of the federal government's contribution for debt service are subtracted from this sum to yield the capitated subsidy payment. Tenant rents are deducted from the FMR total because PHAs should receive a total per household payment of the FMR, part of which is paid by the tenant with the remainder paid by the federal government. Imputed debt service is deducted because the federal government has assumed responsibility for all the capital costs of public housing. Thus, unlike private landlords, PHAs do not have to make debt service payments, because -- in effect -- the federal government is already making them. Finally, a seven percent administrative fee is added to the FMR-based formula payment, to compensate PHAs for the administrative burden of income certifications and subsidy calculations -- costs that private landlords generally do not have to absorb.[19] Like the other capitated formulas analyzed in this report, three versions of the FMR-based formula are implemented.

*Formula Variants.* In mandating a study of capitated payment systems, Section 525 of the National Affordable Housing Act specified that both operating and modernization funding should be included in such a system. Therefore, for every capitated formula analyzed here, we have implemented one variant that encompasses all operating and modernization funds. Variant #1 of each formula would effectively replace both the Performance Funding System (PFS) and the Comprehensive Grant Program (CGP) with a capitated allocation of funding.

However, as discussed earlier, there are arguments against allocating modernization funding on a capitated basis. Unlike operating subsidies, which are provided to cover the costs incurred in delivering housing services to low-income households, modernization funding is directed to the structures themselves. Since modernization funds are provided to repair and rehabilitate the physical assets of PHAs, it might be more appropriate to allocate them on the basis of those physical assets. Moreover, high vacancy rates at some PHAs are due, at least in

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[18] Note that in actuality, the FMR could be determined on the basis of household size rather than unit size In the Certificate and Voucher Programs, households are subsidized up to the FMR level for the minimum size unit that meets their need If this approach were applied in the public housing context, PHAs would have a strong incentive to match households to the size unit most appropriate for them However, for the exploratory simulations reported here, data on the distribution of households by size in each PHA were not available

[19] Under the Section 8 Certificate and Voucher Programs, PHAs receive an average fee of 7 percent to compensate them for the costs they incur in administering the program Administrative costs would probably be somewhat lower for an FMR-based payment system for public housing, since certain administrative costs would not be incurred However, since we have no basis for determining the appropriate rate, the current 7 percent was adopted as a starting point for analysis

part, to large modernization backlogs. Withholding all funding for units that are vacant essentially denies PHAs the modernization funds they need to bring units back into active use.

One approach would be to allocate backlog modernization funding on the basis of need (as defined by the current CGP formula system), while allocating operating subsidies *and* the accrual portion of modernization funding on a capitated basis. Under this approach, once a PHA eliminated its existing backlog of modernization needs, all of its federal funding would be determined on the basis of the number and characteristics of households served. But as long as a PHA still had a significant backlog of physically deficient or obsolete units, its capitated subsidy payments would be supplemented by backlog modernization funding allocated on the basis of need. Therefore, for each capitated funding formula simulated here, we have implemented a variant that holds backlog modernization funding constant while allocating operating subsidies and accrual modernization funding on a capitated basis. Specifically, under variant #2 of each formula, the backlog portion of the Comprehensive Grant Program (CGP) is retained in conjunction with a capitated system for the allocation of operating and accrual modernization funds.

Another approach would be to hold all modernization funding out of a capitated payment system PHAs would receive operating subsidies on the basis of the number (and characteristics) of households actually served, but modernization funding would be allocated on the basis of the characteristics and condition of the PHA's inventory of housing units. Thus, for each of the three capitated funding formulas simulated here, we have implemented a third variant that holds all modernization funding constant while allocating operating subsidies on a capitated basis. Under variant #3 of each formula, the Comprehensive Grant Program (CGP) is retained in conjunction with a capitated system for the allocation of operating funds.

## Formula A: Fixed Federal Payments per Resident Household

The first set of simulations (A1, A2, and A3) assume no change in the aggregate level of funding for PHA operating and modernization costs. These formulas make no attempt to estimate an appropriate per household funding level, but simply show how the existing pool of resources would be reallocated if every PHA's funding level were determined on the basis of the number of households it serves rather than on the number and characteristics of units in its

inventory. An equal payment is made by the federal government for every household served, with no adjustments for variations among PHAs in the costs of doing business. Under formula A1, the total current pool of operating and modernization funds is reallocated, with a constant share provided for each household served. Under formula A2, the backlog portion of modernization funding remains unchanged from the current CGP allocation, while the total pool of operating subsidies plus the accrual portion of modernization funding is reallocated, with a constant share provided for each household served. And under formula A3, all modernization funding remains unchanged from the CGP allocation, while operating subsidies are reallocated, with a constant share provided for each household served.

*Formula A1. Full Capitation* A capitated system that simply divided federal funding evenly among public housing residents, with the same level of funding provided for every household, would dramatically shift resources away from extra large PHAs to medium and small PHAs.[20] Table 3.1 compares the distribution of federal funds under capitated formula A1 to the current distribution of funding by PHA size and region. Extra large PHAs lose a total of $657 million, or 31 percent of their current federal funding In contrast, medium sized PHAs gain a total of $190 million (34 percent), and small PHAs gain a total of $428 million (50 percent). As a group, large PHAs are relatively unaffected, gaining a total of $40 million (4 percent).

Within each size category, PHAs in the four geographic regions (Northeast, South, Central, and West)[21] win and lose at different rates under capitated formula A1. Among extra large PHAs, those in the Central region would experience the biggest drop in federal subsidies - - 51 percent of their current funding. Extra large PHAs in the West, on the other hand, would lose only 9 percent of current funding, while extra large agencies in the Northeast and South would experience reductions of 26 and 23 percent, respectively. Among large PHAs, the overall change in funding levels would be negligible, but large PHAs in the Northeast would lose 7 percent of their current funding, while large PHAs in the South would experience a 12 percent funding increase. Large PHAs in the West and Central Regions would gain by 4 and 2 percent,

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[20] Extra large PHAs have over 6,500 units, large PHAs have between 1,250 and 6,500, medium sized PHAs have between 500 and 1,249, small PHAs have under 500 units

[21] Northeast region includes HUD administrative regions One and Two, South region includes HUD regions Three, Four, and Six, Central region includes HUD regions Five and Seven, West region includes HUD regions Eight, Nine, and Ten

## Table 3.1
## TOTAL FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION
### Formula A1:

Constant Payments per Household for
All Operating and Modernization Funding

| | CAPITATED FORMULA (millions) | CURRENT FUNDING (millions) | DIFFERENCE (millions) | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $1,472 | $2,130 | ($657) | (30.9%) |
| Northeast | 798 | 1,085 | (287) | (26.4%) |
| South | 335 | 434 | (100) | (23.0%) |
| Central | 254 | 516 | (262) | (50.8%) |
| West | 86 | 94 | (9) | (9.3%) |
| **Large PHAs** | $1,162 | $1,122 | $40 | 3 6% |
| Northeast | 295 | 319 | (24) | (7.4%) |
| South | 503 | 450 | 53 | 11.7% |
| Central | 218 | 213 | 5 | 2.4% |
| West | 146 | 140 | 6 | 4.2% |
| **Medium PHAs** | $751 | $562 | $190 | 33.8% |
| Northeast | 168 | 125 | 43 | 34.4% |
| South | 290 | 202 | 88 | 43.4% |
| Central | 171 | 137 | 34 | 24.5% |
| West | 123 | 98 | 25 | 25.8% |
| **Small PHAs** | $1,278 | $850 | $428 | 50.4% |
| Northeast | 213 | 137 | 76 | 55.3% |
| South | 644 | 421 | 222 | 52.8% |
| Central | 315 | 193 | 122 | 63.2% |
| West | 106 | 98 | 8 | 7.8% |
| **Total PHAs** | $4,663 | $4,663 | $0 | 0.0% |
| Northeast | 1,474 | 1,666 | (192) | (11.5%) |
| South | 1,771 | 1,508 | 263 | 17 5% |
| Central | 958 | 1,059 | (102) | (9.6%) |
| West | 460 | 430 | 30 | 7.0% |

respectively  Medium sized PHAs in the Northeast and South would see their federal funding allocations increase by 34 to 43 percent, with medium sized PHAs in the West and Central states gaining by a smaller margin -- about 26 and 25 percent of current funding, respectively.  Small Northeastern, Southern, and Central PHAs would gain federal funding by 53 to 63 percent, while small Western PHAs would gain 8 percent from current funding resources.  Overall, PHAs in the Central and Northeast regions would lose from 10 to 12 percent of their funding under formula A1, while Southern agencies would gain 18 percent and the West 7 percent

Table 3.2 reports the number of PHAs in each size category that would experience either gains or losses of various magnitudes under capitated formula A1.  Altogether, 269 PHAs lose 5 percent or more of their federal resources under this formula, and 2,845 gain by more than 5 percent.  Although some PHAs in every size category would stand to lose under this very simple capitated scheme, extra large PHAs fare the worst.  Over half of the extra large PHAs (13 of 23) would lose more than 25 percent of their federal funding, compared to only 8 percent of the large PHAs, 2 percent of the medium sized PHAs, and 4 percent of the small PHAs.  Of the remaining extra large PHAs, 4 lose by between 11 and 25 percent, 3 experience virtually no change, 1 gains by 6 to 10 percent, 1 gains by 11 to 25 percent, and none gain by more than 25 percent  In contrast, 80 percent of the small PHAs gain by more than 25 percent under formula A1.

What does this reallocation of federal funding mean in terms of annual subsidies per unit? Table 3 3 presents average annual per unit subsidy levels under capitated formula A1 compared to current per unit funding levels by PHA size and region.  Per unit subsidy levels drop by $1,583 among extra large PHAs, and increase among large, medium and small PHAs by $126, $940 and $1,247, respectively.  The net result is that the average per unit funding levels converge to roughly $3,650 per unit for all four size categories under capitated formula A1, compared to the current system, in which per unit funding levels are more than twice as high for extra large PHAs than for small PHAs.  The per unit subsidies vary slightly from $3,647 because vacancy rates vary among regions and PHA size categories.  Northeast and Central regions lose $485 and $369 per unit while the South and West gain $540 and $247 per unit

Table 3 4 presents average per unit subsidy levels by PHA size and metro status  There appears to be little independent relationship between metropolitan status and formula outcomes.  Although most extra large PHAs are located in metropolitan areas, those in non-metro areas

**Table 3.2**
**DISTRIBUTION OF PHAs BY PERCENT CHANGE IN FEDERAL PAYMENTS**
**BY PHA SIZE**
**Formula A1:**

Constant Payments per Household for
All Operating and Modernization Funding

| PHA SIZE | LOSS OF MORE THAN 25% | LOSS OF 25 - 11% | LOSS OF 10 - 6% | GAIN/ LOSS +/- 5% | GAIN OF 6 - 10% | GAIN OF 11 - 25% | GAIN OF MORE THAN 25% | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Extra-Large PHAs (N) | 13 | 4 | 1 | 3 | 1 | 1 | 0 | 23 |
| Large PHAs (N) | 11 | 15 | 7 | 18 | 14 | 28 | 38 | 131 |
| Medium PHAs (N) | 5 | 17 | 4 | 17 | 12 | 40 | 170 | 265 |
| Small PHAs (N) | 119 | 49 | 24 | 101 | 56 | 225 | 2,260 | 2,834 |
| All PHAs (N) | 148 | 85 | 36 | 139 | 83 | 294 | 2,468 | 3,253 |

## Table 3.3
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION
### Formula A1:

Constant Payments per Household for
All Operating and Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $3,544 | $5,127 | ($1,583) | (30.9%) |
| Northeast | 3,759 | 5,110 | (1,351) | (26.4%) |
| South | 3,401 | 4,415 | (1,014) | (23.0%) |
| Central | 3,082 | 6,269 | (3,187) | (50.8%) |
| West | 3,836 | 4,228 | (393) | (9.3%) |
| | | | | |
| **Large PHAs** | $3,650 | $3,525 | $126 | 3.6% |
| Northeast | 3,620 | 3,910 | (290) | (7.4%) |
| South | 3,673 | 3,288 | 385 | 11.7% |
| Central | 3,538 | 3,456 | 82 | 2.4% |
| West | 3,815 | 3,661 | 154 | 4.2% |
| | | | | |
| **Medium PHAs** | $3,723 | $2,784 | $940 | 33.8% |
| Northeast | 3,711 | 2,761 | 950 | 34.4% |
| South | 3,718 | 2,592 | 1,126 | 43.4% |
| Central | 3,702 | 2,972 | 729 | 24.5% |
| West | 3,784 | 3,007 | 777 | 25.8% |
| | | | | |
| **Small PHAs** | $3,722 | $2,475 | $1,247 | 50.4% |
| Northeast | 3,828 | 2,465 | 1,363 | 55.3% |
| South | 3,695 | 2,418 | 1,276 | 52.8% |
| Central | 3,696 | 2,265 | 1,431 | 63.2% |
| West | 3,762 | 3,492 | 271 | 7.8% |
| | | | | |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |
| Northeast | 3,734 | 4,220 | (485) | (11.5%) |
| South | 3,633 | 3,093 | 540 | 17.5% |
| Central | 3,478 | 3,847 | (369) | (9.6%) |
| West | 3,798 | 3,551 | 247 | 7.0% |

## Table 3.4
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND METRO STATUS
### Formula A1:

Constant Payments per Household for
All Operating and Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $3,544 | $5,127 | ($1,583) | (30.9%) |
| Metro | 3,759 | 5,145 | (1,386) | (26.9%) |
| Non-Metro | 3,401 | 4,830 | (1,429) | (29.6%) |
| **Large PHAs** | $3,650 | $3,525 | $126 | 3.6% |
| Metro | 3,620 | 3,634 | (14) | (0.4%) |
| Non-Metro | 3,673 | 3,213 | 460 | 14.3% |
| **Medium PHAs** | $3,723 | $2,784 | $940 | 33.8% |
| Metro | 3,711 | 2,654 | 1,057 | 39.8% |
| Non-Metro | 3,718 | 2,883 | 834 | 28.9% |
| **Small PHAs** | $3,722 | $2,475 | $1,247 | 50.4% |
| Metro | 3,828 | 2,476 | 1,352 | 54.6% |
| Non-Metro | 3,695 | 2,475 | 1,219 | 49.3% |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |

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would experience slightly higher losses in per unit subsidies than those in metro areas under formula A1. Most medium and small PHAs are located in non-metropolitan communities, but those located in metropolitan areas would experience roughly the same per unit increase in federal subsidies as those in non-metropolitan locations. Again per unit subsidies vary slightly from $3,647 because of differences in vacancy rates among the categories of PHAs.

As Table 3.3 and 3.4 illustrate, under the pure capitated funding system represented by formula A1, PHA vacancy rates are the only factor that generate differences in per unit funding levels among PHAs. Table 3.5 shows directly how vacancy rates affect funding levels, and how funding would change from current levels. For example, among extra large PHAs, the reduction in per unit funding ranges from an average of $574 among PHAs with vacancy rates under 5 percent to $3,453 among PHAs with vacancy rates over 30 percent. Correspondingly, among small PHAs, the change in per unit funding ranges from an average gain of $1,427 among PHAs with vacancy rates under 5 percent to a loss of $479 per unit among PHAs with vacancy rates over 30 percent. Nevertheless, regardless of vacancy rate, extra large and large PHAs are more likely to lose funding under capitated formula A1 than medium and small PHAs. To illustrate, extra large PHAs with vacancy rates between 11 and 15 percent lose an average of $953 per unit under this formula, while small PHAs with the same vacancy rates gain $946 per unit on average.

*Formula A2· Capitation Excludes Funding for Backlog Modernization* Even if backlog modernization funds were held out of the capitated formula and allocated on the basis of estimated backlog needs, federal resources would be substantially redistributed from extra large PHAs to medium and small PHAs. Table 3.6 compares the allocation of federal funding under capitated formula A2 to the current allocation of funding by PHA size and region. Changes in the distribution of federal resources among PHAs are less extreme under formula A2 than under formula A1, because backlog modernization funds are allocated under the current CGP formula. Nevertheless, extra large PHAs lose a total of $507 million, or 24 percent of their current federal funding. In contrast, medium sized PHAs gain a total of $141 million (25 percent), and small PHAs gain a total of $371 million (44 percent) As a group, large PHAs are again relatively unaffected, losing a total of only $6 million (0.5 percent).

After accounting for differences in size, outcomes for PHAs in different geographic regions continue to vary substantially under capitated formula A2. Among extra large PHAs,

## Table 3.5
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND VACANCY RATE
### Formula A1:

Constant Payments per Household for
All Operating and Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $3,544 | $5,127 | ($1,583) | (30.9%) |
| Vacancies | | | | |
| 0-5% | 3,953 | 4,526 | (574) | (12.7%) |
| 6%-10% | 3,678 | 4,235 | (557) | (13 2%) |
| 11%-15% | 3,484 | 4,437 | (953) | (21.5%) |
| 16%-20% | 3,288 | 6,694 | (3,405) | (50.9%) |
| 21%-30% | 2,997 | 5,838 | (2,842) | (48.7%) |
| 31%+ | 2,418 | 5,870 | (3,453) | (58.8%) |
| | | | | |
| **Large PHAs** | $3,650 | $3,525 | $126 | 3.6% |
| Vacancies | | | | |
| 0-5% | 3,869 | 3,353 | 516 | 15.4% |
| 6%-10% | 3,680 | 3,646 | 34 | 0.9% |
| 11%-15% | 3,517 | 3,419 | 98 | 2.9% |
| 16%-20% | 3,290 | 3,584 | (294) | (8.2%) |
| 21%-30% | 3,050 | 4,226 | (1,176) | (27.8%) |
| 31%+ | 2,513 | 3,740 | (1,227) | (32.8%) |
| | | | | |
| **Medium PHAs** | $3,723 | $2,784 | $940 | 33.8% |
| Vacancies | | | | |
| 0-5% | 3,879 | 2,715 | 1,163 | 42.8% |
| 6%-10% | 3,695 | 2,787 | 908 | 32.6% |
| 11%-15% | 3,499 | 2,765 | 734 | 26.5% |
| 16%-20% | 3,281 | 2,722 | 560 | 20.6% |
| 21%-30% | 3,074 | 3,539 | (465) | (13.1%) |
| 31%+ | 2,485 | 3,464 | (979) | (28.3%) |
| | | | | |
| **Small PHAs** | $3,722 | $2,475 | $1,247 | 50.4% |
| Vacancies | | | | |
| 0-5% | 3,879 | 2,452 | 1,427 | 58.2% |
| 6%-10% | 3,702 | 2,486 | 1,216 | 48.9% |
| 11%-15% | 3,517 | 2,571 | 946 | 36.8% |
| 16%-20% | 3,292 | 2,379 | 912 | 38.3% |
| 21%-30% | 3,023 | 2,395 | 628 | 26.2% |
| 31%+ | 2,367 | 2,846 | (479) | (16.8%) |
| | | | | |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |

## Table 3.6
## TOTAL FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION
### Formula A2:

Constant Payments per Household for
Operating and Accrual Modernization Funding

| | CAPITATED FORMULA (millions) | CURRENT FUNDING (millions) | DIFFERENCE (millions) | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $1,623 | $2,130 | ($507) | (23.8%) |
| Northeast | 856 | 1,085 | (229) | (21.1%) |
| South | 338 | 434 | (97) | (22.3%) |
| Central | 336 | 516 | (180) | (34.8%) |
| West | 94 | 94 | (1) | (0.9%) |
| | | | | |
| **Large PHAs** | $1,117 | $1,122 | ($6) | (0.5%) |
| Northeast | 297 | 319 | (21) | (6.7%) |
| South | 458 | 450 | 8 | 1.8% |
| Central | 211 | 213 | (2) | (0.8%) |
| West | 150 | 140 | 9 | 6.6% |
| | | | | |
| **Medium PHAs** | $703 | $562 | $141 | 25.2% |
| Northeast | 158 | 125 | 34 | 27.0 |
| South | 261 | 202 | 59 | 29.0 |
| Central | 162 | 137 | 25 | 18.1 |
| West | 122 | 98 | 24 | 24.8 |
| | | | | |
| **Small PHAs** | $1,220 | $850 | $371 | 43.6% |
| Northeast | 207 | 137 | 69 | 50.6% |
| South | 597 | 421 | 176 | 41.7% |
| Central | 302 | 193 | 109 | 56.4% |
| West | 115 | 98 | 17 | 17.1% |
| | | | | |
| **Total PHAs** | $4,663 | $4,663 | $0 | 0.0% |
| Northeast | 1,518 | 1,666 | (148) | (8.9%) |
| South | 1,654 | 1,508 | 146 | 9.7% |
| Central | 1,011 | 1,059 | (48) | (4.5%) |
| West | 480 | 430 | 49 | 11.5% |

those in the Central region would experience the greatest decline in federal funding -- 35 percent of their current funding  Extra large PHAs in the West, on the other hand, would lose only 1 percent of current funding, while extra large agencies in the Northeast and South would experience reductions of 21 and 22 percent, respectively  Among large PHAs, agencies in the Northeast are the only significant losers, with a loss of $21 million.  Among medium and small PHAs, those located in the West would experience smaller gains than those in other regions.  This pattern is particularly dramatic among small PHAs, with gains of 42 percent, 51 percent, and 56 percent respectively for agencies in the South, Northeast, and Central regions, compared to only 17 percent for agencies in the West.

Regional distribution of federal payments under capitated formula A2 would result in Northeastern PHAs losing $148 million (9 percent) and Central PHAs losing $48 million (5 percent)  Both Southern and Western PHAs would realize gains in funding under this payment formula.  Southern agencies would receive $146 million (10 percent) additional funding while the West would gain by $49 million (12 percent).  It appears that the West is more affected than other regions by the addition of backlog modernization funding, because its backlog need is relatively high, according to HUD estimates  Possible explanations for high backlog need in the West are:  (1) historically, western PHAs have received less modernization funding than other parts of the country, (2) the R.S. Means index of construction costs is 10-15% higher in the West than other parts of the country; and, (3) although the West region has somewhat newer public housing in general; it is now reaching the point of needing substantial modernization, whereas other regions have already experienced several modernization phases

Table 3.7 provides a distribution of PHAs by the size and direction of change in federal funding that they would experience under capitated formula A2.  The patterns are quite similar to those obtained under formula A1 (Table 3 2), although the differences among PHAs are less extreme.  In all, 282 PHAs would lose by more than 5 percentage points, while 2,817 would gain by more than 5 percent.  As under formula A1, extra large PHAs are the most likely to lose funding, with 8 of the 23 extra large PHAs losing by more than 25 percent, 9 losing between 11 and 25 percent, and 3 losing between 6 and 10 percent  In contrast, the majority of small PHAs (76 percent) gain by more than 25 percent

### Table 3.7
### DISTRIBUTION OF PHAs BY PERCENT CHANGE IN FEDERAL PAYMENTS
### BY PHA SIZE
Formula A2:

Constant Payments per Household for
Operating and Accrual Modernization Funding

| PHA SIZE | LOSS OF MORE THAN 25% | LOSS OF 25 - 11% | LOSS OF 10 - 6% | GAIN/ LOSS +/- 5% | GAIN OF 6 - 10% | GAIN OF 11 - 25% | GAIN OF MORE THAN 25% | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Extra-Large PHAs (N) | 8 | 9 | 3 | 1 | 1 | 1 | 0 | 23 |
| Large PHAs (N) | 8 | 22 | 13 | 31 | 10 | 22 | 25 | 131 |
| Medium PHAs (N) | 4 | 19 | 6 | 20 | 15 | 60 | 141 | 265 |
| Small PHAs (N) | 73 | 78 | 39 | 102 | 68 | 328 | 2,146 | 2,834 |
| All PHAs (N) | 93 | 128 | 61 | 154 | 94 | 411 | 2,312 | 3,253 |

Changes in federal payments per unit are considerably more moderate under formula A2 than under formula A1, because funding for backlog modernization is allocated on the basis of estimated modernization need, rather than on a constant, per household basis  Table 3 8 presents average annual per unit subsidies for public housing operations and modernization under capitated formula A2, and compares them to current per unit subsidy payments  Per unit subsidies to extra large PHAs would decline by an average of $1,220 under capitated formula A2, and large PHAs would lose an average of $17 per unit  Medium sized and small PHAs would experience increases in per unit subsidy payments of $701 and $1,080, respectively.  Under formula A2, extra large PHAs receive higher per unit subsidy payments than under formula A1, because their backlog modernization costs tend to be substantially above the average for PHAs in other size categories.  As a result, the total per unit subsidy for extra large PHAs under formula A2 would be larger than under formula A1, though still substantially below the average under current funding.  Northeastern and Central PHAs, would receive 9 and 5 percent less funding under formula A2 while Southern and Western agencies would gain 10 and 12 percent.

Tables 3.9 and 3.10 report average per unit subsidy levels by metro status and vacancy rate for PHAs in different size categories. In general, metropolitan status appears to have no consistent impact on formula outcomes, among extra large PHAs, those in non-metro areas lose more than those in metro areas, and the reverse is true among large PHAs.  Vacancy rates, on the other hand, continue to play a critical role in determining funding outcomes.  Because formula A2 holds backlog modernization funding constant, PHAs with the smallest vacancy rates do not necessarily receive the highest per unit funding levels.  However, low-vacancy agencies are generally the gainers under formula A2, while high-vacancy agencies are generally losers.  Among extra large PHAs, the reduction in per unit funding ranges from $520 per unit among PHAs with vacancy rates 6 - 10 percent to $2,378 among PHAs with vacancy rates over 30 percent  Correspondingly, among small PHAs, the change in per unit funding ranges from a gain of $1,242 among PHAs with vacancy rates under 5 percent to a loss of $312 per unit among PHAs with vacancy rates over 30 percent  Still, regardless of vacancy rate, extra large and large PHAs are more likely to lose funding under capitated formula A2 than medium and small PHAs.  To illustrate, in the 11 to 15 percent vacancy range, extra large PHAs would lose an average of $898 per unit in federal funding, while small PHAs would gain an average of $846.

## Table 3.8
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION
### Formula A2:

Constant Payments per Household for
Operating and Accrual Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $3,907 | $5,127 | ($1,220) | (23.8%) |
| Northeast | 4,029 | 5,110 | (1,081) | (21.2%) |
| South | 3,432 | 4,415 | (983) | (22.3%) |
| Central | 4,086 | 6,269 | (2,183) | (34.8%) |
| West | 4,188 | 4,228 | (40) | (0.9%) |
| **Large PHAs** | $3,507 | $3,525 | ($17) | (0 5%) |
| Northeast | 3,647 | 3,910 | (262) | (6.7%) |
| South | 3,349 | 3,288 | 60 | 1.8% |
| Central | 3,428 | 3,456 | (28) | (0.8%) |
| West | 3,904 | 3,661 | 243 | 6.6% |
| **Medium PHAs** | $3,484 | $2,784 | $701 | 25.2% |
| Northeast | 3,507 | 2,761 | 746 | 27.0% |
| South | 3,343 | 2,592 | 751 | 29.0% |
| Central | 3,510 | 2,972 | 538 | 18.1% |
| West | 3,754 | 3,007 | 747 | 24.8% |
| **Small PHAs** | $3,556 | $2,475 | $1,080 | 43.6% |
| Northeast | 3,713 | 2,465 | 1,248 | 50.6% |
| South | 3,427 | 2,418 | 1,009 | 41.7% |
| Central | 3,541 | 2,265 | 1,276 | 56.4% |
| West | 4,089 | 3,492 | 598 | 17.1% |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |
| Northeast | 3,846 | 4,220 | (374) | (8.9%) |
| South | 3,393 | 3,093 | 299 | 9.7% |
| Central | 3,673 | 3,847 | (173) | (4.5%) |
| West | 3,959 | 3,551 | 408 | 11.5% |

## Table 3.9
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND METRO STATUS
### Formula A2:

Constant Payments per Household for
Operating and Accrual Modernization Funding

|  | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $3,907 | $5,127 | ($1,220) | (23.8%) |
| Metro | 3,936 | 5,145 | (1,208) | (23.5%) |
| Non-Metro | 3,421 | 4,830 | (1,408) | (29.2%) |
| **Large PHAs** | $3,507 | $3,525 | ($17) | (0.5%) |
| Metro | 3,469 | 3,634 | (165) | (4.5%) |
| Non-Metro | 3,617 | 3,213 | 404 | 12.6% |
| **Medium PHAs** | $3,484 | $2,784 | $701 | 25.2% |
| Metro | 3,367 | 2,654 | 713 | 26.9% |
| Non-Metro | 3,575 | 2,883 | 691 | 24.0% |
| **Small PHAs** | $3,556 | $2,475 | $1,080 | 43.6% |
| Metro | 3,569 | 2,476 | 1,093 | 44.2% |
| Non-Metro | 3,555 | 2,475 | 1,079 | 43.6% |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |

Table 3.10
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND VACANCY RATE
### Formula A2:

Constant Payments per Household for
Operating and Accrual Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $3,907 | $5,127 | ($1,220) | (23.8%) |
| Vacancies | | | | |
| 0-5% | 4,004 | 4,526 | (523) | (11.6%) |
| 6%-10% | 3,714 | 4,235 | (520) | (12.3%) |
| 11%-15% | 3,539 | 4,437 | (898) | (20.2%) |
| 16%-20% | 4,267 | 6,694 | (2,427) | (36.3%) |
| 21%-30% | 3,691 | 5,838 | (2,147) | (36.8%) |
| 31%+ | 3,492 | 5,870 | (2,378) | (40.5%) |
| | | | | |
| **Large PHAs** | $3,507 | $3,525 | ($17) | (0.5%) |
| Vacancies | | | | |
| 0-5% | 3,671 | 3,353 | 318 | 9.5% |
| 6%-10% | 3,553 | 3,646 | (93) | (2.6%) |
| 11%-15% | 3,385 | 3,419 | (35) | (1.0%) |
| 16%-20% | 3,147 | 3,584 | (436) | (12.2%) |
| 21%-30% | 3,112 | 4,226 | (1,114) | (26.4%) |
| 31%+ | 2,671 | 3,740 | (1,069) | (28.6%) |
| | | | | |
| **Medium PHAs** | $3,484 | $2,784 | $701 | 25.2% |
| Vacancies | | | | |
| 0-5% | 3,622 | 2,715 | 907 | 33.4% |
| 6%-10% | 3,446 | 2,787 | 659 | 23.6% |
| 11%-15% | 3,224 | 2,765 | 459 | 16.6% |
| 16%-20% | 3,078 | 2,722 | 357 | 13.1% |
| 21%-30% | 3,043 | 3,539 | (496) | (14.0%) |
| 31%+ | 2,706 | 3,464 | (759) | (21.9%) |
| | | | | |
| **Small PHAs** | $3,556 | $2,475 | $1,080 | 43.6% |
| Vacancies | | | | |
| 0-5% | 3,694 | 2,452 | 1,242 | 50.7% |
| 6%-10% | 3,528 | 2,486 | 1,043 | 41.9% |
| 11%-15% | 3,417 | 2,571 | 846 | 32.9% |
| 16%-20% | 3,107 | 2,379 | 728 | 30.6% |
| 21%-30% | 2,870 | 2,395 | 475 | 19.8% |
| 31%+ | 2,534 | 2,846 | (312) | (11.0%) |
| | | | | |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |

*Formula A3: Capitation Excludes All Modernization Funding.* If only operating subsidies were allocated on a capitated basis, with modernization funding allocated on the basis of estimated modernization needs, the redistribution of federal resources would be more moderate than under the previous two formulas, although funding would still shift away from extra large and large PHAs to medium and small PHAs. Table 3.11 compares the allocation of federal funding under capitated formula A3 to the current allocation of funding by PHA size and region. Even though the allocation of all modernization funding is unaffected by this formula, extra large PHAs would lose a total of $428 million, or 20 percent of their current federal funding. Large PHAs would lose $15 million, 1 percent of their current funding. In contrast, medium sized PHAs gain by $129 million (23 percent), and small PHAs would gain $314 million (37 percent).

As in previous simulations, outcomes differ by geographic region within size categories, with Western PHAs faring better than their counterparts in the extra large and large size categories, while faring worse than their counterparts in the small category. Among extra large PHAs, those in the Central region would continue to experience the greatest decline in federal funding -- 31 percent of their current funding. Among large PHAs, agencies in the Northeast continue to account for the bulk of the funding loss, but large PHAs in the South neither gained nor lost under this formula, while they were gainers under formulas A1 and A2

Overall, Northeastern and Central PHAs would continue to have their funding reduced while Western and Southern agencies would gain. PHAs in the West, overall, would fare better under formula A3 (13 percent gain) than under formulas A1 (7 percent) or A2 (12 percent) While the Northeast loses under all three formulas, formula A3 spares this funding, compared with a loss of only 7 percent from current funding, compared with a loss of 12 percent under formula A1 and 9 percent under A2 Under this formula Central PHAs lose 5 percent funding compared with 5 percent under formula A2, and 10 percent under formula A1. The South, like the West, gains under all three versions of capitated formula A but, gains the least under formula A3 (7 percent) compared with formula A2 (10 percent) and formula A1 (18 percent).

Table 3.12 reports the distribution of PHAs by the size and direction of change in federal funding simulated for capitated formula A3. Altogether, 267 PHAs would lose by more than 5 percentage points, while 2,767 would gain by more than 5 percent. In general, a larger share of PHAs in every size category would be unaffected by this capitated formula than by the two

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Constant Payments per Household for
Operating Funding

| | CAPITATED FORMULA (millions) | CURRENT FUNDING (millions) | DIFFERENCE (millions) | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $1,702 | $2,130 | ($428) | (20.1%) |
| Northeast | 910 | 1,085 | (176) | (16.2%) |
| South | 344 | 434 | (90) | (20.8%) |
| Central | 354 | 516 | (162) | (31.4%) |
| West | 95 | 94 | 0 | 0.4% |
| | | | | |
| **Large PHAs** | $1,107 | $1,122 | ($15) | (1.4%) |
| Northeast | 295 | 319 | (23) | (7.3%) |
| South | 450 | 450 | 0 | 0.0% |
| Central | 211 | 213 | (2) | (1.0%) |
| West | 150 | 140 | 10 | 7.2% |
| | | | | |
| **Medium PHAs** | $691 | $562 | $129 | 23.0% |
| Northeast | 153 | 125 | 28 | 22.3% |
| South | 254 | 202 | 52 | 25.6% |
| Central | 160 | 137 | 23 | 16.7% |
| West | 124 | 98 | 27 | 27.3% |
| | | | | |
| **Small PHAs** | $1,163 | $850 | $314 | 36.9% |
| Northeast | 194 | 137 | 57 | 41.6% |
| South | 568 | 421 | 146 | 34.7% |
| Central | 285 | 193 | 92 | 47.8% |
| West | 116 | 98 | 18 | 18.7% |
| | | | | |
| **Total PHAs** | $4,663 | $4,663 | $0 | 0.0% |
| Northeast | 1,552 | 1,666 | (114) | (6.8%) |
| South | 1,616 | 1,508 | 108 | 7.1% |
| Central | 1,010 | 1,059 | (49) | (4.6%) |
| West | 486 | 430 | 56 | 12.9% |

Table 3.12
DISTRIBUTION OF PHAs BY PERCENT CHANGE IN FEDERAL PAYMENTS
BY PHA SIZE
Formula A3:

Constant Payments per Household for
Operating Funding

| PHA SIZE | LOSS OF MORE THAN 25% | LOSS OF 25 - 11% | LOSS OF 10 - 6% | GAIN/ LOSS +/- 5% | GAIN OF 6 - 10% | GAIN OF 11 - 25% | GAIN OF MORE THAN 25% | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Extra-Large PHAs (N) | 7 | 10 | 3 | 1 | 1 | 1 | 0 | 23 |
| Large PHAs (N) | 6 | 23 | 21 | 29 | 7 | 24 | 21 | 131 |
| Medium PHAs (N) | 4 | 14 | 10 | 27 | 14 | 69 | 127 | 265 |
| Small PHAs (N) | 30 | 76 | 63 | 162 | 108 | 413 | 1,987 | 2,834 |
| All PHAs (N) | 47 | 123 | 97 | 219 | 125 | 507 | 2,135 | 3,253 |

previous versions, and for those that are affected, the change in funding would be less extreme Still, extra large PHAs are most likely to lose funding, with 7 of the 23 extra large PHAs losing by more than 25 percent, 10 losing between 11 and 25 percent, and 3 losing between 6 and 10 percent. And while there are losers among the small PHAs, a substantial majority (70 percent) gain by more than 25 percent

As one would expect given the results thus far, changes in per unit funding levels under formula A3 follow essentially the same pattern as under A1 and A2, but are more moderate. Because only operating subsidies are reallocated on a capitated basis under this formula variant, PHAs retain all of their current modernization funding. As illustrated by Table 3.13, annual per unit subsidies to extra large PHAs would decline by an average of $1,030 under capitated formula A3, while large PHAs would lose an average of $48 per unit. Medium sized and small PHAs would experience increases in per unit subsidy payments of $640 and $914, respectively It is interesting to note that large PHAs lose more under formula A3 than under either A1 or A2, while extra large PHAs lose less This result probably stems from the fact that under current allocation formulas, modernization funding accounts for a larger share of total funding for extra large PHAs than for PHAs in any other category. Reduced funding for extra large and large Northeastern and Central PHAs seemingly accounts for the overall loss for these regions.

Tables 3.14 and 3.15 report average per unit subsidy levels by metro status and vacancy rate for PHAs in different size categories. Again, with the exception of large PHAs, metropolitan status appears to have little significant impact on formula outcomes, but vacancy rates continue to play a central role in determining funding outcomes. Because all modernization funding is held constant under formula A3, there is considerable variation in funding levels by vacancy rate range. Nevertheless, PHAs with the highest vacancy rates consistently lose funding under this system, while PHAs with low vacancy rates either gain funding or lose less funding than other PHAs of their size Among extra large PHAs, the reduction in annual per unit funding ranges from $304 per unit among PHAs with vacancy rates under 5 percent to $1,995 among PHAs with vacancy rates over 30 percent. Correspondingly, among small PHAs, the change in per unit funding ranges from a gain of $1,021 among PHAs with vacancy rates under 5 percent to a loss of $78 per unit among PHAs with vacancy rates over 30 percent Nevertheless, at every vacancy rate range, extra large and large PHAs continue to be more likely to lose funding under

## Table 3.13
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION
### Formula A3:

Constant Payments per Household for
Operating Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $4,097 | $5,127 | ($1,030) | (20.1%) |
| Northeast | 4,282 | 5,110 | (828) | (16.2%) |
| South | 3,496 | 4,415 | (919) | (20.8%) |
| Central | 4,297 | 6,269 | (1,972) | (31.4%) |
| West | 4,246 | 4,228 | 18 | 0.4% |
| **Large PHAs** | $3,477 | $3,525 | ($48) | (1.4%) |
| Northeast | 3,626 | 3,910 | (284) | (7.3%) |
| South | 3,288 | 3,288 | 0 | 0.0% |
| Central | 3,421 | 3,456 | (36) | (1.0%) |
| West | 3,926 | 3,661 | 265 | 7.2% |
| **Medium PHAs** | $3,424 | $2,784 | $640 | 23.0% |
| Northeast | 3,378 | 2,761 | 617 | 22.3% |
| South | 3,256 | 2,592 | 664 | 25.6% |
| Central | 3,468 | 2,972 | 496 | 16.7% |
| West | 3,829 | 3,007 | 822 | 27.3% |
| **Small PHAs** | $3,390 | $2,475 | $914 | 36.9% |
| Northeast | 3,489 | 2,465 | 1,025 | 41.6% |
| South | 3,257 | 2,418 | 839 | 34.7% |
| Central | 3,347 | 2,265 | 1,082 | 47.8% |
| West | 4,144 | 3,492 | 653 | 18.7% |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |
| Northeast | 3,931 | 4,220 | (288) | (6.8%) |
| South | 3,314 | 3,093 | 221 | 7.1% |
| Central | 3,668 | 3,847 | (179) | (4.6%) |
| West | 3,647 | 3,551 | 95 | 2.7% |

## Table 3.14
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND METRO STATUS
### Formula A3:

Constant Payments per Household for
Operating Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $4,097 | $5,127 | ($1,030) | (20.1%) |
| Metro | 4,130 | 5,145 | (1,015) | (19.7%) |
| Non-Metro | 3,550 | 4,830 | (1,280) | (26.5%) |
| **Large PHAs** | $3,477 | $3,525 | ($48) | (1.4%) |
| Metro | 3,428 | 3,634 | (206) | (5.7%) |
| Non-Metro | 3,618 | 3,213 | 405 | 12.6% |
| **Medium PHAs** | $3,424 | $2,784 | $640 | 23.0% |
| Metro | 3,262 | 2,654 | 608 | 22.9% |
| Non-Metro | 3,548 | 2,883 | 665 | 23.1% |
| **Small PHAs** | $3,390 | $2,475 | $914 | 36.9% |
| Metro | 3,351 | 2,476 | 875 | 35.4% |
| Non-Metro | 3,393 | 2,475 | 918 | 37.1% |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |

## Table 3.15
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND VACANCY RATE
### Formula A3:

Constant Payments per Household for
Operating Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $4,097 | $5,127 | ($1,030) | (20.1%) |
| Vacancies | | | | |
| 0-5% | 4,222 | 4,526 | (304) | (6.7%) |
| 6%-10% | 3,728 | 4,235 | (507) | (12.0%) |
| 11%-15% | 3,587 | 4,437 | (850) | (19.2%) |
| 16%-20% | 4,469 | 6,694 | (2,224) | (33.2%) |
| 21%-30% | 3,928 | 5,838 | (1,910) | (32.7%) |
| 31%+ | 3,875 | 5,870 | (1,995) | (34.0%) |
| **Large PHAs** | $3,477 | $3,525 | ($48) | (1.4%) |
| Vacancies | | | | |
| 0-5% | 3,583 | 3,353 | 230 | 6.8% |
| 6%-10% | 3,513 | 3,646 | (133) | (3.7%) |
| 11%-15% | 3,431 | 3,419 | 12 | (0.3%) |
| 16%-20% | 3,187 | 3,584 | (397) | (11.1%) |
| 21%-30% | 3,234 | 4,226 | (992) | (23.5%) |
| 31%+ | 2,910 | 3,740 | (830) | (22.2%) |
| **Medium PHAs** | $3,424 | $2,784 | $640 | 23.0% |
| Vacancies | | | | |
| 0-5% | 3,537 | 2,715 | 821 | 30.3% |
| 6%-10% | 3,373 | 2,787 | 586 | 21.0% |
| 11%-15% | 3,193 | 2,765 | 428 | 15.5% |
| 16%-20% | 3,103 | 2,722 | 382 | 14.0% |
| 21%-30% | 3,173 | 3,539 | (366) | (10.3%) |
| 31%+ | 2,987 | 3,464 | (477) | (13.8%) |
| **Small PHAs** | $3,390 | $2,475 | $914 | 36.9% |
| Vacancies | | | | |
| 0-5% | 3,473 | 2,452 | 1,021 | 41.6% |
| 6%-10% | 3,375 | 2,486 | 889 | 35.8% |
| 11%-15% | 3,374 | 2,571 | 803 | 31.2% |
| 16%-20% | 3,011 | 2,379 | 631 | 26.5% |
| 21%-30% | 2,854 | 2,395 | 459 | 19.1% |
| 31%+ | 2,767 | 2,846 | (78) | (2.8%) |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |

capitated formula A2 than medium and small PHAs  In the 11 to 15 percent vacancy range, for example, extra large PHAs would lose an average of $850 per unit in federal funding, while small PHAs would gain an average of $803.


## Formula B: Per Household Payments Adjusted for Local Cost Levels

The second set of simulations (formulas B1, B2, and B3) is similar to the first set in that no change in the aggregate level of federal funding is assumed.  Again, these formulas show how the existing pool of resources would be reallocated under a capitated system.  The second set of simulations differ from the first in that they adjust for local cost conditions  Specifically, these formulas recognize that allocating the same level of funding for every household living in public housing may be unreasonable, since some PHAs are located in high cost areas while others face much lower costs for labor, supplies, materials, and services.  Therefore, per household subsidy payments are adjusted by the R.S. Means Index, which measures place-to-place variations in building materials and supplies.  Under formula B1, the total pool of operating and modernization funds is reallocated, with the dollar amount provided per household adjusted by the R.S. Means Index.  Under formula B2, the backlog portion of modernization funding remains unchanged from the current CGP allocation, while the total pool of operating subsidies plus the accrual portion of modernization funding is reallocated, with the dollar amount provided per household adjusted by the R.S. Means Index.  And under formula B3, all modernization funding remains unchanged from the current CGP allocation, with only operating subsidies reallocated.

*Formula B1. Full Capitation with Local Cost Adjustments.*  Table 3.16 summarizes the distribution of federal funding for public housing operations and modernization under capitated formula B1.  Because per household payment levels are adjusted to reflect local cost factors, this formula does not redistribute federal resources as drastically as formula A1 (which allocated an equal subsidy amount to every resident household in public housing).  Nevertheless, extra large PHAs would experience funding reductions of $452 million (21 percent) under formula B1.  Large PHAs would lose by a much smaller margin -- $11 million or 1 percent.  As in earlier simulations, medium sized and small PHAs would receive increased federal payments, with medium sized PHAs gaining by $152 million (27 percent), and small PHAs gaining by $311 million (37 percent).

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## Table 3.16
## TOTAL FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION
### Formula B1:

Indexed Payments per Household for
All Operating and Modernization Funding

| | CAPITATED FORMULA (millions) | CURRENT FUNDING (millions) | DIFFERENCE (millions) | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $1,677 | $2,130 | ($452) | (21.2%) |
| Northeast | 1,003 | 1,085 | (83) | (7.6%) |
| South | 309 | 434 | (125) | (28.9%) |
| Central | 267 | 516 | (249) | (48.3%) |
| West | 99 | 94 | 5 | 4.9% |
| **Large PHAs** | $1,111 | $1,122 | ($11) | (1.0%) |
| Northeast | 311 | 319 | (8) | (2.5%) |
| South | 432 | 450 | (18) | (4.0%) |
| Central | 216 | 213 | 3 | 1.5% |
| West | 152 | 140 | 12 | 8.6% |
| **Medium PHAs** | $714 | $562 | $152 | 27.1% |
| Northeast | 173 | 125 | 48 | 38.8% |
| South | 252 | 202 | 49 | 24.4% |
| Central | 163 | 137 | 26 | 18.8% |
| West | 126 | 98 | 28 | 29.1% |
| **Small PHAs** | $1,161 | $850 | $311 | 36.6% |
| Northeast | 216 | 137 | 79 | 57.4% |
| South | 546 | 421 | 125 | 29.6% |
| Central | 293 | 193 | 100 | 51.8% |
| West | 105 | 98 | 8 | 7.7% |
| **Total PHAs** | $4,663 | $4,663 | $0 | 0.0 |
| Northeast | 1,702 | 1,666 | 37 | 2.2 |
| South | 1,539 | 1,508 | 31 | 2.0 |
| Central | 939 | 1,509 | (120) | (11.3) |
| West | 483 | 430 | 53 | 12.2 |

Within each size category, PHAs in different geographic regions are affected differently by capitated formula B1. Comparing formula B1 to formula A1, the cost adjustments appear to work to the advantage of PHAs in the Northeast and to the disadvantage of those in the Central and South. Among extra large PHAs, those in the Central region would face the biggest loss in federal funding -- 48 percent of their current funding. Extra large PHAs in the South would experience funding declines of 29 percent. Extra large PHAs in the Northeast would lose 8 percent of their current funding. Extra large PHAs in the West, however, would experience a small increase of 5 percent. Among large PHAs, the overall change in funding levels would be small (1%), with no more than a 4% decline in any of the 4 regions. Medium sized PHAs in all four regions would receive increased federal funding levels, with the greatest gains in the West (29 percent) and Northeast (39 percent) regions, and smaller gains in the South (24 percent) and Central (19 percent). Small PHAs in the Northeast, South, and Central regions would gain in federal funding allocations by 30 to 57 percent, while small sized PHAs in the West would gain only 8 percent above their current federal funding resources. PHA size would assert some influence on net funding gains and losses throughout the regions. Funding losses by extra large Central PHAs ($249 million) contributed to the net regional decline of $120 million. Minimal regional gains in the Northeast (2 percent), South (2 percent) and West (12 percent) under formula B1 appear due to funding losses for extra large and large PHAs

Table 3.17 reports the number of PHAs that would lose or gain in federal funding under capitated formula B1, with results that are quite similar to those obtained under Formula A1 (constant per household payment to all PHAs). More than half of extra large PHAs (13 of 23) would lose more than 25 percent of current funding, and four would lose between 11 and 25 percent. The majority of small PHAs (67 percent), on the other hand, would gain by more than 25 percent. Altogether, 410 PHAs would experience reductions of funding of at least 6 percent under this capitated formula, while 2,626 PHAs would experience funding increases of at least 6 percent.

Changes in annual federal payments per unit are considerably more moderate under formula B1 than under formula A1 (see Table 3.18). This suggests that variations in local cost levels account for a substantial share of the variation in average subsidy levels between PHAs in different size categories. Nevertheless, formula B1 would reduce per unit subsidy payments

**Table 3.17**
**DISTRIBUTION OF PHAs BY PERCENT CHANGE IN FEDERAL PAYMENTS**
**BY PHA SIZE**
Formula B1:

Constant Payments per Household for
All Operating and Modernization Funding

| PHA SIZE | LOSS OF MORE THAN 25% | LOSS OF 25 - 11% | LOSS OF 10 - 6% | GAIN/ LOSS +/- 5% | GAIN OF 6 - 10% | GAIN OF 11 - 25% | GAIN OF MORE THAN 25% | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Extra-Large PHAs (N) | 13 | 4 | 1 | 3 | 0 | 1 | 1 | 23 |
| Large PHAs (N) | 14 | 17 | 12 | 28 | 7 | 22 | 31 | 131 |
| Medium PHAs (N) | 9 | 19 | 5 | 23 | 12 | 50 | 147 | 265 |
| Small PHAs (N) | 145 | 102 | 69 | 163 | 98 | 349 | 1,908 | 2,834 |
| All PHAs (N) | 181 | 142 | 87 | 217 | 117 | 422 | 2,087 | 3,253 |

## Table 3.18
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION
### Formula B1:

Indexed Payments per Household for
All Operating and Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $4,038 | $5,127 | ($1,089) | (21 2%) |
| Northeast | 4,720 | 5,110 | (390) | (7.6%) |
| South | 3,140 | 4,415 | (1,275) | (28.9%) |
| Central | 3,243 | 6,269 | (3,026) | (48.3%) |
| West | 4,436 | 4,228 | 207 | 4.9% |
| | | | | |
| **Large PHAs** | $3,491 | $3,525 | ($34) | (1.0%) |
| Northeast | 3,814 | 3,910 | (96) | (2.5%) |
| South | 3,156 | 3,288 | (132) | (4.0%) |
| Central | 3,507 | 3,456 | 50 | 1.5% |
| West | 3,976 | 3,661 | 315 | 8.6% |
| | | | | |
| **Medium PHAs** | $3,537 | $2,784 | $753 | 27.1% |
| Northeast | 3,833 | 2,761 | 1,072 | 38.8% |
| South | 3,224 | 2,592 | 632 | 24.4% |
| Central | 3,531 | 2,972 | 559 | 18.8% |
| West | 3,884 | 3,007 | 876 | 29.1% |
| | | | | |
| **Small PHAs** | $3,382 | $2,475 | $907 | 36.6% |
| Northeast | 3,881 | 2,465 | 1,416 | 57 4% |
| South | 3,135 | 2,418 | 717 | 29.6% |
| Central | 3,437 | 2,265 | 1,172 | 51.8% |
| West | 3,760 | 3,492 | 268 | 7.7% |
| | | | | |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0 0% |
| Northeast | 4,313 | 4,220 | 93 | 2.2% |
| South | 3,156 | 3,093 | 63 | 2.0% |
| Central | 3,410 | 3,847 | (436) | (11.3%) |
| West | 3,986 | 3,551 | 435 | 12 2% |

to extra large and large PHAs, while increasing per unit payments to medium and small agencies. Specifically, per unit subsidies to extra large PHAs would decline by an average of $1,089 under capitated formula B1, while large PHAs would lose an average of $34 per unit. Medium sized and small PHAs would experience increases in per unit subsidy payments of $753 and $907, respectively Central PHAs would lose $436 per unit due in large part to reduced funding for extra large agencies (reduced $3,026 per unit, or 48 percent).

Table 3.19 presents average annual per unit subsidy levels by PHA size and metro status. As in the earlier simulations, there appears to be little independent relationship between metropolitan status and formula outcomes except in the case of large PHAs. Although most extra large PHAs are located in metropolitan areas, those in non-metro areas would experience a somewhat greater loss in per unit subsidies under capitated formula B1 than those in metro areas. Most medium and small PHAs are located in non-metropolitan communities, but those located in metropolitan areas would experience equivalent increases in federal subsidies as those in non-metropolitan locations. The only exception to this pattern is among large PHAs, where those in metro areas would lose funding under formula B1, while those in non-metro locations would gain funding

A PHA's vacancy rate again plays a major role in determining how funding levels would be affected under formula B1, although PHA size still appears to matter at every vacancy rate range. Because formula B1 adjusts capitated payments to reflect local cost conditions, a PHA's vacancy rate is not a perfect predictor of its per unit funding level (as it was under formula A1) Still, there is a strong relationship between vacancy rates and the change in per unit funding that PHAs would experience under this formula. Table 3.20 shows that extra large PHAs with vacancy rates under 5 percent gain $466 in per unit funding, while among those with higher vacancy rates the reduction in per unit funding ranges from $516 per unit (vacancy rates between 6 and 10 percent) to $3,365 per unit (vacancy rates over 30 percent). The pattern is comparable among small PHAs, where the change in per unit funding ranges from a gain of $1,131 among PHAs with vacancy rates under 5 percent to a loss of $720 per unit among PHAs with vacancy rates over 30 percent However, regardless of vacancy rate, extra large and large PHAs still fare less well under capitated formula B1 than medium and small PHAs. For example, among PHAs with vacancy rates between 11 and 15 percent, extra large agencies would experience a loss of-

## Table 3.19
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND METRO STATUS
### Formula B1:

Indexed Payments per Household for
All Operating and Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $4,038 | $5,127 | ($1,089) | (21.2%) |
| Metro | 4,092 | 5,145 | (1,053) | (20.5%) |
| Non-Metro | 3,144 | 4,830 | (1,685) | (34.9%) |
| **Large PHAs** | $3,491 | $3,525 | ($34) | (1.0%) |
| Metro | 3,425 | 3,634 | (209) | (5.7%) |
| Non-Metro | 3,678 | 3,213 | 465 | 14.5% |
| **Medium PHAs** | $3,537 | $2,784 | $753 | 27.1% |
| Metro | 3,505 | 2,654 | 851 | 32.1% |
| Non-Metro | 3,561 | 2,883 | 678 | 23.5% |
| **Small PHAs** | $3,382 | $2,475 | $907 | 36.6% |
| Metro | 3,506 | 2,476 | 1,030 | 41.6% |
| Non-Metro | 3,370 | 2,475 | 895 | 36.1% |
| **Total PHAs** | 3,647 | 3,647 | $0 | 0.0% |

## Table 3.20
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND VACANCY RATE
### Formula B1:

Indexed Payments per Household for
All Operating and Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $4,038 | $5,127 | ($1,089) | (21.2%) |
| Vacancies | | | | |
| 0-5% | 4,992 | 4,526 | 466 | 10.3% |
| 6%-10% | 3,719 | 4,235 | (516) | (12.2%) |
| 11%-15% | 3,469 | 4,437 | (967) | (21.8%) |
| 16%-20% | 3,432 | 6,694 | (3,261) | (48.7%) |
| 21%-30% | 3,111 | 5,838 | (2,727) | (46.7%) |
| 31%+ | 2,505 | 5,870 | (3,365) | (57.3%) |
| | | | | |
| **Large PHAs** | $3,491 | $3,525 | ($34) | (1.0%) |
| Vacancies | | | | |
| 0-5% | 3,678 | 3,353 | 325 | 9.7% |
| 6%-10% | 3,553 | 3,646 | (93) | (2.5%) |
| 11%-15% | 3,203 | 3,419 | (216) | (6.3%) |
| 16%-20% | 3,287 | 3,584 | (296) | (8.3%) |
| 21%-30% | 2,973 | 4,226 | (1,254) | (29.7%) |
| 31%+ | 2,389 | 3,740 | (1,351) | (36.1%) |
| | | | | |
| **Medium PHAs** | $3,537 | $2,784 | $753 | 27.1% |
| Vacancies | | | | |
| 0-5% | 3,702 | 2,715 | 986 | 36.3% |
| 6%-10% | 3,506 | 2,787 | 718 | 25.8% |
| 11%-15% | 3,241 | 2,765 | 476 | 17.2% |
| 16%-20% | 3,006 | 2,722 | 284 | 10.4% |
| 21%-30% | 2,966 | 3,539 | (573) | (16.2%) |
| 31%+ | 2,428 | 3,464 | (1,037) | (29.9%) |
| | | | | |
| **Small PHAs** | $3,382 | $2,475 | $907 | 36.6% |
| Vacancies | | | | |
| 0-5% | 3,583 | 2,452 | 1,131 | 46.1% |
| 6%-10% | 3,315 | 2,486 | 830 | 33.4% |
| 11%-15% | 3,083 | 2,571 | 512 | 19.9% |
| 16%-20% | 2,902 | 2,379 | 523 | 22.0% |
| 21%-30% | 2,640 | 2,395 | 245 | 10.2% |
| 31%+ | 2,126 | 2,846 | (720) | (25.3%) |
| | | | | |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |

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$967 per unit, while small agencies would experience a gain of $512.

*Formula B2: Capitation Excludes Funding for Backlog Modernization.* Even if backlog modernization funds were held out of a cost adjusted capitated formula and allocated on the basis of estimated backlog needs, federal resources would still shift from extra large PHAs to medium and small PHAs (see Table 3.21). This shift would be considerably more moderate than under formulas that include backlog modernization funding in the capitated payment or that ignore variations in local cost levels Nevertheless, extra large PHAs would lose a total of $354 million, or 17 percent of their current federal funding. Large PHAs would retain nearly all of their current funding, experiencing an estimated decrease of less than 4 percent. In contrast, medium sized PHAs would gain a total of $113 million (20 percent) under formula B2, and small PHAs would gain $284 million (34 percent).

After accounting for differences in size, significant differences in outcomes by geographic region remain In general, the cost adjustments have similar effects as under formula B1, working to the advantage of PHAs in the Northeast and West and to the disadvantage of those in the Central and South Among extra large PHAs, those in the Central region would face the biggest loss -- 33 percent of their current federal funding, and extra large PHAs in the South would experience declines of 27 percent Northeastern extra large PHAs would lose only 7 percent of current funding. Extra large PHAs in the West, however, would experience a small increase of 10 percent. Among large PHAs, the overall change in funding levels would remain relatively small, with losses of 10 percent or less for all but the West region, where PHAs would experience a 10 percent funding increase. Medium sized PHAs in all four regions would receive increased federal funding levels, with the greatest gains in the Northeast (30 percent) and West (27 percent) regions, and smaller gains in the South (15 percent) and Central region (14 percent). Like medium sized PHAs, small PHAs in all four regions would gain federal funding, from 17 percent (West) to 52 percent (Northeast).

Overall, Western PHAs would fare well under formula B2 compared with the other regions. While the West would gain $66 million (over 15 percent), the Northeast accrues $22 million (1 percent), the South loses $27 million (2 percent) and Central region is reduced by $61 million (6 percent). These gains and losses seem to be a function of funding reductions under this formula for extra large and large PHAs. In addition, it appears that the West is more

## Table 3.21
## TOTAL FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION
### Formula B2:

Indexed Payments per Household for
Operating and Accrual Modernization Funding

| | CAPITATED FORMULA (millions) | CURRENT FUNDING (millions) | DIFFERENCE (millions) | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $1,775 | $2,130 | ($354) | (16.6%) |
| Northeast | 1,007 | 1,085 | (78) | (7.2%) |
| South | 318 | 434 | (116) | (26.7%) |
| Central | 346 | 516 | (170) | (32.9%) |
| West | 104 | 94 | 9 | 9.6% |
| | | | | |
| **Large PHAs** | $1,079 | $1,122 | ($43) | (3.9%) |
| Northeast | 309 | 319 | (10) | (3.0%) |
| South | 406 | 450 | (44) | (9.8%) |
| Central | 210 | 213 | (3) | (1.5%) |
| West | 154 | 140 | 14 | 9.9% |
| | | | | |
| **Medium PHAs** | $675 | $562 | $113 | 20.2% |
| Northeast | 163 | 125 | 38 | 30.3% |
| South | 232 | 202 | 30 | 14.9% |
| Central | 156 | 137 | 19 | 13.8% |
| West | 124 | 98 | 27 | 27.3% |
| | | | | |
| **Small PHAs** | $1,134 | $850 | $284 | 33.5% |
| Northeast | 209 | 137 | 72 | 52.2% |
| South | 325 | 421 | 103 | 24.5% |
| Central | 286 | 193 | 92 | 47.9% |
| West | 115 | 98 | 17 | 17.1% |
| | | | | |
| **Total PHAs** | $4,663 | $4,663 | $0 | 0.0% |
| Northeast | 1,688 | 1,666 | 22 | 1.3% |
| South | 1,481 | 1,508 | (27) | (1.8%) |
| Central | 998 | 1,059 | (61) | (5.8%) |
| West | 497 | 430 | 66 | 15.4% |

affected, because its current backlog modernization funding (based on HUD estimates of need) is relatively high. Potential causes of this circumstance were discussed on page 31

Table 3 22 presents the distribution of PHAs by the size and direction of change in federal funding that they would experience under capitated formula B2. The results are similar to those obtained under previous formulas, although the differences among categories of PHAs are buffered by the fact that backlog modernization funds are allocated on the basis of need and that capitated payments are adjusted for local cost variation A total of 11 of the 23 extra large PHAs would lose by more than 25 percent, while -- at the opposite extreme -- more than half of the small PHAs (63 percent) gain by more than 25 percent Altogether, 412 PHAs would experience reductions of funding of more than 6 percent under this capitated formula, while 2,600 PHAs would experience funding increases greater than 6 percent

Changes in federal payments per unit are smaller under formula B2 than under previous formulas. Table 3 23 presents average annual per unit subsidies for public housing operations and modernization under capitated formula B2, and compares them to current per unit subsidy payments. Per unit subsidies to extra large PHAs would decline by an average of $853 under capitated formula B2, and large PHAs would lose an average of $136 per unit. Medium sized and small PHAs would experience increases in per unit subsidy payments of $562 and $828, respectively. Under formula B2, extra large PHAs receive substantially higher per unit subsidy payments than under other formulas, because their backlog modernization costs tend to be substantially above the average for PHAs in other size categories, and because many are located in high cost areas Central PHAs lose the largest share of their funding ($223 per unit) under this formula while the South loses $55, the Northeast gains $55 and the West gains $547.

Tables 3.24 and 3.25 present average per unit subsidy levels by metro status and vacancy rate for PHAs in different size categories. Among small and medium PHAs, metropolitan status again appears to have no independent impact on formula outcomes Among extra larger PHAs, however, the few located in non-metro jurisdictions lose about twice as much funding per unit as those in metro areas. In contrast, large PHAs in non-metro areas gain funding, while their metro counterparts lose under this formula

Vacancy rates, on the other hand, continue to act as primary determinants of federal funding allocations. For all size categories, PHAs with vacancy rates of 5 percent or below

Table 3.22
DISTRIBUTION OF PHAs BY PERCENT CHANGE IN FEDERAL PAYMENTS
BY PHA SIZE
Formula B2:

Constant Payments per Household for
Operating and Accrual Modernization Funding

| PHA SIZE | LOSS OF MORE THAN 25% | LOSS OF 25 - 11% | LOSS OF 10 - 6% | GAIN/ LOSS +/- 5% | GAIN OF 6 - 10% | GAIN OF 11 - 25% | GAIN OF MORE THAN 25% | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Extra-Large PHAs (N) | 11 | 7 | 0 | 2 | 1 | 2 | 0 | 23 |
| Large PHAs (N) | 13 | 35 | 11 | 20 | 8 | 18 | 26 | 131 |
| Medium PHAs (N) | 9 | 21 | 8 | 32 | 14 | 66 | 115 | 265 |
| Small PHAs (N) | 94 | 126 | 77 | 187 | 112 | 450 | 1,788 | 2,834 |
| All PHAs (N) | 127 | 189 | 96 | 241 | 135 | 536 | 1,929 | 3,253 |

**Table 3.23**
**AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES**
**BY PHA SIZE AND REGION**
**Formula B2:**

Indexed Payments per Household for
Operating and Accrual Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $4,274 | $5,127 | ($853) | (16.6%) |
| Northeast | 4,742 | 5,110 | (368) | (7.2%) |
| South | 3,238 | 4,415 | (1,177) | (26.7%) |
| Central | 4,206 | 6,269 | (2,063) | (32.9%) |
| West | 4,634 | 4,228 | 405 | 9.6% |
| **Large PHAs** | $3,389 | $3,525 | ($136) | (3.9%) |
| Northeast | 3,791 | 3,910 | (119) | (3.0%) |
| South | 2,965 | 3,288 | (323) | (9.8%) |
| Central | 3,405 | 3,456 | (52) | (1.5%) |
| West | 4,023 | 3,661 | 362 | 9.9% |
| **Medium PHAs** | $3,346 | $2,784 | $562 | 20.2% |
| Northeast | 3,598 | 2,761 | 836 | 30.3% |
| South | 2,977 | 2,592 | 385 | 14.9% |
| Central | 3,384 | 2,972 | 412 | 13.8% |
| West | 3,828 | 3,007 | 820 | 27.3% |
| **Small PHAs** | $3,304 | $2,475 | $828 | 33.5% |
| Northeast | 3,752 | 2,465 | 1,288 | 52.2% |
| South | 3,012 | 2,418 | 593 | 24.5% |
| Central | 3,349 | 2,265 | 1,084 | 47.9% |
| West | 4,088 | 3,492 | 596 | 17.1% |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |
| Northeast | 4,275 | 4,220 | 55 | 1.3% |
| South | 3,039 | 3,093 | (55) | (1.8%) |
| Central | 3,623 | 3,847 | (223) | (5.8%) |
| West | 4,098 | 3,551 | 547 | 15.4% |

## Table 3.24
### AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
### BY PHA SIZE AND METRO STATUS
### Formula B2:

Indexed Payments per Household for
Operating and Accrual Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $4,274 | $5,127 | ($853) | (16.6%) |
| Metro | 4,326 | 5,145 | (819) | (15.9%) |
| Non-Metro | 3,410 | 4,830 | (1,420) | (29.4%) |
| | | | | |
| **Large PHAs** | $3,389 | $3,525 | ($136) | (3.9%) |
| Metro | 3,313 | 3,634 | (321) | (8.8%) |
| Non-Metro | 3,607 | 3,213 | 394 | 12.3% |
| | | | | |
| **Medium PHAs** | $3,346 | $2,784 | $562 | 20.2% |
| Metro | 3,214 | 2,654 | 560 | 21.1% |
| Non-Metro | 3,447 | 2,883 | 564 | 19.6% |
| | | | | |
| **Small PHAs** | $3,304 | $2,475 | $828 | 33.5% |
| Metro | 3,361 | 2,476 | 885 | 35.8% |
| Non-Metro | 3,298 | 2,475 | 823 | 33.2% |
| | | | | |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |

## Table 3.25
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND VACANCY RATE
### Formula B2·

Indexed Payments per Household for
Operating and Accrual Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $4,274 | $5,127 | ($853) | (16.6%) |
| Vacancies | | | | |
| 0-5% | 4,775 | 4,526 | 249 | 5.5% |
| 6%-10% | 3,745 | 4,235 | (490) | (11.6%) |
| 11%-15% | 3,528 | 4,437 | (909) | (20.5%) |
| 16%-20% | 4,374 | 6,694 | (2,320) | (34.7%) |
| 21%-30% | 3,776 | 5,838 | (2,063) | (35.3%) |
| 31%+ | 3,557 | 5,870 | (2,313) | (39.4%) |
| | | | | |
| **Large PHAs** | $3,389 | $3,525 | ($136) | (3.9%) |
| Vacancies | | | | |
| 0-5% | 3,529 | 3,353 | 176 | 5.2% |
| 6%-10% | 3,459 | 3,646 | (187) | (5.1%) |
| 11%-15% | 3,152 | 3,419 | (268) | (7.8%) |
| 16%-20% | 3,145 | 3,584 | (438) | (12.2%) |
| 21%-30% | 3,054 | 4,226 | (1,172) | (27.7%) |
| 31%+ | 2,579 | 3,740 | (1,161) | (31.0%) |
| | | | | |
| **Medium PHAs** | $3,346 | $2,784 | $562 | 20.2% |
| Vacancies | | | | |
| 0-5% | 3,491 | 2,715 | 776 | 28.6% |
| 6%-10% | 3,305 | 2,787 | 518 | 18.6% |
| 11%-15% | 3,032 | 2,765 | 267 | 9.7% |
| 16%-20% | 2,874 | 2,722 | 152 | 5.6% |
| 21%-30% | 2,963 | 3,539 | (576) | (16.3%) |
| 31%+ | 2,663 | 3,464 | (801) | (23.1%) |
| | | | | |
| **Small PHAs** | $3,304 | $2,475 | $828 | 33.5% |
| Vacancies | | | | |
| 0-5% | 3,474 | 2,452 | 1,022 | 41.7% |
| 6%-10% | 3,241 | 2,486 | 756 | 30.4% |
| 11%-15% | 3,095 | 2,571 | 524 | 20.4% |
| 16%-20% | 2,818 | 2,379 | 438 | 18.4% |
| 21%-30% | 2,585 | 2,395 | 190 | 7.9% |
| 31%+ | 2,356 | 2,846 | (490) | (17.2%) |
| | | | | |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |

would receive increased federal funding, ranging from $176 per unit for large PHAs to $1,022 per unit for small PHAs. Extra large and large PHAs with higher vacancy rates (over 5 percent) would experience declines in per unit funding levels, with the largest declines experienced by PHAs with the highest vacancy rates. Medium sized and small PHAs would also experience declines in per unit funding if their vacancy rates were high (above 20 percent for medium sized PHAs or above 30 percent for small PHAs). It is important to note, that regardless of vacancy rate, extra large and large PHAs still fare less well under capitated formula B2 than medium and small PHAs.

*Formula B3: Capitation Excludes All Modernization Funding.* If only operating subsidies were allocated on a capitated basis, with adjustments for local cost levels, and with modernization funding allocated on the basis of estimated needs, the redistribution of federal resources would be more moderate than under any of the previous formulas, although funding would still shift away from extra large and large PHAs to medium and small PHAs. Table 3.26 compares the allocation of federal funding under capitated formula B3 to the current allocation of funding by PHA size and region. Even though the allocation of all modernization funding is unaffected by this formula and the capitated payments for operating subsidies are indexed, extra large PHAs would lose a total of $328 million, or 15 percent of their current federal funding. Large PHAs would lose $40 million, 4 percent of their current funding. In contrast, medium sized PHAs would gain by $111 million (20 percent), and small PHAs would gain $257 million (30 percent).

As in previous simulations, outcomes differ by geographic region within size categories, with PHAs in the West faring better than their counterparts in the extra large, large, and medium categories, while faring worse than their counterparts in the small category. Among extra large PHAs, those in the Central region would continue to experience the greatest decline in federal funding -- 30 percent of their current funding. Among large PHAs, agencies in the Northeast and South both lose about 5 and 8 percent of their current funding, respectively, under formula B3. PHAs in the Northeast, South and Central regions lose from less than 1 percent to 6 percent funding under formula B2, while PHAs in the West realize a moderate gain (16 percent). Funding reductions for the Northeast, South and Central regions may be explained by losses for extra large (7 to 30 percent) and large PHAs (2 to 8 percent). Gains, however, for Western PHAs seem due to greater funding for medium (29 percent) and small agencies (19 percent)

## Table 3.26
## TOTAL FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION
### Formula B3:

Indexed Payments per Household for
Operating Funding

| | CAPITATED FORMULA (millions) | CURRENT FUNDING (millions) | DIFFERENCE (millions) | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $1,801 | $2,130 | ($328) | (15.4%) |
| Northeast | 1,008 | 1,085 | (77) | (7.1%) |
| South | 331 | 434 | (103) | (23.7%) |
| Central | 360 | 516 | (156) | (30.2%) |
| West | 101 | 94 | 7 | 7.3% |
| **Large PHAs** | $1,082 | $1,122 | ($40) | (3.5%) |
| Northeast | 303 | 319 | (15) | (4.9%) |
| South | 416 | 450 | (34) | (7.6%) |
| Central | 210 | 213 | (3) | (1.5%) |
| West | 153 | 140 | 13 | 9.4% |
| **Medium PHAs** | $673 | $562 | $111 | 19.8% |
| Northeast | 155 | 125 | 31 | 24.5% |
| South | 235 | 202 | 33 | 16.4% |
| Central | 156 | 137 | 19 | 13.9% |
| West | 126 | 98 | 28 | 28.9% |
| **Small PHAs** | $1,107 | $850 | $257 | 30.3% |
| Northeast | 196 | 137 | 58 | 42.6% |
| South | 520 | 421 | 99 | 23.5% |
| Central | 275 | 193 | 82 | 42.3% |
| West | 116 | 98 | 18 | 18.7% |
| **Total PHAs** | $4,663 | $4,663 | $0 | 0.0% |
| Northeast | 1,663 | 1,666 | (3) | (0.2%) |
| South | 1,503 | 1,508 | (5) | (0.3%) |
| Central | 1,001 | 1,059 | (58) | (5.5%) |
| West | 497 | 430 | 67 | 15.5% |

Table 3.27 reports the distribution of PHAs by the size and direction of change in federal funding simulated for capitated formula B3. Again, the pattern of losers and gainers is familiar. Altogether, 356 PHAs would lose by more than 5 percentage points, while 2,605 would gain by more than 5 percent As before, extra large PHAs are the most likely to lose funding, with 9 of the 23 extra large PHAs losing by more than 25 percent, 9 losing between 11 and 25 percent, and 1 losing between 6 and 10 percent. And while there are losers among the small PHAs, over half (61 percent) gain by more than 25 percent.

Changes in per unit funding levels under formula B3 follow essentially the same pattern as under B1 and B2, but are more moderate. Because only operating subsidies are reallocated on a capitated basis under this formula variant, PHAs retain all of their current modernization funding. As shown in Table 3.28, annual per unit subsidies to extra large PHAs would decline by an average of $791 under capitated formula B3, while large PHAs would lose an average of $125 per unit. Medium sized and small PHAs would experience increases in per unit subsidy payments of $550 and $750, respectively Overall, Northeast, South and Central regions lose from $8 to $212 per unit The West regions gains $549 per unit

Tables 3.29 and 3.30 report average per unit subsidy levels by metro status and vacancy rate for PHAs in different size categories. As for other formulas, metropolitan status appears to have relatively little impact on formula outcomes for medium and small PHAs Among extra-large PHAs, however, non-metro agencies lose about twice as much in per unit funding as metro agencies The pattern among large PHAs is reversed, with non-metro agencies gaining while those in metro areas lose funding.

Vacancy rates play a key role in determining funding outcomes. Even though all modernization funding is held constant under formula B3, PHAs with the highest vacancy rates consistently lose funding under this system, while PHAs with low vacancy rates either gain funding or lose less funding than other PHAs of their size Among extra large PHAs, the change in annual per unit funding ranges from an average gain of $199 per unit among those with vacancy rates of 5 percent or less to a loss of $2,155 among those with vacancy rates from 16 to 20 percent Correspondingly, among small PHAs, the change in per unit funding ranges from a gain of $877 among agencies with vacancy rates of 5 percent and below to a loss of $195 per

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## Table 3.27
## DISTRIBUTION OF PHAs BY PERCENT CHANGE IN FEDERAL PAYMENTS
## BY PHA SIZE
### Formula B3:

Constant Payments per Household for
Operating Funding

| PHA SIZE | LOSS OF MORE THAN 25% | LOSS OF 25 - 11% | LOSS OF 10 - 6% | GAIN/ LOSS +/- 5% | GAIN OF 6 - 10% | GAIN OF 11 - 25% | GAIN OF MORE THAN 25% | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Extra-Large PHAs (N) | 9 | 9 | 1 | 2 | 0 | 2 | 0 | 23 |
| Large PHAs (N) | 10 | 32 | 18 | 20 | 10 | 17 | 24 | 131 |
| Medium PHAs (N) | 4 | 21 | 8 | 33 | 19 | 68 | 112 | 265 |
| Small PHAs (N) | 38 | 122 | 84 | 237 | 140 | 482 | 1,731 | 2,834 |
| All PHAs (N) | 61 | 184 | 111 | 292 | 169 | 569 | 1,867 | 3,253 |

Table 3.28
# AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION
### Formula B3:

Indexed Payments per Household for
Operating Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $4,336 | $5,127 | ($791) | (15.4%) |
| Northeast | 4,748 | 5,110 | (362) | (7.1%) |
| South | 3,369 | 4,415 | (1,046) | (23.7%) |
| Central | 4,376 | 6,269 | (1,893) | (30.2%) |
| West | 4,537 | 4,228 | 309 | 7.3% |
| | | | | |
| **Large PHAs** | $3,400 | $3,525 | ($125) | (3.5%) |
| Northeast | 3,720 | 3,910 | (190) | (4.9%) |
| South | 3,038 | 3,288 | (251) | (7.6%) |
| Central | 3,405 | 3,456 | (51) | (1.5%) |
| West | 4,003 | 3,661 | 343 | 9.4% |
| | | | | |
| **Medium PHAs** | $3,334 | $2,784 | $550 | 19.8% |
| Northeast | 3,437 | 2,761 | 676 | 24.5% |
| South | 3,017 | 2,592 | 425 | 16.4% |
| Central | 3,386 | 2,972 | 413 | 13.9% |
| West | 3,877 | 3,007 | 870 | 28.9% |
| | | | | |
| **Small PHAs** | $3,225 | $2,475 | $750 | 30.3% |
| Northeast | 3,515 | 2,465 | 1,050 | 42.6% |
| South | 2,986 | 2,418 | 568 | 23.5% |
| Central | 3,222 | 2,265 | 957 | 42.3% |
| West | 4,143 | 3,492 | 652 | 18.7% |
| | | | | |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |
| Northeast | 4,212 | 4,220 | (8) | (0.2%) |
| South | 3,083 | 3,092 | (10) | (0.3%) |
| Central | 3,635 | 3,847 | (212) | (5.5%) |
| West | 4,101 | 3,551 | 549 | 15.5% |

## Table 3.29
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND METRO STATUS
### Formula B3:

Indexed Payments per Household for
Operating Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $4,336 | $5,127 | ($791) | (15.4%) |
| Metro | 4,384 | 5,145 | (761) | (14.8%) |
| Non-Metro | 3,542 | 4,830 | (1,288) | (26.7%) |
| **Large PHAs** | $3,400 | $3,525 | ($125) | (3.5%) |
| Metro | 3,326 | 3,634 | (308) | (8.5%) |
| Non-Metro | 3,611 | 3,213 | 398 | 12.4% |
| **Medium PHAs** | $3,334 | $2,784 | $550 | 19.8% |
| Metro | 3,163 | 2,654 | 509 | 19.2% |
| Non-Metro | 3,465 | 2,883 | 582 | 20.2% |
| **Small PHAs** | $3,225 | $2,475 | $750 | 30.3% |
| Metro | 3,215 | 2,476 | 740 | 29.9% |
| Non-Metro | 3,226 | 2,475 | 751 | 30.3% |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |

## Table 3.30
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND VACANCY RATE
### Formula B3:

Indexed Payments per Household for
Operating Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $4,336 | $5,127 | ($791) | (15.4%) |
| Vacancies | | | | |
| 0-5% | 4,725 | 4,526 | 199 | 4.4% |
| 6%-10% | 3,748 | 4,235 | (487) | (11.5%) |
| 11%-15% | 3,580 | 4,437 | (857) | (19.3%) |
| 16%-20% | 4,539 | 6,694 | (2,155) | (32.2%) |
| 21%-30% | 3,984 | 5,838 | (1,855) | (31.8%) |
| 31%+ | 3,918 | 5,870 | (1,952) | (33.3%) |
| | | | | |
| **Large PHAs** | $3,400 | $3,525 | ($125) | (3.5%) |
| Vacancies | | | | |
| 0-5% | 3,490 | 3,353 | 197 | 4.1% |
| 6%-10% | 3,451 | 2,646 | (195) | (5.3%) |
| 11%-15% | 3,279 | 3,419 | (140) | (4.1%) |
| 16%-20% | 3,185 | 3,584 | (398) | (11.1%) |
| 21%-30% | 3,197 | 4,226 | (1,029) | (24.4%) |
| 31%+ | 2,850 | 3,740 | (890) | (23.8%) |
| | | | | |
| **Medium PHAs** | $3,334 | $2,784 | $550 | 19.8% |
| Vacancies | | | | |
| 0-5% | 3,451 | 2,715 | 736 | 27.1% |
| 6%-10% | 3,281 | 2,787 | 494 | 17.7% |
| 11%-15% | 3,068 | 2,765 | 303 | 11.0% |
| 16%-20% | 2,970 | 2,722 | 248 | 9.1% |
| 21%-30% | 3,121 | 3,539 | (418) | (11.8%) |
| 31%+ | 2,959 | 3,464 | (505) | (14.6%) |
| | | | | |
| **Small PHAs** | $3,225 | $2,475 | $750 | 30.3% |
| Vacancies | | | | |
| 0-5% | 3,329 | 2,452 | 877 | 35.8% |
| 6%-10% | 3,188 | 2,486 | 702 | 28.2% |
| 11%-15% | 3,164 | 2,571 | 593 | 23.0% |
| 16%-20% | 2,822 | 2,379 | 443 | 18.6% |
| 21%-30% | 2,668 | 2,395 | 273 | 11.4% |
| 31%+ | 2,651 | 2,846 | (195) | (6.9%) |
| | | | | |
| **Total PHAs** | $3,647 | $3,647 | $0 | 0.0% |

unit among those with vacancy rates over 30 percent. Nevertheless, at every vacancy rate range, extra large and large PHAs continue to be more likely to lose funding under capitated formula B3 than medium and small PHAs. In the 11 to 15 percent vacancy range, for example, extra large PHAs would lose an average of $857 per unit in federal funding, while small PHAs would gain an average of $593.

### Formula C: Fair Market Rent Payments for Public Housing Residents

The third set of formulas (C1, C2, and C3) considered here simulate how *total* funding levels might be affected by a capitated system in which the per household payments are based on independent estimates of the costs of delivering housing services. Unlike formulas A and B, these formulas are not constrained by the existing level of national funding for public housing, but rather provide a rough estimate of the financial implications of a funding system that reimbursed a PHA at market rates for delivering housing services to each resident household. Again, three variants of the basic formula are considered, one in which the capitated payment replaces all operating and modernization costs, a second in which backlog modernization funding continues to be provided on the existing, CGP formula basis, and a third in which all modernization funding is allocated by the CGP formula.

*Formula C1: Fully Capitated FMR-Based Payments.* A capitated system that replaced all current PHA operating and modernization subsidies with revenues pegged to local Fair Market Rents would substantially reduce total federal contributions to the public housing program. As illustrated by Table 3.31, total federal spending would decline by 31 percent (about $1.4 billion), with PHAs in every size category dramatically affected Extra large PHAs would lose a total of $777 million, or 37 percent of their current federal funding. Large PHAs would lose a total of $328 million (29 percent), and small PHAs would lose a total of $301 million (35 percent) As a group, medium sized PHAs would face a somewhat less precipitous decline, losing a total of $25 million (4 percent). Regardless of size, PHAs would be worse off under this formula than under any of the other capitated formula alternatives considered earlier.

Within each size category, PHAs in different geographic regions would face somewhat different outcomes under capitated formula C1. In all but the small size category, PHAs in the West would gain funding under an FMR-based capitated system In contrast, Central PHAs

## Table 3.31
## TOTAL FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION
### Formula C1:

FMR-Based Payments for All
Operating and Modernization Funding

| | CAPITATED FORMULA (millions) | CURRENT FUNDING (millions) | DIFFERENCE (millions) | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $1,353 | $2,130 | ($777) | (36.5%) |
| Northeast | 669 | 1,085 | (416) | (38.3%) |
| South | 314 | 434 | (120) | (27.7%) |
| Central | 243 | 516 | (272) | (52.8%) |
| West | 126 | 94 | 31 | 33.3% |
| | | | | |
| **Large PHAs** | $794 | $1,122 | ($328) | (29.3%) |
| Northeast | 165 | 319 | (154) | (48.3%) |
| South | 348 | 450 | (103) | (22.8%) |
| Central | 115 | 213 | (98) | (46.0%) |
| West | 166 | 140 | 26 | 18.7% |
| | | | | |
| **Medium PHas** | $537 | $562 | ($25) | (4.4%) |
| Northeast | 98 | 125 | (27) | (21.6%) |
| South | 188 | 202 | (14) | (6.9%) |
| Central | 104 | 137 | (33) | (24.2%) |
| West | 147 | 98 | 49 | 50.6% |
| | | | | |
| **Small PHAs** | $549 | $850 | ($301) | (35.4%) |
| Northeast | 94 | 137 | (43) | (31.7%) |
| South | 284 | 421 | (137) | (32.5%) |
| Central | 101 | 193 | (92) | (47.4%) |
| West | 69 | 98 | (29) | (29.2%) |
| | | | | |
| **Total PHAs** | $3,232 | $4,663 | ($1,431) | (30.7%) |
| Northeast | 1,025 | 1,666 | (640) | (38.4%) |
| South | 1,134 | 1,508 | (374) | (24.8%) |
| Central | 564 | 1,059 | (495) | (46.8%) |
| West | 509 | 430 | 78 | 18.2% |

would experience the greatest losses (47 percent overall), ranging from 24 percent to 53 percent of their current funding levels  These results suggest that FMRs relative to public housing rents are generally higher in the West than in other regions, particularly the Central region

The overall drop in federal funding that would occur under formula C1 is reflected further in Table 3.32, which reports the number of PHAs in each size category that would experience either gains or losses of various magnitudes.  Altogether, 2,449 PHAs would face losses greater than 5 percent under this formula, while only 623 would experience funding gains.  For the first time, the majority of small PHAs would lose funding at a substantial rate  In fact, in every size category, the majority of PHAs would stand to lose under this capitated scheme.

What would the FMR-based formula yield in terms of annual subsidies per unit?  Table 3 33 presents average per unit subsidy levels under capitated formula C1 compared to current per unit funding levels by PHA size and region.  The overall average subsidy per unit drops by $1,120 -- from a current level of $3,647 to an FMR-based level of $2,527.  Average payment levels drop by $1,871 among extra large PHAs, $1,032 among large PHAs, $123 among medium sized PHAs, and $876 among small PHAs.  Nevertheless, under the FMR-based formula, extra large PHAs would receive substantially higher per unit subsidy levels than PHAs in other size categories, and small PHAs would receive the lowest per unit subsidies.  Also, PHAs in the West enjoy a moderate gain under this formula.  The Northeast, South, and Central regions would lose from $767 to $1,799 (or 25 to 47 percent per unit), while the West would gain $647 (18 percent).

Table 3.34 presents average per unit subsidy levels by PHA size and metro status. Among extra large and small PHAs, those in non-metro areas experience greater funding losses than those in metro areas.  For example, extra large PHAs in metropolitan areas experience an average decline in federal funding of $1,825 per unit, while those in non-metropolitan communities lose $2,628 per unit.   Similarly, small PHAs in metro areas lose an average of $451 per unit, compared to $917 for small, non-metropolitan PHAs.  The reverse is true among large PHAs, where agencies in metro areas lose an average of $1,289 per unit compared to $299 for large non-metropolitan agencies.  Among medium sized PHAs, however, metropolitan status appears to make little difference.

Under the FMR-based capitated funding scheme represented by formula C1, a PHA's vacancy rate continues to play a major role in determining funding levels.  The relationship

**Table 3.32**
**DISTRIBUTION OF PHAs BY PERCENT CHANGE IN FEDERAL PAYMENTS**
**BY PHA SIZE**
**Formula C1:**

Constant Payments per Household for
All Operating and Modernization Funding

| PHA SIZE | LOSS OF MORE THAN 25% | LOSS OF 25 - 11% | LOSS OF 10 - 6% | GAIN/ LOSS +/- 5% | GAIN OF 6 - 10% | GAIN OF 11 - 25% | GAIN OF MORE THAN 25% | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Extra-Large PHAs (N) | 13 | 5 | 1 | 1 | 1 | 1 | 1 | 23 |
| Large PHAs (N) | 63 | 22 | 5 | 12 | 3 | 14 | 12 | 131 |
| Medium PHAs (N) | 111 | 32 | 7 | 18 | 9 | 11 | 77 | 265 |
| Small PHAs (N) | 1,877 | 245 | 68 | 150 | 59 | 134 | 301 | 2,834 |
| All PHAs (N) | 2,064 | 304 | 81 | 181 | 72 | 160 | 391 | 3,253 |

## Table 3.33
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION
## Formula C1:

FMR-Based Payments for All
Operating and Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $3,256 | $5,127 | ($1,871) | (36.5%) |
| Northeast | 3,150 | 5,110 | (1,959) | (38.3%) |
| South | 3,192 | 4,415 | (1,223) | (27.7%) . |
| Central | 2,959 | 6,269 | (3,310) | (52.8%) |
| West | 5,637 | 4,228 | 1,408 | 33.3% |
| | | | | |
| **Large PHAs** | $2,493 | $3,525 | ($1,032) | (29.3%) |
| Northeast | 2,021 | 3,910 | .(1,889) | (48.3%) |
| South | 2,539 | 3,288 | (749) | (22.8%) |
| Central | 1,865 | 3,456 | (1,591) | (46.0%) |
| West | 4,345 | 3,661 | 685 | 18.7% . |
| | | | | |
| **Medium PHAs** | $2,661 | $2,784 | ($123) | (4.4%) |
| Northeast | 2,164 | 2,761 | (598) | (21.6%) |
| South | 2,413 | 2,592 | (179) | (6.9%) |
| Central | 2,252 | 2,972 . | (720) | (24.2%) |
| West | 4,528 | 3,007 | 1,521 | 50.6% |
| | | | | |
| **Small PHAs** | $1,599 | $2,475 | ($876) | (35.4%) |
| Northeast | 1,684 | 2,465 | (781) | (31.7%) |
| South | 1,632 | 2,418 | (786) | (32.5%) |
| Central | 1,190 | 2,265 | (1,074) | (47.4%) |
| West | 2,471 · | 3,492 | (1,021) | (29.2%) |
| | | | | |
| **Total PHAs** | $2,527 | $3,647 | ($1,120) | (30.7%) |
| Northeast | 2,597 | 4,220 | (1,622) | (38.4%) |
| South | 2,327 | 3,092 | (767) | (24.8%) |
| Central | 2,048 | 3,847 | (1,799) | (46.8%) |
| West | 4,199 | 3,551 | 647 | 18.2% |

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**Table 3.34**
**AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES**
**BY PHA SIZE AND METRO STATUS**
**Formula C1:**

FMR-Based Payments for All
Operating and Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $3,256 | $5,127 | ($1,871) | (36.5%) |
| Metro | 3,319 | 5,145 | (1,825) | (35.5%) |
| Non-Metro | 2,202 | 4,830 | (2,628) | (54.4%) |
| **Large PHAs** | $2,493 | $3,525 | ($1,032) | (29.3%) |
| Metro | 2,345 | 3,634 | (1,289) | (35.5%) |
| Non-Metro | 2,914 | 3,213 | (299) | (9.3%) |
| **Medium PHAs** | $2,661 | $2,784 | ($123) | (4.4%) |
| Metro | 2,474 | 2,654 | (180) | (6.8%) |
| Non-Metro | 2,804 | 2,883 | (79) | (2.8%) |
| **Small PHAs** | $1,599 | $2,475 | ($876) | (35.4%) |
| Metro | 2,025 | 2,476 | (451) | (18.2%) |
| Non-Metro | 1,558 | 2,475 | (917) | (37.1%) |
| **Total PHAs** | $2,527 | $3,647 | ($1,120) | (30.7%) |

between vacancy rates and funding levels is somewhat less direct than under earlier formulas, because FMR-based payments vary with local FMRs and with a PHA's unit mix, as well as with its vacancy rate. Moreover, unlike formulas simulated earlier, except for medium PHAs, formula C1 does not increase per unit subsidy levels, even for PHAs with the lowest vacancy rates (see Table 3.35). Among extra large PHAs, the reduction in per unit funding ranges from $394 per unit among PHAs with vacancy rates 6 - 10 percent to $4,606 among PHAs with vacancy rates over 30 percent. Correspondingly, among small PHAs, the decline in per unit funding ranges from $642 among PHAs with vacancy rates under 6 percent to $2,877 among PHAs with vacancy rates over 30 percent. As in previous simulations, extra large PHAs appear to lose the most under a capitated system, regardless of vacancy rate.

*Formula C2: FMR-Based Payments Plus Funding for Backlog Modernization.* If an FMR-based formula system were supplemented by backlog modernization funding that was allocated on the basis of estimated backlog needs, federal payments to PHAs would decline by less than 5 percent relative to current funding ($229 million). Table 3.36 compares the allocation of federal funding under capitated formula C2 to the current allocation of funding by PHA size and region. Medium sized PHAs as a group would receive increased funding, while PHAs in the other three size categories would lose between 3 percent and 12 percent of their federal funding. Extra large PHAs would lose a total of $247 million, or 12 percent of their current federal funding. Large PHAs would lose $74 million (7 percent), and small PHAs would lose $28 million (3 percent).

After accounting for differences in size, outcomes for PHAs in different geographic regions vary substantially under capitated formula C2, with PHAs in the West faring best and PHAs in the Central region faring worst. Among extra large PHAs, those in the Central region would experience a 24 percent decline in federal funding, while extra large PHAs in the West would actually gain by 65 percent. Similarly, large and medium sized PHAs in the West would experience funding increases of roughly 48 and 82 percent, respectively while small PHAs in the West would gain by about 8 percent. In contrast, for PHAs in the Central region, losses in federal funding levels range from 12 percent among small sized PHAs to 24 percent among extra large PHAs. Overall, the Northeast, South and Central regions lose from $34 to $216 million (2 to 18 percent) in funding. PHAs in the West, however, gain $217 million (50 percent) under

Table 3 35

## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND VACANCY RATE
### Formula C1:

FMR-Based Payments for All
Operating and Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $3,256 | $5,127 | ($1,871) | (36.5%) |
| Vacancies | | | | |
| 0-5% | 3,235 | 4,526 | (1,292) | (28.5%) |
| 6%-10% | 3,841 | 4,235 | (394) | (9.3%) |
| 11%-15% | 3,254 | 4,437 | (1,182) | (26.8%) |
| 16%-20% | 4,090 | 6,694 | (2,604) | (38.9%) |
| 21%-30% | 2,558 | 5,838 | (3,280) | (56.2%) |
| 31%+ | 1,264 | 5,870 | (4,606) | (78.5%) |
| | | | | |
| **Large PHAs** | $2,493 | $3,525 | ($1,032) | (29.3%) |
| Vacancies | | | | |
| 0-5% | 3,029 | 3,353 | (324) | (9.7%) |
| 6%-10% | 2,391 | 3,646 | (1,255) | (34.4%) |
| 11%-15% | 2,863 | 3,419 | (557) | (16.3%) |
| 16%-20% | 1,153 | 3,584 | (2,430) | (67.8%) |
| 21%-30% | 1,049 | 4,226 | (3,178) | (75.2%) |
| 31%+ | 734 | 3,740 | (3,006) | (80.4%) |
| | | | | |
| **Medium PHAs** | $2,661 | $2,784 | ($123) | (4.4%) |
| Vacancies | | | | |
| 0-5% | 3,190 | 2,715 | 475 | 17.5% |
| 6%-10% | 2,335 | 2,787 | (453) | (16.2%) |
| 11%-15% | 2,033 | 2,765 | (732) | (26.5%) |
| 16%-20% | 1,554 | 2,722 | (1,168) | (42.9%) |
| 21%-30% | 1,094 | 3,539 | (2,443) | (69.0%) |
| 31%+ | (84) | 3,464 | (3,549) | (102.4%) |
| | | | | |
| **Small PHAs** | $1,599 | $2,475 | ($876) | (35.4%) |
| Vacancies | | | | |
| 0-5% | 1,810 | 2,452 | (642) | (26.2%) |
| 6%-10% | 1,595 | 2,486 | (890) | (35.8%) |
| 11%-15% | 1,242 | 2,571 | (1,329) | (51.7%) |
| 16%-20% | 970 | 2,379 | (1,409) | (59.2%) |
| 21%-30% | 728 | 2,395 | (1,667) | (69.6%) |
| 31%+ | (31) | 2,846 | (2,877) | (101.1%) |
| | | | | |
| **Total PHAs** | $2,527 | $3,647 | ($1,119) | (30.7%) |

Table 3.36
## TOTAL FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION
### Formula C2:

FMR-Based Payments for
Operating and Accrual Modernization Funding

| | CAPITATED FORMULA (millions) | CURRENT FUNDING (millions) | DIFFERENCE (millions) | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $1,883 | $2,130 | ($247) | (11.6%) |
| Northeast | 932 | 1,085 | (153) | (14.1%) |
| South | 403 | 434 | (31) | (7.1%) |
| Central | 391 | 516 | (124) | (24.1%) |
| West | 156 | 94 | 61 | 65.0% |
| **Large PHAs** | $1,048 | $1,122 | ($74) | (6.6%) |
| Northeast | 243 | 319 | (76) | (23.8%) |
| South | 433 | 450 | (17) | (3.8%) |
| Central | 165 | 213 | (49) | (22.8%) |
| West | 208 | 140 | 67 | 48.0% |
| **Medium PHAs** | $682 | $562 | $121 | 21.5% |
| Northeast | 132 | 125 | 7 | 5.6% |
| South | 234 | 202 | 32 | 15.6% |
| Central | 139 | 137 | 2 | 1.4% |
| West | 178 | 98 | 80 | 82.0% |
| **Small PHAs** | $821 | $850 | ($28) | (3.3%) |
| Northeast | 142 | 137 | 5 | 3.7% |
| South | 404 | 421 | (18) | (4.2%) |
| Central | 170 | 193 | (24) | (12.2%) |
| West | 106 | 98 | 8 | 7.9% |
| **Total PHAs** | $4,434 | $4,663 | ($229) | (4.9%) |
| Northeast | 1,449 | 1,666 | (216) | (13.0%) |
| South | 1,474 | 1,508 | (34) | (2.3%) |
| Central | 864 | 1,059 | (195) | (18.4%) |
| West | 647 | 430 | 217 | 50.3% |

formula C2.

Table 3.37 reports the distribution of PHAs by the size and direction of change in federal funding that they would experience under capitated formula C2. Interestingly, the results are different from those obtained under other formulas considered thus far. A total of 1,820 PHAs would lose by more than 5 percent under formula C2, while 1,206 would gain by more than 5 percent. For the first time, extra large PHAs do not appear to suffer disproportionately. Only 7 of the 22 extra large PHAs would lose by more than 25 percent, while 3 would lose by between 11 and 25 percent, 3 would gain by between 11 and 25 percent, and 3 would gain by more than 25 percent. The distribution of small PHAs is essentially the same, with 42 percent losing by more than 25 percent and only 26 percent gaining by more than 25 percent

Not surprisingly, changes in federal payments per unit are considerably more moderate under formula C2 than under formula C1, because funding for backlog modernization supplements the FMR-based payment and is allocated on the basis of estimated modernization need, rather than on a capitated basis. Table 3 38 presents average annual per unit subsidies for public housing operations and modernization under capitated formula C2, and compares them to current per unit subsidy payments. On average, per unit subsidies would decline by only $179, from an average of $3,647 to $3,468. Per unit subsidies to extra large PHAs would decline by an average of $594, large PHAs would lose an average of $234 per unit, and small PHAs would lose $83 per unit. Medium sized PHAs would experience a moderate increase in per unit subsidy payments -- $598 on average. Under formula C2, the average per unit funding levels would range from a high of around $7,000 per unit for extra large PHAs in the West to a low of about $2,000 for small PHAs in the Central region. Due to the effect of this formula primarily among extra large and large PHAs, the Northeast, South and Central would lose from $71 (2 percent) to $707 (18 percent) per unit, while Western PHAs gain $1,787 on 50 percent funding per unit

Tables 3.39 and 3 40 report average per unit subsidy levels by metro status and vacancy rate for PHAs in different size categories As under formula C1, extra large and small PHAs in non-metropolitan areas experience greater funding losses than their counterparts in metropolitan areas. However, the reverse is true for large and medium sized PHAs, where those in non-metropolitan communities appear to fare better than those located in metro areas.

## Table 3.37
## DISTRIBUTION OF PHAs BY PERCENT CHANGE IN FEDERAL PAYMENTS
## BY PHA SIZE
### Formula C2:

Constant Payments per Household for
Operating and Accrual Modernization Funding

| PHA SIZE | LOSS OF MORE THAN 25% | LOSS OF 25 - 11% | LOSS OF 10 - 6% | GAIN/ LOSS +/- 5% | GAIN OF 6 - 10% | GAIN OF 11 - 25% | GAIN OF MORE THAN 25% | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Extra-Large PHAs (N) | 7 | 3 | 2 | 5 | 0 | 3 | 3 | 23 |
| Large PHAs (N) | 38 | 16 | 9 | 10 | 8 | 15 | 35 | 131 |
| Medium PHAs (N) | 55 | 35 | 11 | 23 | 5 | 36 | 100 | 265 |
| Small PHAs (N) | 1,204 | 344 | 96 | 189 | 80 | 225 | 696 | 2,834 |
| All PHAs (N) | 1,304 | 398 | 118 | 227 | 93 | 279 | 834 | 3,253 |

Table 3.38
**AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
BY PHA SIZE AND REGION**
Formula C2:

FMR-Based Payments for
Operating and Accrual Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $4,533 | $5,127 | ($594) | (11.6%) |
| Northeast | 4,389 | 5,110 | (721) | (14.1%) |
| South | 4,099 | 4,415 | (316) | (7.1%) |
| Central | 4,757 | 6,269 | (1,512) | (24.1%) |
| West | 6,978 | 4,228 | 2,750 | 65.0% |
| **Large PHAs** | $3,291 | $3,525 | ($234) | (6.6%) |
| Northeast | 2,981 | 3,910 | (929) | (23.8%) |
| South | 3,162 | 3,288 | (127) | (3.8%) |
| Central | 2,667 | 3,456 | (789) | (22.8%) |
| West | 5,418 | 3,661 | 1,757 | 48.0% |
| **Medium PHAs** | $3,381 | $2,784 | $598 | 21.5% |
| Northeast | 2,916 | 2,761 | 155 | 5.6% |
| South | 2,997 | 2,592 | 405 | 15.6% |
| Central | 3,015 | 2,972 | 73 | 1.4% |
| West | 5,474 | 3,007 | 2,467 | 82.0% |
| **Small PHAs** | $2,393 | $2,475 | ($83) | (3.3%) |
| Northeast | 2,556 | 2,465 | 91 | 3.7% |
| South | 2,317 | 2,418 | (101) | (4.2%) |
| Central | 1,988 | 2,265 | (276) | (12.2%) |
| West | 3,768 | 3,492 | 276 | 7.9% |
| **Total PHAs** | $3,468 | $3,647 | ($179) | (4.9%) |
| Northeast | 3,671 | 4,220 | (548) | (13.0%) |
| South | 3,023 | 3,093 | (71) | (2.3%) |
| Central | 3,140 | 3,847 | (707) | (18.4%) |
| West | 5,339 | 3,551 | 1,787 | 50.3% |

# Table 3.39
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND METRO STATUS
### Formula C2:

FMR-Based Payments for
Operating and Accrual Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $4,533 | $5,127 | ($594) | (11.6%) |
| Metro | 4,608 | 5,145 | (537) | (10.4%) |
| Non-Metro | 3,278 | 4,830 | (1,552) | (32.1%) |
| **Large PHAs** | $3,291 | $3,525 | ($234) | (6.6%) |
| Metro | 3,116 | 3,634 | (518) | (14.3%) |
| Non-Metro | 3,791 | 3,213 | 578 | 18.0% |
| **Medium PHAs** | $3,381 | $2,784 | $598 | 21.5% |
| Metro | 3,087 | 2,654 | 433 | 16.3% |
| Non-Metro | 3,608 | 2,883 | 725 | 25.1% |
| **Small PHAs** | $2,393 | $2,475 | ($83) | (3.3%) |
| Metro | 2,783 | 2,476 | 308 | 12.4% |
| Non-Metro | 2,355 | 2,475 | (120) | (4.9%) |
| **Total PHAs** | $3,468 | $3,647 | ($179) | (4.9%) |

## Table 3.40
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND VACANCY RATE
### Formula C2:

FMR-Based Payments for
Operating and Accrual Modernization Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $4,533 | $5,127 | ($594) | (11.6%) |
| Vacancies | | | | |
| 0-5% | 4,305 | 4,526 | (222) | (4.9%) |
| 6%-10% | 4,826 | 4,235 | 591 | 13.9% |
| 11%-15% | 4,207 | 4,437 | (229) | (5.2%) |
| 16%-20% | 5,916 | 6,694 | (778) | (11.6%) |
| 21%-30% | 4,025 | 5,838 | (1,813) | (31.1%) |
| 31%+ | 2,962 | 5,870 | (2,908) | (49.5%) |
| **Large PHAs** | $3,291 | $3,525 | ($234) | (6.6%) |
| Vacancies | | | | |
| 0-5% | 3,829 | 3,353 | 475 | 14.2% |
| 6%-10% | 3,213 | 3,646 | (433) | (11.9%) |
| 11%-15% | 3,637 | 3,419 | 217 | 6.4% |
| 16%-20% | 1,859 | 3,584 | (1,725) | (48.1%) |
| 21%-30% | 1,897 | 4,226 | (2,329) | (55.1%) |
| 31%+ | 1,540 | 3,740 | (2,200) | (58.8%) |
| **Medium PHAs** | $3,381 | $2,784 | $598 | 21.5% |
| Vacancies | | | | |
| 0-5% | 3,934 | 2,715 | 1,218 | 44.9% |
| 6%-10% | 3,038 | 2,787 | 250 | 9.0% |
| 11%-15% | 2,660 | 2,765 | (105) | (3.8%) |
| 16%-20% | 2,197 | 2,722 | (525) | (19.3%) |
| 21%-30% | 1,858 | 3,539 | (1,681) | (47.5%) |
| 31%+ | 777 | 3,464 | (2,688) | (77.6%) |
| **Small PHAs** | $2,393 | $2,475 | ($83) | (3.3%) |
| Vacancies | | | | |
| 0-5% | 2,625 | 2,452 | 173 | 7.1% |
| 6%-10% | 2,376 | 2,486 | (110) | (4.4%) |
| 11%-15% | 2,049 | 2,571 | (522) | (20.3%) |
| 16%-20% | 1,634 | 2,379 | (746) | (31.3%) |
| 21%-30% | 1,354 | 2,395 | (1,041) | (43.5%) |
| 31%+ | 746 | 2,846 | (2,099) | (73.8%) |
| **Total PHAs** | $3,468 | $3,647 | ($179) | (4.9%) |

Vacancy rates continue to play a major role in determining funding outcomes, even though formula C2 provides backlog modernization funding on the basis of physical needs per unit rather than on the basis of households served. In fact, under this version of an FMR-based formula, several categories of PHAs with low vacancy rates would experience increases in per unit funding levels, while reductions in per unit payments would be limited to PHAs with moderate to high vacancy rates. Among extra large PHAs, agencies with vacancy rates between 6 and 10 percent would receive a 14 percent increase in per unit funding while those with higher vacancy rates would lose from 5 to 50 percent of current funding. A similar pattern applies among PHAs in other size categories. Moreover, this is the first formula in which smaller PHAs do not fare better than large and extra large PHAs, even after controlling for vacancy rates. In fact, among PHAs with vacancies between 11 and 15 percent, extra large agencies would lose an average of $229 per unit in federal funding, while small agencies would lose $522 on average.

*Formula C3: FMR-Based Payments Plus Funding for All Modernization* If an FMR-based federal payment were supplemented by full payment of modernization funding allocated on the basis of estimated needs, total federal payments to PHAs would increase by about 21 percent ($973 million). PHAs in every size category would gain, but gains would be greater for medium sized and small PHAs than for extra large and large agencies. Table 3.41 compares the allocation of federal funding under capitated formula C3 to the current allocation of funding by PHA size and region. Extra large PHAs would gain a total of $212 million, or 10 percent of their current federal funding. Among extra large PHAs, those in the Central region would experience an 8 percent decrease in federal funding, while PHAs in the West would receive a 90 percent increase in federal funding. Large PHAs would gain $216 million, 19 percent of their current funding. Medium sized PHAs gain by $302 million (54 percent), and small PHAs would gain $244 million (29 percent).

As in previous simulations, outcomes differ by geographic region as well as by PHA size category, with PHAs in the West faring dramatically better than their counterparts ($341 million or 79 percent), and PHAs in the Central region generally experiencing the smallest gains ($51 million or 5 percent). Overall, the Northeast gained $197 million (12 percent) while the South gained $384 million, or 25 percent.

## Table 3.41
## TOTAL FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION
### Formula C3:

FMR-Based Payment for Operating Funding

| | CAPITATED FORMULA (millions) | CURRENT FUNDING (millions) | DIFFERENCE (millions) | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $2,341 | $2,130 | $212 | 9.9% |
| Northeast | 1,192 | 1,085 | 107 | 9.8% |
| South | 496 | 434 | 61 | 14.2% |
| Central | 474 | 516 | (42) | (8.1%) |
| West | 179 | 94 | 85 | 89.8% |
| | | | | |
| **Large PHAs** | $1,338 | $1,122 | $216 | 19.2% |
| Northeast | 317 | 319 | (1) | (0.4%) |
| South | 554 | 450 | 104 | 23.1% |
| Central | 220 | 213 | 7 | 3.3% |
| West | 246 | 140 | 106 | 75.5% |
| | | | | |
| **Medium PHAs** | $864 | $562 | $302 | 53.8% |
| Northeast | 169 | 125 | 44 | 35.6% |
| South | 302 | 202 | 100 | 49.2% |
| Central | 181 | 137 | 44 | 32.1% |
| West | 212 | 98 | 114 | 116.9% |
| | | | | |
| **Small PHAs** | $1,094 | $850 | $244 | 28.7% |
| Northeast | 185 | 137 | 48 | 34.7% |
| South | 540 | 421 | 119 | 28.2% |
| Central | 234 | 193 | 41 | 21.3% |
| West | 134 | 98 | 36 | 37.3% |
| | | | | |
| **Total PHAs** | $5,636 | $4,663 | $973 | 20.9% |
| Northeast | 1,863 | 1,666 | 197 | 11.9% |
| South | 1,892 | 1,508 | 384 | 25.4% |
| Central | 1,110 | 1,059 | 51 | 4.8% |
| West | 772 | 430 | 341 | 79.3% |

Table 3.42 reports the distribution of PHAs by the size and direction of change in federal funding simulated for capitated formula C3. Altogether, only 1,018 PHAs would lose by more than 5 percentage points under this formula, while 2,028 would gain by more than 5 percent. And, as for formula C2, extra large PHAs are no. more likely to be losers under this funding system than are small PHAs. Specifically, only 5 (22 percent) of the 23 extra large PHAs lose more than 25 percent of funding, while 7 gain (30 percent) by more than 25 percent. Among small PHAs, the distribution is comparable, with 22 percent losing and 46 percent gaining by more than 25 percent

Not surprisingly, per unit funding levels under formula C3 increase for PHAs in every size category and region. As illustrated by Table 3.43, the overall average annual payment per unit increases by $761, from $3,647 to $4,408. Extra large PHAs would gain by an average of $509 per unit under capitated formula C3, while large PHAs would gain an average of $677 per unit, medium sized PHAs would gain by $1,497 on average, and small PHAs would gain by $711

Tables 3.44 and 3.45 report average annual per unit subsidy levels by metro status and vacancy rate for PHAs in different size categories. Extra large and small PHAs in metropolitan areas fare better than their non-metropolitan counterparts, while the reverse is true among medium and large PHAs. Even though all modernization funding is held constant under formula C3, vacancy rates continue to play an important role. In fact, PHAs with high vacancy rates lose funding under this formula, despite the substantial overall increase in average funding levels Among extra large PHAs, for example, the change in per unit funding ranges from a gain of $1,552 per unit among PHAs with vacancy rates 6 - 10 percent to a loss of $1,902 among PHAs with vacancy rates over 30 percent. Correspondingly, among small PHAs, the change in per unit funding ranges from a gain of $952 among PHAs with vacancy rates under 6 percent to a loss of $1,256 per unit among PHAs with vacancy rates over 30 percent. Among small PHAs only those with relatively low vacancy rates (under 11 percent) receive a substantial increase in per unit funding.

**Table 3.42**
**DISTRIBUTION OF PHAs BY PERCENT CHANGE IN FEDERAL PAYMENTS**
**BY PHA SIZE**
**Formula C3:**

Constant Payments per Household for
All Operating and Modernization Funding

| PHA SIZE | LOSS OF MORE THAN 25% | LOSS OF 25 - 11% | LOSS OF 10 - 6% | GAIN/ LOSS +/- 5% | GAIN OF 6 - 10% | GAIN OF 11 - 25% | GAIN OF MORE THAN 25% | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Extra-Large PHAs (N) | 5 | 1 | 1 | 2 | 1 | 6 | 7 | 23 |
| Large PHAs (N) | 21 | 10 | 7 | 6 | 3 | 19 | 65 | 131 |
| Medium PHAs (N) | 15 | 17 | 7 | 15 | 10 | 30 | 171 | 265 |
| Small PHAs (N) | 627 | 237 | 70 | 184 | 128 | 293 | 1,295 | 2,834 |
| All PHAs (N) | 668 | 265 | 85 | 207 | 142 | 348 | 1,538 | 3,253 |

## Table 3.43
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION
### Formula C3:

FMR-Based Payment for Operating Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $5,636 | $5,127 | $509 | 9.9% |
| Northeast | 5,612 | 5,110 | 502 | 9.8% |
| South | 5,040 | 4,415 | 625 | 14.2% |
| Central | 5,763 | 6,269 | (506) | (8.1%) |
| West | 8,025 | 4,228 | 3,797 | 89.8% |
| | | | | |
| **Large PHAs** | $4,202 | $3,525 | $677 | 19.2% |
| Northeast | 3,893 | 3,910 | (17) | (0.4%) |
| South | 4,098 | 3,288 | 760 | 23.1% |
| Central | 3,572 | 3,456 | 116 | 3.3% |
| West | 6,423 | 3,661 | 2,762 | 75.5% |
| | | | | |
| **Medium PHAs** | $4,281 | $2,784 | $1,497 | 53.8% |
| Northeast | 3,744 | 2,761 | 983 | 35.6% |
| South | 3,868 | 2,592 | 1,276 | 49.2% |
| Central | 3,927 | 2,972 | 955 | 32.1% |
| West | 6,525 | 3,007 | 3,517 | 116.9% |
| | | | | |
| **Small PHAs** | $3,186 | $2,475 | $711 | 28.7% |
| Northeast | 3,319 | 2,465 | 854 | 34.7% |
| South | 3,100 | 2,418 | 681 | 28.2% |
| Central | 2,747 | 2,265 | 483 | 21.3% |
| West | 4,792 | 3,492 | 1,301 | 37.3% |
| | | | | |
| **Total PHAs** | $4,408 | $3,647 | $761 | 20.9% |
| Northeast | 4,720 | 4,220 | 500 | 11.9% |
| South | 3,880 | 3,093 | 787 | 25.4% |
| Central | 4,031 | 3,847 | 184 | 4.8% |
| West | 6,368 | 3,551 | 2,817 | 79.3% |

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## Table 3.44
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND METRO STATUS
### Formula C3:

FMR-Based Payment for Operating Funding

| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $5,636 | $5,127 | $509 | 9.9% |
| Metro | 5,721 | 5,145 | 576 | 11.2% |
| Non-Metro | 4,221 | 4,830 | (609) | (12.6%) |
| **Large PHAs** | $4,202 | $3,525 | $677 | 19.2% |
| Metro | 4,012 | 3,634 | 378 | 10.4% |
| Non-Metro | 4,744 | 3,213 | 1,531 | 47.6% |
| **Medium PHAs** | $4,281 | $2,784 | $1,497 | 53.8% |
| Metro | 3,939 | 2,654 | 1,285 | 48.4% |
| Non-Metro | 4,544 | 2,883 | 1,661 | 57.6% |
| **Small PHAs** | $3,186 | $2,475 | $711 | 28.7% |
| Metro | 3,542 | 2,476 | 1,066 | 43.1% |
| Non-Metro | 3,152 | 2,475 | 676 | 27.3% |
| **Total PHAs** | $4,408 | $3,647 | $761 | 20.9% |

# Table 3.45
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND VACANCY RATE
### Formula C3:

FMR-Based Payment for Operating Funding

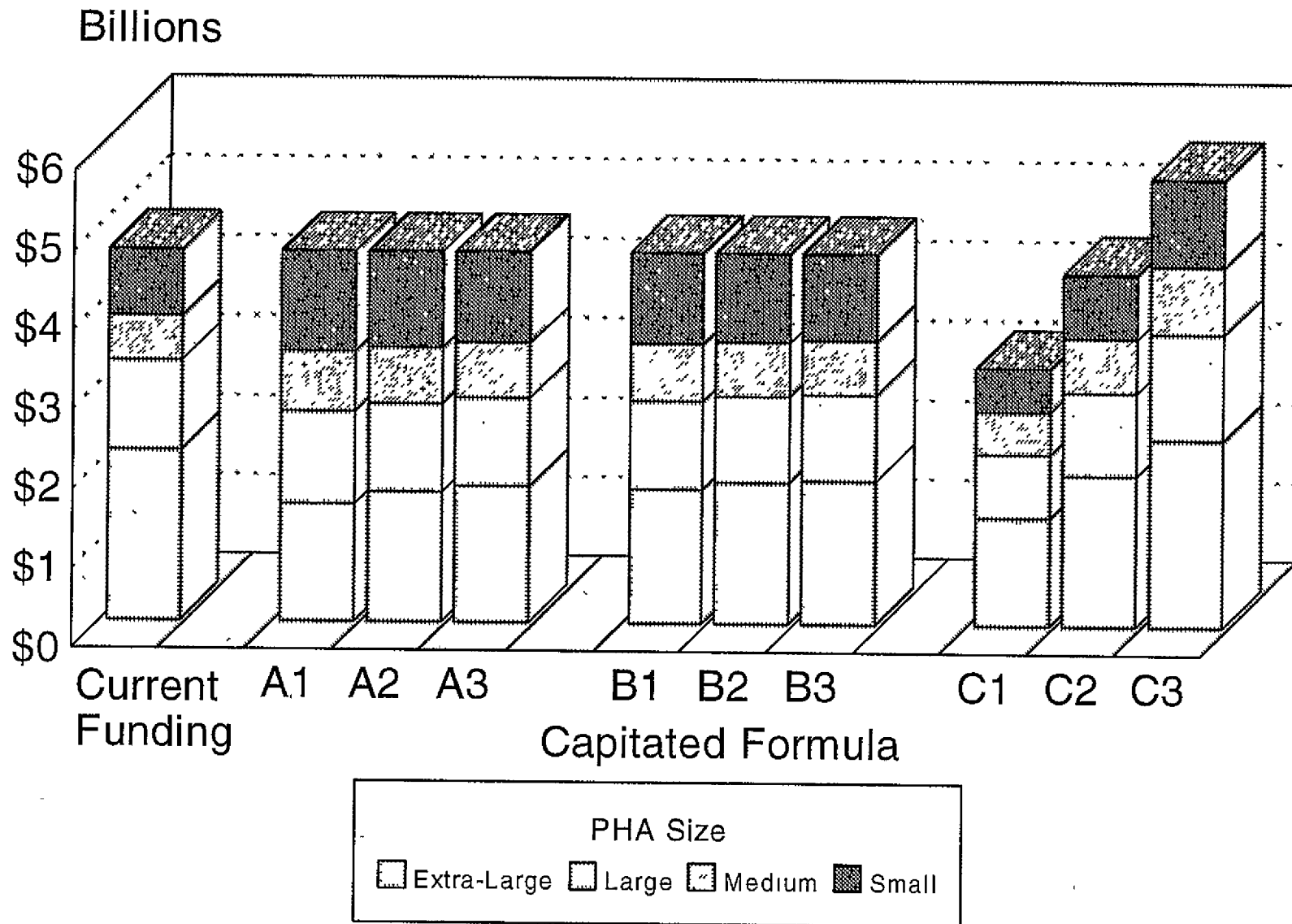| | CAPITATED FORMULA | CURRENT FUNDING | DIFFERENCE | PERCENT DIFFERENCE |
|---|---|---|---|---|
| **Extra-Large PHAs** | $5,636 | $5,127 | $509 | 9.9% |
| Vacancies | | | | |
| 0-5% | 5,542 | 4,526 | 1,016 | 22.4% |
| 6%-10% | 5,787 | 4,235 | 1,552 | 36.7% |
| 11%-15% | 5,154 | 4,437 | 717 | 16.2% |
| 16%-20% | 6,966 | 6,694 | 272 | 4.1% |
| 21%-30% | 5,035 | 5,838 | (803) | (13.8%) |
| 31%+ | 3,968 | 5,870 | (1,902) | (32.4%) |
| | | | | |
| **Large PHAs** | $4,202 | $3,525 | $677 | 19.2% |
| Vacancies | | | | |
| 0-5% | 4,738 | 3,353 | 1,385 | 41.3% |
| 6%-10% | 4,121 | 3,646 | 475 | 13.0% |
| 11%-15% | 4,590 | 3,419 | 1,171 | 34.2% |
| 16%-20% | 2,746 | 3,584 | (837) | (23.4%) |
| 21%-30% | 2,806 | 4,226 | (1,421) | (33.6%) |
| 31%+ | 2,427 | 3,740 | (1,313) | (35.1%) |
| | | | | |
| **Medium PHAs** | $4,281 | $2,784 | $1,497 | 53.8% |
| Vacancies | | | | |
| 0-5% | 4,848 | 2,715 | 2,132 | 78.5% |
| 6%-10% | 3,918 | 2,787 | 1,131 | 40.6% |
| 11%-15% | 3,532 | 2,765 | 766 | 27.7% |
| 16%-20% | 3,068 | 2,722 | 346 | 12.7% |
| 21%-30% | 2,780 | 3,539 | (759) | (21.4%) |
| 31%+ | 1,699 | 3,464 | (1,766) | (51.0%) |
| | | | | |
| **Small PHAs** | $3,186 | $2,475 | $711 | 28.7% |
| Vacancies | | | | |
| 0-5% | 3,404 | 2,452 | 952 | 38.8% |
| 6%-10% | 3,177 | 2,486 | 691 | 27.8% |
| 11%-15% | 2,913 | 2,571 | 341 | 13.3% |
| 16%-20% | 2,386 | 2,379 | 7 | 0.3% |
| 21%-30% | 2,118 | 2,395 | (277) | (11.6%) |
| 31%+ | 1,590 | 2,846 | (1,256) | (44.1%) |
| | | | | |
| **Total PHAs** | $4,408 | $3,647 | $761 | 20.9% |

## Summary of Capitated Formula Results

Figure 3 2 provides an overview of the impacts of all nine capitated funding alternatives analyzed here. Specifically, the graph displays levels of funding by PHA size category under the current formula system and under each alternative formula By definition, all three variants of formula A as well as the three variants of formula B yield the same aggregate funding level as the base case. Only formula C, the FMR-based approach, allows overall funding levels to change.

Formula A, which simply divides federal funding evenly among public housing residents, with the same level of funding provided for every household, would dramatically shift resources away from extra large PHAs to medium and small PHAs The redistribution of resources is most extreme under the formula variant that includes all operating and modernization funds in the capitated formula (A1), and less extreme under the variant that holds modernization funding constant (A3). Although some PHAs in every size category would stand to lose under this very simple capitated scheme, extra large PHAs fare the worst. In fact, the majority of extra large PHAs would experience funding losses of at least 5 percent Vacancy rates play a major role in determining how PHAs are affected by this form of capitated payments, but regardless of vacancy rates, extra large and large PHAs are more likely to lose funding than medium or small agencies.

Under Formula B, per household payment levels are adjusted to reflect local cost factors As a result, this formula does not redistribute federal resources as drastically as formula A, which allocated an equal subsidy amount to every resident household in public housing Nevertheless, extra large PHAs as a group would experience a substantial reduction in funding levels, while small agencies would gain And although vacancy rates are again primary determinants of outcomes under these simulations, at every vacancy rate range extra large PHAs are more likely to lose funding while small PHAs are more likely to gain. As under Formula A, the redistribution of federal subsidies is most extreme when both operating and modernization funding are included in the capitated payment, and least extreme when modernization funding is held out of the capitated system. Overall, the cost adjustments incorporated into Formula B appear to work to the advantage of PHAs in the Northeast, and to the disadvantage of those in the South

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# Figure 3.2
## Summary of Funding Allocations



Billions

$6

$5

$4

$3

$2

$1

$0

Current Funding    A1    A2    A3        B1    B2    B3        C1    C2    C3

Capitated Formula

PHA Size

☐ Extra-Large  ☐ Large  ☐ Medium  ■ Small

The third set of formulas simulate how *total* funding levels might be affected by a capitated system in which the per household payments are based on local Fair Market Rents (FMRs). If an FMR-based payment were implemented to replace all federal operating and modernization funding (C1), total federal contributions to PHAs would decline by almost a third. At the opposite extreme, an FMR-based payment system for operating subsidies, supplemented by the current CGP formula allocation of modernization funding (C3) would yield more than a 21 percent increase in total federal payments  The intermediate formula (C2), which provides an FMR-based payment for operating subsidies and accrual modernization, supplemented by CGP funding for backlog modernization needs would yield approximately the same aggregate level of funding as the current system

The FMR-based payment system would not result in the reallocation of funding from extra large and large PHAs to medium and small PHAs. Instead, vacancy rates play the primary role in determining which PHAs gain funding and which PHAs lose. At a given vacancy range, PHA size does not appear to be a factor. Regional variations are pronounced under the FMR-based formulas, however. In particular, PHAs in the West experience substantial increases in funding for every size category. These results suggest that FMRs in the West are unusually high relative to public housing costs. This discrepancy warrants further investigation to determine whether the FMRs are abnormally high, or whether public housing costs are particularly low.

Under all three sets of capitated payment formulas, outcomes vary by geographic region. Some of this variation appears to stem from PHA size differences  Specifically, over half of all Northeastern units are in extra large PHAs  This helps explain why the Northeast consistently loses funding under the capitated scenarios  However, the distribution of units by PHA size does not explain why the West consistently benefits under capitated funding formulas, while the Central region consistently loses and the South sometimes wins and sometimes loses.

In order to identify PHA characteristics that seem to play the greatest role in determining the impacts of capitated payments on PHA funding levels, we estimated multivariate regression equations in which change in per unit funding levels under alternative formulas were expressed as a function of PHA characteristics. The ordinary least squares (OLS) methodology was employed for these estimates, with PHA location and size included as dummy explanatory variables. Because public housing resident characteristics (average household size and income,

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and percent single mother households) are only available for PHAs with more than 500 units, small PHAs have been excluded from this multivariate analysis.

Table 3.46 summarizes the results of the multivariate regression analysis for three capitated formulas -- formula A2, formula B2, and formula C2. All three of these formulas hold the backlog portion of CGP modernization funding at current levels, and provide capitated payments to replace PFS operating subsidies and the accrual portion of modernization funding Not surprisingly, these results suggest that vacancy rates play a major role in determining the impacts of all three formula alternatives, with higher vacancy rates resulting in substantially lower payment levels. After controlling for vacancy rates and other factors, PHA size only plays a significant independent role under formulas A2 and B2 However, since small PHAs are excluded from the multivariate analysis, we cannot be confident that differences between extra large and small agencies are not significant in the other two equations as well. Regional differences appear to be significant for each formula, with PHAs in the South and West consistently receiving higher funding levels than those in the Northeast, other things being equal.

Characteristics of public housing residents also appear to play a role in shaping the impacts of capitated payment alternatives. Under formulas A2 and B2, PHAs with larger average household sizes lose more funding than those serving smaller households. This effect is not significant under formula C2, since the FMR-based formula provides larger payments for larger units, and hence for larger households Under all formulas resident incomes are positively correlated to capitated funding levels, with PHAs that serve higher income households receiving higher funding levels An alternative set of regressions using percent of households on welfare as the indicator of income levels showed no significant effect.

## Longer Term Implications of a Capitated Funding System

This component of the analysis explores longer-term funding implications of a capitated system based on FMRs, given assumptions regarding the extent to which the number of households served by PHAs would increase and vacancy rates would be reduced under a capitated funding system. Formula C2 has been selected as a basis for these simulations, because it seems to come closest to the principles of a capitated payment system, while still recognizing that some PHAs have serious backlogs of modernization needs. Formula C2 reflects an

**Table 3.46**
**Variation in the Impacts of Capitated Payments Under**
**Capitated Formulas A2, B2, C2**

| PHA Characteristics | Formula A2 | | Formula B2 | | Formula C2 | |
|---|---|---|---|---|---|---|
| Extra Large Size | $ -1,270.6 | ~~ | $ -1,030 3 | ** | $ 103.3 | |
| Large Size | -397 2 | ~~ | -356 2 | | -324 1 | |
| South Region | 826 5 | *~ | 464 9 | ** | 1,077 7 | ~~ |
| Central Region | 471.2 | ~ | 351 8 | * | 628.8 | * |
| West Region | 505.4 | ~ | 576.8 | * | 1,629.0 | *~ |
| Vacancy Rate | -4,713 0 | ** | -4,494 8 | *~ | -8,224 7 | ~~ |
| Average Hh Size | -613 3 | ~* | -739 9 | ** | 11 4 | |
| Average Hh Income | 14 | ~* | .18 | *~ | 33 | ** |
| Percent Single Mother Hhs | -536 5 | | -369 1 | | -323 1 | |
| Intercept | 1,073 8 | ** | 1,047.0 | ~~ | -2,296 7 | ~~ |
| | | | | | | |
| Adjusted R-squared | 39 9% | | 41.9% | | 35.6% | |

~* Indicates statistical significance at a 99 percent confidence level
~ Indicates statistical significance at a 95 percent confidence level

assumption that PHAs should be on essentially the same footing as private landlords who serve a HUD clientele, that they should not receive full funding for vacant units, but that many will require additional assistance from the federal government to eliminate their backlog of modernization needs.

The "future" simulations presented here estimate the impacts of formula C2 after one year of operation and after five years of operation, comparing the overall level and distribution of federal funding to the status quo. These simulations assume that the modified capitated system embodied in formula C2 would encourage (and enable) PHAs to reduce their vacancy rates. To the extent that PHAs were able to serve more households, their funding levels would increase, as would the total federal contribution to the public housing program. Figure 3.3 provides an overview of assumptions regarding changes in vacancy rates after one year and after five years. PHAs with modest rates of vacancy (6 to 10 percent) are immediately expected to make management improvements to bring vacancy rates down below 5 percent. PHAs with high rates of vacancy (11 to 30 percent) are expected to make gradual progress through management improvements and modernization, and to reduce vacancy rates by 2 percentage points annually. PHAs with extremely high rates of vacancy (over 30 percent) are expected to modernize 5 percent of their vacant units annually, and to achieve 95 percent occupancy of the modernized units.

Based on these assumptions, changes in the overall level of federal funding under a capitated payment formula as well as changes in the allocation of funding among PHAs of different types and characteristics are estimated. Each PHA's funding under an FMR-based system is calculated after one year and after five years by applying local FMRs (adjusted for inflation) to the estimated number of occupied units (adjusted to reflect declining vacancy rates), subtracting rent revenues (adjusted for both inflation and the estimated increase in occupied units) and imputed debt service payments, and applying the seven percent administrative fee. Backlog modernization funding is assumed to be sustained at current levels, adjusted for inflation.[22] The comparison base case represents a continuation of current funding levels under PFS and CGP,

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[22] According to HUD's analysis of the accumulated backlog of modernization needs, funding at this level would eliminate backlogs after a minimum of ten and a maximum of twenty years. See U S Department of Housing and Urban Development, *Report to Congress on Alternative Methods for Funding Public Housing Modernization*, Washington, D C, 1990

Figure 3.3

Assumptions for 1-year and 5-year
Capitated Payment Scenarios Under Formula C2

| PHAs with Vacancy Rates | After 1 year | After 5 years |
|---|---|---|
| ≤ 5% | No change in vacancy rates | No change in vacancy rates |
| 6 - 10% | Vacancy rates decline by 5 percentage points -- to between 0 and 5% | No further change in vacancy rates |
| 11 - 30% | Vacancy rates decline by 2 percentage points | Vacancy rates decline a total of 10 percentage points |
| 31% + | Five percent of vacant units are modernized and 95% of these are occupied | A cumulative total of 25 percent of vacant units have been modernized and 95% of these are occupied |

adjusted for inflation.  Details of these calculations are provided in Appendix B.

*Capitated Funding After One Year.*  Given the assumptions outlined above regarding the rate at which vacancies could be reduced, an FMR-based formula system supplemented by backlog modernization funding would yield a small increase in funding levels relative to the baseline after one year of operation.  As shown by Table 3 47, total federal funding for PHA operations and modernization would still be almost 1 percent lower after one year of operation than under the current PFS and CGP formula system.  More specifically, at the outset the capitated system yields lower federal payments than the current PFS and CGP formulas (see "baseline difference" column in Table 3.47), but expected reductions in vacancy rates (increases in the number of households served) under the capitated system would raise federal spending after one year from $4.4 billion to $4.8 billion.  In fact, the total number of households living in public housing would increase by about 20,900 in the first year, given our assumptions about reductions in vacancy rates by PHAs.

Medium sized PHAs would continue to experience the biggest funding gains, with capitated funding levels about 27 percent higher than under the current system.  Extra large PHAs would fall short of estimated funding under the current system by about $195 million, or 9 percent of their projected funding under the current system.  Large PHAs would lose $19 million (2 percent), and small PHAs would gain $19 million (2 percent).

Regional differences follow the same pattern as observed in the baseline year simulations for capitated formula C2.  PHAs in the West would continue to experience the greatest increases in funding under the capitated payment system, with funding gains of 70 percent for extra large agencies, 52 percent for large agencies, 87 percent for medium sized agencies, and 13 percent for small agencies.  In contrast, PHAs in the Central region generally receive less funding even after one year under the capitated system than they would under the existing PFS and CGP system.  Northeastern PHAs in the extra large and large size categories would also fall short after a year of capitated funding.  Overall, PHAs in the West would see gains of 55 percent while those of the South would realize only a 3 percent increase, and Northeastern and Central PHAs would experience funding losses of 10 and 14 percent, respectively

Table 3 48 indicates how many PHAs would receive funding below current formula levels after one year under a capitated system, and how many would exceed current formula levels.

## Table 3.47
## TOTAL FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES
## BY PHA SIZE AND REGION

FMR-Based Payment Formula After One Year

| | PROJECTED CAPITATED FORMULA* (millions) | PROJECTED PFS + CGP FUNDING (millions) | DIFFERENCE (millions) | PERCENT DIFFERENCE | |
| --- | --- | --- | --- | --- | --- |
| | | | | CURRENT | BASELINE** |
| **Extra-Large PHAs** | $2,013 | $2,208 | ($195) | (8.8%) | (11.6%) |
| Northeast | 988 | 1,125 | (137) | (12.2%) | (14.1%) |
| South | 437 | 450 | (13) | (2.9%) | (7.1%) |
| Central | 422 | 535 | (113) | (21.2%) | (24.1%) |
| West | 166 | 98 | 68 | 69.7% | 65.0% |
| **Large PHAs** | $1,144 | $1,164 | ($19) | (1.7%) | (6.6%) |
| Northeast | 269 | 330 | (61) | (18.6%) | (23.8%) |
| South | 470 | 467 | 3 | 0.7% | (3.8%) |
| Central | 184 | 221 | (37) | (16.8%) | (22.8%) |
| West | 221 | 145 | 76 | 52.3% | 48.0% |
| **Medium PHAs** | $739 | $582 | $157 | 26.9% | 21.5% |
| Northeast | 145 | 129 | 16 | 12.1% | 5.6% |
| South | 254 | 210 | 44 | 20.9% | 15.6% |
| Central | 152 | 142 | 10 | 6.8% | 1.4% |
| West | 189 | 101 | 88 | 86.6% | 82.0% |
| **Small PHAs** | $900 | $881 | $19 | 2.2% | (3.3%) |
| Northeast | 154 | 142 | 12 | 8.3% | 3.7% |
| South | 443 | 437 | 6 | 1.4% | (4.2%) |
| Central | 189 | 200 | (12) | (5.8%) | (12.2%) |
| West | 114 | 102 | 13 | 12.6% | 7.9% |
| **Total PHAs** | $4,797 | $4,836 | ($39) | (0.8%) | (4.9%) |
| Northeast | 1,556 | 1,727 | (171) | (9.9%) | (13.0%) |
| South | 1,604 | 1,564 | 40 | 2.6% | (2.3%) |
| Central | 946 | 1,098 | (152) | (13.9%) | (18.4%) |
| West | 691 | 446 | 245 | 54.9% | 50.3% |

* Capitated payments replace operating and accrual modernization funding, backlog modernization funding allocated by CGP
** From Table 3.38

## Table 3.48
## DISTRIBUTION OF PHAs BY PERCENT CHANGE IN FEDERAL PAYMENTS
## BY PHA SIZE

FMR-Based Payment Formula After One Year*

| PHA SIZE | LOSS OF MORE THAN 25% | LOSS OF 25 - 11% | LOSS OF 10 - 6% | GAIN/ LOSS +/- 5% | GAIN OF 6 - 10% | GAIN OF 11 - 25% | GAIN OF MORE THAN 25% | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Extra-Large PHAs (N) | 6 | 3 | 1 | 4 | 3 | 3 | 3 | 23 |
| Large PHAs (N) | 35 | 13 | 7 | 15 | 5 | 19 | 37 | 131 |
| Medium PHAs (N) | 45 | 31 | 15 | 19 | 10 | 30 | 115 | 265 |
| Small PHAs (N) | 1,067 | 351 | 115 | 195 | 88 | 223 | 795 | 2,834 |
| All PHAs (N) | 1,153 | 398 | 138 | 233 | 106 | 275 | 950 | 3,253 |

* Capitated payments replace operating and accrual modernization funding; backlog modernization funding allocated by CGP.

Although most PHAs would receive increased funding as a result of vacancy reductions expected during the first year of a capitated system, more than half would still fall at least 5 percent below their current funding levels. Specifically, after a year under a capitated system, 1,689 PHAs would fall more than 5 percent below estimated funding levels for the current system, while 1,331 would end up more than 5 percent above current formula levels.

After one year under a capitated funding system, annual per unit federal funding for public housing would average approximately $3,751 -- $31 less than predicted under the current formula system.[23] As shown in Table 3 49, the only significant losers would be extra large and large PHAs in the Northeast and Central regions. PHAs in these categories would receive approximately 12 to 21 percent less per unit after a year under a capitated system than under the current formula system. The effect of PHA size on winners and losers continues to strongly influence the regional funding distribution  The West largely benefits with a minimal increase for the South and a decline for both the Northeast and Central regions.

*Capitated Funding After Five Years*  The simulations of capitated funding outcomes after five years are based upon fairly optimistic assumptions regarding the rate at which PHAs will be able to bring vacant housing units back into full occupancy, increasing the number of households served, and correspondingly, increasing federal funding levels.  Given these assumptions (which increase the number of households living in public housing by about 51,400), the simulations suggest that after five years, an FMR-based formula system supplemented by backlog modernization funding would yield total funding levels 10 percent above estimated levels for the current PFS and CGP system.  As illustrated in Table 3 50, total federal funding for PHA operations and modernization would reach $6.1 billion under the capitated system, compared to estimated funding levels of $5.6 billion under the current PFS and CGP system.  PHAs in almost every size category and geographic region would receive more funding after five years of capitated payments than under the existing system.  The only exceptions are large and extra large PHAs in the Northeast and Central regions, which would still fall short of projected funding under the current system by 4 to 11 percent  Regional funding patterns follow these findings as

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[23] It is important to note that these results are reported on a per unit basis  Since the capitated system is expected to reduce vacancies (thereby increasing the number of households served), and since it provides funding on a per household basis, the funding available for a fixed number of units increases

## Table 3.49
### AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES BY PHA SIZE AND REGION

FMR-Based Payment Formula After One Year

| | PROJECTED CAPITATED FORMULA* | PROJECTED PFS + CGP FUNDING | DIFFERENCE | PERCENT DIFFERENCE CURRENT | PERCENT DIFFERENCE BASELINE** |
|---|---|---|---|---|---|
| **Extra-Large PHAs** | $4,847 | $5,317 | ($470) | (8 8%) | (11.6%) |
| Northeast | 4,653 | 5,298 | (645) | (12 2%) | (14.1%) |
| South | 4,443 | 4,578 | (135) | (2.9%) | (7.1%) |
| Central | 5,125 | 6,501 | (1,376) | (21.2%) | (24.1%) |
| West | 7,441 | 4,385 | 3,056 | 69.7% | 65.0% |
| | | | | | |
| **Large PHAs** | $3,594 | $3,655 | ($61) | (1.7%) | (6.6%) |
| Northeast | 3,300 | 4,054 | (754) | (18.6%) | (23 8%) |
| South | 3,433 | 3,410 | 23 | 0.7% | (3 8%) |
| Central | 2,980 | 3,584 | (604) | (16.8%) | (22 8%) |
| West | 5,783 | 3,796 | 1,987 | 52.3% | 48.0% |
| | | | | | |
| **Medium PHAs** | $3,663 | $2,887 | $777 | 26.9% | 21.5% |
| Northeast | 3,210 | 2,863 | 347 | 12.1% | 5.6% |
| South | 3,250 | 2,688 | 562 | 20.9% | 15.6% |
| Central | 3,292 | 3,082 | 209 | 6.8% | 1.4% |
| West | 5,818 | 3,119 | 2,699 | 86.6% | 82.0% |
| | | | | | |
| **Small PHAs** | $2,623 | $2,567 | $56 | 2.2% | (3.3%) |
| Northeast | 2,769 | 2,556 | 213 | 8.3% | 3.7% |
| South | 2,544 | 2,508 | 36 | 1.4% | (4.2%) |
| Central | 2,213 | 2,348 | (136) | (5.8%) | (12.2%) |
| West | 4,078 | 3,621 | 457 | 12.6% | 7 9% |
| | | | | | |
| **Total PHAs** | $3,751 | $3,782 | ($31) | (0.8%) | (4.9%) |
| Northeast | 3,943 | 4,376 | (433) | (9.9%) | (13.0%) |
| South | 3,290 | 3,208 | 82 | 2.6% | (2.3%) |
| Central | 3,436 | 3,989 | (553) | (13.9%) | (18.4%) |
| West | 5,703 | 3,683 | 2,021 | 54.9% | 50.3% |

* Capitated payments replace operating and accrual modernization funding, backlog modernization funding allocated by CGP
** From Table 3 38

**Table 3.50**
**TOTAL FEDERAL PAYMENTS TO PUBLIC HOUSING AGENCIES**
**BY PHA SIZE AND REGION**

FMR-Based Payment Formula After Five Years

| | PROJECTED CAPITATED FORMULA* (millions) | PROJECTED PFS + CGP FUNDING (millions) | DIFFERENCE (millions) | PERCENT DIFFERENCE | |
|---|---|---|---|---|---|
| | | | | CURRENT | BASELINE** |
| **Extra-Large PHAs** | $2,561 | $2,554 | $7 | 0.3% | (11.6%) |
| Northeast | 1,237 | 1,301 | (65) | (5.0%) | (14.1%) |
| South | 575 | 521 | 55 | 10.5% | (7.1%) |
| Central | 551 | 618 | (68) | (10.9%) | (24.1%) |
| West | 198 | 113 | 85 | 74.7% | 65.0% |
| **Large PHAs** | $1,470 | $1,346 | $124 | 9.2% | (6.6%) |
| Northeast | 356 | 382 | (26) | (6.9%) | (23.8%) |
| South | 600 | 540 | 60 | 11.2% | (3.8%) |
| Central | 246 | 256 | (9) | (3.6%) | (22.8%) |
| West | 267 | 168 | 99 | 59.0% | 48.0% |
| **Medium PHAs** | $929 | $674 | $256 | 38.0% | 21.5% |
| Northeast | 187 | 150 | 37 | 24.7% | 5.6% |
| South | 321 | 243 | 78 | 32.2% | 15.6% |
| Central | 193 | 164 | 29 | 17.6% | 1.4% |
| West | 229 | 117 | 112 | 95.7% | 82.0% |
| **Small PHAs** | $1,176 | $1,019 | $157 | 15.4% | (3.3%) |
| Northeast | 203 | 165 | 38 | 23.2% | 3.7% |
| South | 577 | 505 | 72 | 14.2% | (4.2%) |
| Central | 251 | 323 | 19 | 8.3% | (12.2%) |
| West | 146 | 117 | 28 | 24.0% | 7.9% |
| **Total PHAs** | $6,136 | $5,592 | $544 | 9.7% | (4.9%) |
| Northeast | 1,982 | 1,998 | (16) | (0.8%) | (13.0%) |
| South | 2,073 | 1,808 | 265 | 14.6% | (2.3%) |
| Central | 1,241 | 1,270 | (29) | (2.3%) | (18.4%) |
| West | 840 | 516 | 324 | 62.8% | 50.3% |

\* Capitated payments replace operating and accrual modernization funding, backlog modernization funding allocated by CGP
\*\* From Table 3 38

the Northeast and Central regions lose minimal funding while the South and West show moderate and substantial gains, respectively.

Table 3.51 presents the number of PHAs that would receive funding below current levels after five years under a capitated system, and the number that would exceed current funding levels. Most PHAs would continue to receive increased funding as a result of vacancy reductions assumed to be achieved over five years of a capitated system, and as a result, slightly more than half (52 percent) would receive at least 5 percent more funding from the federal government than under the current formula system. In fact, over half of PHAs in every size category would benefit under this system, assuming that they were able to achieve steady vacancy reductions.

After five years of a capitated funding system, average annual federal funding per unit of public housing would be approximately $4,798 -- $425 above the average estimated under the current formula system As shown in Table 3.52, every category of PHAs would experience higher per unit funding levels, except extra large and large agencies in the Northeast and Central regions. PHA size no longer appears to be a significant determinant of relative outcomes, although PHAs in the West continue to fare better relative to the status quo than PHAs in any other region. Funding per unit for Northeastern and Central PHAs would decline by 1 and 2 percent, respectively. Southern and Western PHAs would show a 15 and 63 percent increase, respectively. Again, these regional findings generally reflect the effect of PHA size.

## Table 3.51
## DISTRIBUTION OF PHAs BY PERCENT CHANGE IN FEDERAL PAYMENTS
## BY PHA SIZE

FMR-Based Payment Formula After Five Years*

| PHA SIZE | LOSS OF MORE THAN 25% | LOSS OF 25 - 11% | LOSS OF 10 - 6% | GAIN/ LOSS +/- 5% | GAIN OF 6 - 10% | GAIN OF 11 - 25% | GAIN OF MORE THAN 25% | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Extra-Large PHAs (N) | 5 | 1 | 2 | 3 | 2 | 5 | 5 | 23 |
| Large PHAs (N) | 20 | 17 | 5 | 14 | 7 | 20 | 48 | 131 |
| Medium PHAs (N) | 27 | 22 | 13 | 19 | 10 | 34 | 140 | 265 |
| Small PHAs (N) | 778 | 299 | 110 | 235 | 111 | 291 | 1,010 | 2,834 |
| All PHAs (N) | 830 | 339 | 130 | 271 | 130 | 350 | 1,203 | 3,253 |

* Capitated payments replace operating and accrual modernization funding, backlog modernization funding allocated by CGP.

## Table 3 52
## AVERAGE PER UNIT FEDERAL PAYMENTS TO PUBLIC HOUSING AUTHORITIES
## BY PHA SIZE AND REGION

FMR-Based Payment Formula After Five Years

| | PROJECTED CAPITATED FORMULA* | PROJECTED PFS + CGP FUNDING | DIFFERENCE | PERCENT DIFFERENCE CURRENT | PERCENT DIFFERENCE BASELINE** |
|---|---|---|---|---|---|
| **Extra-Large PHAs** | $6,165 | $6,148 | $16 | 0.3% | (11.6%) |
| Northeast | 5,822 | 6,127 | (305) | (5 0%) | (14.1%) |
| South | 5,850 | 5,294 | 555 | 10.5% | (7.1%) |
| Central | 6,695 | 7,518 | (823) | (10.9%) | (24.1%) |
| West | 8,857 | 5,071 | 3,786 | 74.7% | 65.0% |
| | | | | | |
| **Large PHAs** | $4,616 | $4,227 | $389 | 9.2% | (6.6%) |
| Northeast | 4,365 | 4,688 | (323) | (6.9%) | (23.8%) |
| South | 4,384 | 3,943 | 441 | 11.2% | (3.8%) |
| Central | 3,994 | 4,145 | (151) | (3.6%) | (22.8%) |
| West | 6,980 | 4,390 | 2,590 | 59.0% | 48.0% |
| | | | | | |
| **Medium PHAs** | $4,606 | $3,338 | $1,268 | 38.0% | 21.5% |
| Northeast | 4,129 | 3,311 | 817 | 24.7% | 5.6% |
| South | 4,108 | 3,108 | 1,000 | 32.2% | 15.6% |
| Central | 4,194 | 3,564 | 629 | 17.6% | 1.4% |
| West | 7,057 | 3,607 | 3,450 | 95.7% | 82.0% |
| | | | | | |
| **Small PHAs** | $3,426 | $2,969 | $458 | 15.4% | (3.3%) |
| Northeast | 3,642 | 2,956 | 686 | 23.2% | 3.7% |
| South | 3,311 | 2,900 | 411 | 14.2% | (4.2%) |
| Central | 2,940 | 2,716 | 225 | 8.3% | (12 2%) |
| West | 5,192 | 4,187 | 1,005 | 24 0% | 7 9% |
| | | | | | |
| **Total PHAs** | $4,798 | $4,373 | $425 | 9.7% | (4.9%) |
| Northeast | 5,020 | 5,060 | (40) | (0.8%) | (13.0%) |
| South | 4,252 | 3,709 | 543 | 14 6% | (2.3%) |
| Central | 4,508 | 4,613 | (105) | (2 3%) | (13.4%) |
| West | 6,933 | 4,259 | 2,674 | 62.8% | 50.3% |

* Capitated payments replace operating and accrual modernization funding, backlog modernization funding allocated by CGP
** From Table 3 38

# 4. FEASIBILITY AND IMPACTS OF A CAPITATED PAYMENT SYSTEM

The financial simulations reported in Chapter 3 provide estimates of the impacts of alternative capitated payment schemes on the distribution of federal funding among PHAs. This chapter builds upon these results to explore some of the implementation issues posed by a prospective, capitated system for funding public housing. To do so, we have drawn upon the opinions of knowledgeable individuals in the field of public housing about the applicability and possible impacts of a prospective, capitated funding system. Thirteen experts on PHA management and funding -- including three PHA directors, four HUD officials, three public housing advocates, and three PHA management consultants -- were interviewed about the pros and cons of a system that funded PHAs in advance for anticipated operating and modernization costs, and that based payment levels on the number and characteristics of households served rather than on the number and characteristics of housing units in a PHA's inventory These interviews explored the capacity of PHAs to reduce vacancy rates and to balance operating and modernization needs, the incentives HUD might provide to promote better quality public housing services, and the applicability of various operating cost standards to the public housing environment.[24]

## Overall Impacts

Congress' mandate that HUD conduct an analysis of prospective, capitated funding alternatives reflects concerns that the PFS may not be working effectively Issues of funding adequacy and PHA efficiency were reviewed in Chapter 2 of this report, but, in addition, our selective sample of PHA experts were asked to identify problems with the PFS that should be addressed by alternative funding systems

The primary problem cited by most of the respondents is that the baseline PFS estimates of the cost of operating a well managed PHA are out of date, and that the PFS has not evolved to account for major changes in the public housing tenant population and in the operating

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[24] Responses to the expert interviews are synthesized here, to provide an overview of the range of assessments and opinions that were expressed, specific responses are not attributed to particular individuals

environment. For example, respondents cited problems of crime, drugs, and security that have substantially increased costs for PHAs but that have not been balanced by increased funding because these factors are not well represented in the PFS  One respondent characterized this problem as being "locked in time." In addition, several respondents indicated that the baseline data for PFS were faulty for some PHAs, so that funding levels were never adequate, even before conditions began changing

For respondents whose primary concern is that the operating environment for PHAs has changed radically since baseline costs were computed, adjusting subsidy levels to reflect actual costs is the highest priority for reforms to the existing funding system. Regardless of whether payments are made on the basis of households served or housing units under management, new baseline data are needed to reflect the costs of public housing operations. In addition, these respondents recommended that HUD should be more receptive to claims by PHAs that some costs they incur are beyond their control, and less reluctant to adjust payment levels when there is compelling reason to do so. It was suggested that a systematic review mechanism or formal appeals process would be appropriate to help resolve cases in which PHAs believe that a formula provides inadequate resources.

Other respondents expressed concerns about incentives for efficiency under the PFS. One indicated that under the existing formula system, PHAs have no incentive to save money, collect rents, or aggressively market their units. Another suggested that there was a definite need to curtail payment of subsidies for vacant units, in order to encourage PHAs to achieve higher occupancy rates in their inventories. However, only one of the respondents saw the prospective, capitated payment concept as a solution to the problems of the current system  This individual argued that under a capitated system PHAs would start to operate like traditional private sector management, delivering housing services more efficiently. Other respondents, however, expressed a preference for incremental improvements to the PFS rather than replacing it with an entirely new funding system. One of the primary reasons given for retaining the existing system was that a capitated approach would not work unless very good management was in place, and that many PHAs would not be able to handle the flexibility such a system offered because capitated funding would not change attitudes enough to produce strategic planning.

Although the PFS is in many respects a prospective payment system, it does allow some after-the-fact reimbursement for actual costs. A capitated payment system might be implemented in essentially the same way as the PFS, with federal payment levels estimated at the beginning of the year, and with limited opportunities for adjustments at year end. Alternatively, under an FMR-based system like those analyzed in Chapter 3, a PHA might be allocated the modernization component of its federal subsidy at the start of the year, while the capitated portion of the payment was provided monthly on the basis of households in occupancy. In other words, FMR-based payments for public housing would be more comparable to subsidy payments to private landlords under the Section 8 Certificate and Voucher programs.

Respondents were asked to identify the advantages and disadvantages of a fully prospective funding system, in which no after-the-fact adjustments for actual operating costs were provided by HUD. In general, respondents were highly skeptical of such a system, primarily because of utility costs. Utility costs, which represent a very large cost item in some PHAs, are difficult to predict and are not easily controlled by management. Buildings that are centrally metered provide little opportunity for conservation measures, and utility costs sometimes rise precipitously and without warning. As a result, several respondents felt that a purely prospective payment system would have a devastating effect for some PHAs.

Several respondents pointed out that PHAs are completely dependent on the federal government for the funds needed to operate and maintain public housing; they have no other major resources to make up the difference if HUD funding falls short of actual expenditures. One respondent made this point by indicating that if PHAs could not obtain reimbursement for actual costs incurred, they would have to reduce or postpone services to make up the difference. And another respondent argued that private landlords have equity investors with outside resources to draw upon if they face short-term cash flow problems, but that PHAs do not have anyone but the federal government to perform this function.

## Capital Improvements

If all federal funding for public housing operations and modernization were combined into a single, undifferentiated federal payment, PHAs would have to make their own allocation decisions about appropriate levels of spending for operations, routine maintenance, ongoing

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capital improvements, and modernization of dilapidated or obsolete properties. Respondents were asked whether this would result in better public housing quality, and whether they thought PHAs had the capacity to make strategic trade-offs between short-term and long-term spending options.

Most respondents argued that HUD should retain a separate funding allocation for modernization, or at least for the backlog portion of modernization. They felt that, at the national level, folding modernization and operating funds together would ultimately result in a reduction of overall funding levels. Similarly, several respondents said that at the individual PHA level, funds for modernization should be kept separate so that they are not "eaten up" by inevitable increases in operating costs. Some respondents felt that, although backlog modernization funding should definitely be kept separate, once a PHA had all its units up to standard condition, it should be required to establish a replacement reserve and fund this reserve out of its regular subsidy payment.

Most respondents indicated that if PHAs were given more latitude about resource allocations, they would spend more on annual unit inspections and follow-up, deferred maintenance, and vacancy preparation, and would probably spend less for major capital improvements. Some indicated that they would perform more preventive maintenance to reduce costs in the long run, but others expressed concern that short-term operating problems that are underfunded (such as security and drug elimination) would "suck money out of modernization resources."

Almost all the respondents expressed doubts about the capacity of PHAs to plan and prioritize effectively. One respondent argued that planning for routine maintenance versus capital improvements requires a long-term perspective that Executive Directors and Boards typically do not have; another respondent claimed that the natural tendency of PHAs is not to plan, even if forced to; and a third characterized most PHAs as being poor managers, stating that people running PHAs are not sufficiently qualified to make good decisions about short-term versus long-term spending trade-offs.

As discussed earlier in this report, a capitated funding system for public housing could continue to make payments for backlog modernization needs (or for all modernization needs) on the basis of the physical attributes of a PHA's inventory, while subsidies for operating costs would be provided on a capitated basis. Respondents expressed great uncertainty about how

major capital improvements would be financed by PHAs if they received all funding in a single stream of monthly payments from HUD rather than separate allocations for operating expenses and modernization costs. For PHAs with significant backlogs of modernization needs, this could be a major problem, since large amounts of funding are required to undertake comprehensive work. If the backlog modernization needs were funded separately, however, the problem of financing capital improvements would be more manageable.

## Occupancy Incentives

The concept of a capitated funding system reflects the notion that it is inefficient to provide PHAs with operating subsidies for units that are not occupied. Such a system would create strong incentives to increase the number of units that were occupied, but for these incentives to be effective, the payment system also has to provide the financial resources to achieve increased occupancy. In general, respondents felt that a system which created financial penalties for vacant units would cause housing agencies to place a higher priority on vacancy management and turnover to stabilize their income stream. However, not all PHAs would be successful in reducing vacancy rates, particularly if their vacancies were the result of market conditions rather than management practices.

Most respondents agreed that a funding system that made no payment whatsoever for vacant units would make it impossible to modernize public housing, and that the result would be a serious decline in public housing conditions. Without modernization funds, vacant units would remain vacant, with no way to restore them to reasonable condition. Respondents argued strongly that it takes money to reduce vacancies, and that PHAs should get this money unless it is clear that vacant units should be removed from use. A system that continued to provide funding for backlog modernization on the basis of per unit needs, in conjunction with capitated payments for operating costs and accrual modernization needs, could provide both the incentives and the resources to increase occupancy. In fact, as illustrated by the "future simulations" presented in Chapter 3, PHAs that increased the number of occupied units gradually would experience increases in funding levels under such a system, because of the increased number of households served .

Not all vacancies are the result of modernization needs. Some are simply vacant because the PHA is slow in preparing them for new occupants and in renting them. Others are vacant because there is no longer sufficient demand for them.[25] Examples of this problem include public housing elderly units, particularly in communities where a large volume of Section 202 housing for the elderly was developed after the public housing was built. Several respondents indicated that PHAs should not be penalized for market problems of this type, unless there was a mechanism for retiring units that were no longer in demand However, it seems wasteful to continue subsidizing units that are not in demand; a capitated payment system would encourage PHAs to market vacant units more aggressively, convert them so that they match the characteristics of households in need of affordable housing, or develop a plan for retiring them from use.

Most respondents also argued that even when a unit is temporarily vacant, there are costs associated with it, and that PHAs should receive some funding for maintaining and operating vacancies, even if at a reduced level. Adjustments to the capitated funding concept could be responsive to this concern, including partial subsidy payments for vacant units, full payments for a limited number of vacancies, or full payments for a limited duration.

## Variations in Public Housing Costs

As discussed in Chapter 3, any formula system for estimating appropriate payment levels to PHAs must rely on benchmarks of reasonable costs to deliver decent quality housing to public housing residents. Using historical data from PHAs themselves is problematic because PHA expenditures have been governed for so long by the PFS, that historical data is more likely to reflect how much funding has been available rather than how much is actually needed for efficient management. We asked respondents for their assessments of two alternative sources of data that might serve as benchmarks for PHA operating costs -- operating costs in privately owned multifamily projects, and the Fair Market Rents (FMRs) paid to private landlords who rent existing units to HUD subsidized households.

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[25] For data on the reasons for vacancies in public housing, see U S General Accounting Office, *Public Housing Vacancies and the Related Impact of HUD's Proposal to Reduce Operating Subsidies* Washington, D C U S General Accounting Office 1985

Several respondents felt that no direct comparisons with operating costs for private multifamily projects would be appropriate. They argued that very few costs are similar for PHAs and private property owners, describing these two types of housing as "entirely different worlds." Other respondents, however, expressed the opposite view, suggesting that private sector operating costs would reflect local costs well, and would be better than the current system.

The prospect of using FMRs as a benchmark for public housing costs also elicited mixed reactions. Several respondents had the same reaction to FMRs that they did to private multifamily operating costs -- namely that there are too many differences between public housing and the private rental market. Some respondents thought that, at least in principle, FMRs would be workable once public housing units were modernized, but that FMRs would not be adequate (or fair) for PHAs with significant backlog modernization needs. In addition, there was some concern that FMRs are not always set to reflect actual market conditions properly, and that FMRs might not adequately cover utility costs during periods when they are increasing rapidly

Because of the widely expressed view that neither private multifamily operating costs nor FMRs fully reflect the costs confronting PHAs, we asked respondents to be specific about the project characteristics, resident attributes, and other factors that make it so difficult and costly to operate public housing. On this question, there was quite widespread consensus. Not all respondents named the same factors, but there were no contradictory views expressed Public housing project characteristics that increase operating costs include older buildings that have not been modernized, projects requiring energy improvements, including buildings without individual metering for utilities; family high rise buildings -- particularly those with elevators, and those with very high population densities; three-story walkups with unsecured hallways; and other buildings with serious design flaws.

Respondents also expressed widespread agreement about resident characteristics that raise the cost of operating public housing. In particular, housing delivery costs are thought to be higher for large families with many children, especially if the children are teenagers, or if the families are headed by young single mothers; for overcrowded households; for families with social problems, such as substance abuse; and for disabled or handicapped individuals, including the very frail elderly.

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In addition, respondents cited a number of environmental conditions that raise the costs of delivering public housing, and that are very difficult -- if not impossible -- for a PHA to control. These conditions include crime and vandalism in public housing, or in the immediate vicinity; drug use and sales in and around a public housing project; inadequate service provision by local government; and social service needs of public housing residents, which -- according to one respondent -- public housing agencies must address "by default." Respondents also indicated that HUD's administrative requirements, and changing demands on public housing to perform new functions (such as lead based paint abatement) make public housing management more costly than the private sector. On the opposite side, however, two respondents criticized PHAs for having excessively large management staffs, for paying high salaries, and for providing excessive employee benefits, all of which inflate the cost of public housing unnecessarily.

A capitated payment system supplemented by funding for backlog modernization needs (or for total modernization needs ) would address some, but not all of these concerns. Under such a system, PHAs would continue to receive modernization funding to repair and renovate older buildings that are in poor condition, or that require replacement of major systems, as well as buildings with serious design flaws. Moreover, under the FMR-based approach analyzed in this report, PHAs would receive more operating funding for larger families than for small families or for individuals. However, an FMR-based funding system would not reflect higher costs that might be associated with particular building types (such as elevator buildings or three-story walkups), it would not provide additional resources for the types of residents that have high service needs (troubled families, frail elderly, and disabled), and it would not provide resources for security costs. Some of these concerns could be addressed by a more fully specified capitated payment system, if reliable data were available to estimate the incremental costs of serving different types of households or if HUD's subsidies for the provision of housing services were explicitly supplemented by funding for social services and project security.

Currently, some PHAs are experiencing significant financial and management problems, and are in a financially distressed or troubled condition. It may not be appropriate to automatically include these PHAs in a capitated payment system, without explicitly addressing their immediate financial problems. If a capitated payment formula were under serious consideration for implementation, its implications for financially distressed PHAs should be

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carefully evaluated. It is possible that these PHAs might fare better under a new formula, particularly if they experience costs that are not well represented in the PFS formula but that are included in a capitated formula. On the other hand, it is also possible that PHAs that are severely distressed need short-term financial and technical assistance to resolve their accumulated problems before they can be expected to operate successfully under any nationwide formula system

## Monitoring and Quality Control

A capitated payment system has the potential to create strong incentives for PHAs to increase the number of their units that are occupied, and reduce the duration of vacancies. In principle, this would enable the public housing program to serve more households within the constraints of its existing inventory of units. However, a capitated system of subsidy payments cannot guarantee that the quality of housing services delivered to public housing residents will be adequate. Monitoring and quality control would remain just as significant an issue under a capitated payment system as under the current system.

Quality control is also an issue where prospective and capitated payment systems have been implemented in health care. An important difference between hospitals that receive Medicare payments and PHAs that receive HUD subsidies is that Medicare patients can chose any hospital, while public housing residents lose their subsidy if they decide to move away This suggests that one way to heighten quality control in public housing is to give the recipients of services (the public housing residents) more control over the disposition of funding. Under a capitated payment formula, there is a wide range of ways in which such a concept could be implemented. The most modest approach would require that public housing residents be represented on decision-making bodies that determine how funding would be allocated between operating and modernization priorities, and how modernization funds would be utilized.

Most of the public housing experts we interviewed argued for a limited resident role of this kind. For example, several suggested that residents should be represented on decision making boards or consulted by decision makers, but that residents should not have veto power over spending and investment decisions Others suggested that they should be kept informed, but that tenant involvement in decision-making might encourage short term remedies rather than

strategic long term planning.  One respondent suggested that residents would have to be educated to participate effectively in the decision-making process.

A more radical approach would grant public housing residents the authority to withhold the capitated payments HUD makes on their behalf if the quality of their housing was inadequate. Like private sector tenants who call a rent strike, public housing residents could have their capitated payments held in escrow until they were satisfied with housing conditions  Such a scheme would wreak havoc with PHA planning for modernization if all funding were included in the capitated payments, but if at least backlog modernization funding were provided separately, tenant control over the release of capitated payments for operating costs could create extremely strong incentives for PHAs to make housing quality as well vacancy reduction a top priority.

# APPENDIX A: DATA SOURCES

· All the data on PHA characteristics and funding levels used in this analysis were provided by HUD from their automated information systems  Figure A.1 provides an overview of the various data sets used to construct a composite data base for analysis. HUD's Fiscal Data Survey (FDS) provided the master list of Public and Indian Housing Agencies to be included in the analysis. In addition, the FDS provided what HUD staff consider to be the most reliable measure of each PHA's size, expressed in terms of the number of units of low rent public housing in their inventory. The FDS covers 3,253 PHAs and IHAs that own low rent public housing units. According to HUD staff, the only jurisdictions excluded from the FDS are Alaska, Guam, Puerto Rico, and the Virgin Islands. These Agencies are typically excluded from standardized analysis of PHA finances, either because they are outliers or because they operate under different subsidy rules (or both).

The results of financial simulations provided in Chapter 3 are stratified to reflect variations in outcomes for different groups of PHAs. All results have been stratified by PHA size. Specifically, PHAs and IHAs have been classified into four groups, using the standard size categories routinely reported by HUD. Table A.1 reports the number and percent of PHAs in each size category  The vast majority of PHAs -- 2,834 or 87 1 percent are small -- with fewer than 500 units each. Only 23 (less than 1 percent) are extra large, with inventories greater than 6,500  In between these two extremes are 131 large PHAs, with between 1,250 and 6,500 units each, and 265 medium sized PHAs, with between 500 and 1,249 units each.

In addition to the four size categories, PHAs have been stratified by region, and metro or non/metro location. These variables provide an indication of the geographic distribution of PHAs, and the type of community in which they are located. Table A.2 presents the distribution of PHAs in the four size categories across these descriptive variables. PHAs from all size categories are distributed essentially the same way across geographic regions, with almost half of all PHAs located in the South, roughly one quarter located in the Central region, about 15 percent located in the North, and only about 10 percent located in the West  Not surprisingly, the distribution by metropolitan status varies greatly by PHA size  Almost all of the extra large PHAs (21 out of 23, or 91 percent) are located in metropolitan areas, while the vast majority of small PHAs (96 percent) are located in non-metropolitan areas. Large and medium sized PHAs fall between these two extremes, with 70 percent of large PHAs and 58 percent of medium sized PHAs located in metropolitan areas.

*Operating Subsidies.* Data on operating subsidies paid under the PFS were provided by HUD in a file called SUBSIDY.DAT, extracted from the ROBOTS data base. Actual PFS payments for Fiscal Year 1989 provide the most current and complete measures of operating subsidies to individual PHAs. These payments incorporate after-year-end adjustments, and include utilities as well as non-utility operating costs  All but ten of the 3,253 PHAs and IHAs in our universe appear in the SUBSIDY.DAT file, with non-zero values for PFS payments. For the ten missing cases, operating subsidy values of zero have been assigned. Table A.3 reports
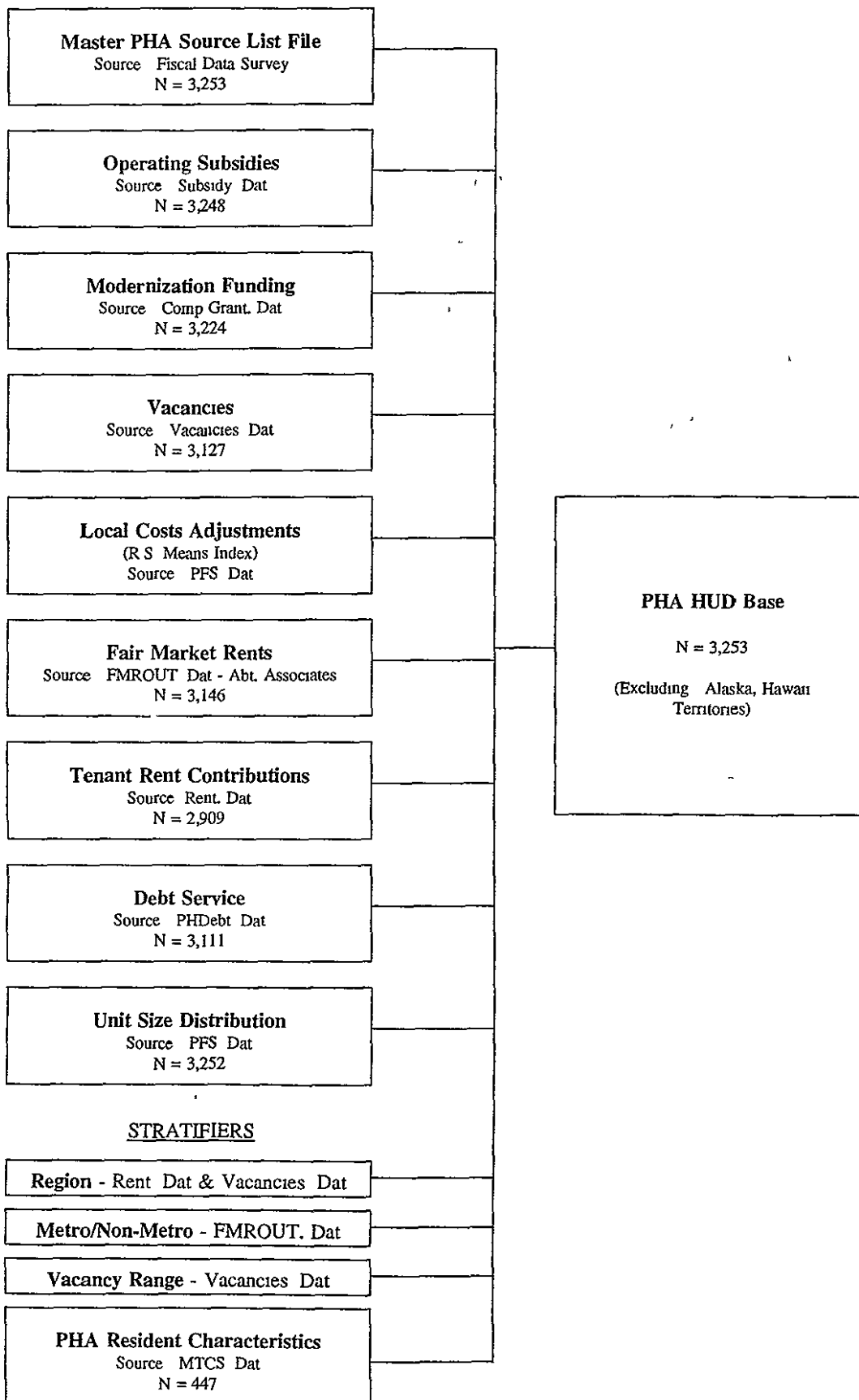
## PHA PROSPECTIVE PAYMENT SYSTEM DATABASE STRUCTURE

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┌─────────────────────────────────┐
│    Master PHA Source List File  │
│    Source   Fiscal Data Survey  │
│         N = 3,253               │
└─────────────────────────────────┘

┌─────────────────────────────────┐
│      Operating Subsidies        │
│      Source   Subsidy  Dat      │
│         N = 3,248               │
└─────────────────────────────────┘

┌─────────────────────────────────┐
│      Modernization Funding      │
│      Source   Comp Grant  Dat   │
│         N = 3,224               │
└─────────────────────────────────┘

┌─────────────────────────────────┐
│            Vacancies            │
│      Source   Vacancies  Dat    │
│         N = 3,127               │
└─────────────────────────────────┘

┌─────────────────────────────────┐
│      Local Costs Adjustments    │
│        (R S  Means Index)       │
│         Source   PFS  Dat       │
└─────────────────────────────────┘

┌─────────────────────────────────┐
│        Fair Market Rents        │
│  Source   FMROUT Dat - Abt. Associates │
│         N = 3,146               │
└─────────────────────────────────┘

┌─────────────────────────────────┐
│     Tenant Rent Contributions   │
│        Source   Rent  Dat       │
│         N = 2,909               │
└─────────────────────────────────┘

┌─────────────────────────────────┐
│          Debt Service           │
│      Source   PHDebt  Dat       │
│         N = 3,111               │
└─────────────────────────────────┘

┌─────────────────────────────────┐
│      Unit Size Distribution     │
│        Source   PFS  Dat        │
│         N = 3,252               │
└─────────────────────────────────┘
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┌──────────────────────────┐
│                          │
│                          │
│      PHA HUD Base        │
│                          │
│       N = 3,253          │
│                          │
│  (Excluding  Alaska, Hawaii │
│       Territories)       │
│                          │
│                          │
└──────────────────────────┘
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## STRATIFIERS

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┌─────────────────────────────────────────┐
│ Region - Rent  Dat & Vacancies  Dat     │
└─────────────────────────────────────────┘

┌─────────────────────────────────────────┐
│ Metro/Non-Metro - FMROUT. Dat           │
└─────────────────────────────────────────┘

┌─────────────────────────────────────────┐
│ Vacancy Range - Vacancies  Dat          │
└─────────────────────────────────────────┘

┌─────────────────────────────────────────┐
│   PHA Resident Characteristics          │
│      Source   MTCS  Dat                 │
│         N = 447                         │
└─────────────────────────────────────────┘
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## Table A.1

## Public Housing Agencies by Size

| | Number of PHAs | Percent* |
|---|---|---|
| Extra Large (over 6,500 units) | 23 | 0.7% |
| Large (1,250 - 6,500 units) | 131 | 4.0 |
| Medium (500 - 1,249 units) | 265 | 8 1 |
| Small (under 500 units) | 2,834 | 87.1 |
| Total | 3,253 | 100.0 |

*Percentages do not total 100% due to rounding

Table A.2

Distribution of PHAs by
Region and Metro Status

| | Extra Large | | Large | | Medium | | Small | |
|---|---|---|---|---|---|---|---|---|
| **REGION** | | | | | | | | |
| Northeast | 5 | (21.7%) | 40 | (30.5%) | 60 | (22.6%) | 310 | (10.9%) |
| Central | 6 | (26.1%) | 23 | (17.6%) | 61 | (23.0%) | 864 | (30 5%) |
| South | 9 | (39.1%) | 55 | (42.0%) | 102 | (38 5%) | 1,399 | (49.4%) |
| West | 3 | (13.0%) | 13 | (9 9%) | 42 | (15.9%) | 261 | (9.2%) |
| **TOTAL PHAs** | 23 | | 131 | | 265 | | 2,834 | |
| | | | | | | | | |
| **METRO STATUS** | | | | | | | | |
| Metro | 21 | (91.3%) | 92 | (70.2%) | 155 | (58.5%) | 123 | (4 3%) |
| Non-Metro | 2 | (8.7%) | 39 | (29.8%) | 110 | (41.5%) | 2,711 | (95.7%) |
| **TOTAL PHAs** | 23 | | 131 | | 265 | | 2,834 | |

## Table A.3

### Final FY 1992 PFS Operating Subsidies
### by PHA Type and Region

| PHA TYPE | PFS OPERATING FUNDS (millions) |
|---|---|
| Extra Large | $1,141 |
| Northeast | 562 |
| South | 252 |
| Central | 285 |
| West | 41 |
| | |
| Large | $578 |
| Northeast | 166 |
| South | 244 |
| Central | 108 |
| West | 61 |
| | |
| Medium | $235 |
| Northeast | 53 |
| South | 89 |
| Central | 60 |
| West | 33 |
| | |
| Small | $305 |
| Northeast | 46 |
| South | 166 |
| Central | 60 |
| West | 33 |
| | |
| Total PHAs | $2,259 |
| Northeast | 828 |
| South | 750 |
| Central | 513 |
| West | 167 |

Note   Subtotals do not add up to totals due to rounding

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the total level of operating subsidies provided to the PHAs included in the analysis, scaled up to FY 1992 terms, as well as the distribution of funding by PHA size.

*Modernization Funding*   Values for the levels of modernization funding allocated to PHAs and IHAs under the new Comprehensive Grants Program (CGP) were derived from data in a file called COMPGRNT.DAT, extracted from HUD's Comprehensive Grant Formula data base   These data reflect the final share amounts of backlog modernization funding and accrual funding estimated as of July 1992 for every PHA using HUD's modernization needs formula. A total of 67 agencies that appeared in the FDS file were missing from this file. These agencies were assigned a value of zero for modernization funding.

Currently, only PHAs and IHAs with more than 500 units in their inventory are eligible to participate in the formula-based CGP, PHAs with 250 to 500 units are scheduled to be incorporated into the system, but smaller PHAs will continue to apply for funding under the terms of the CIAP program.   Nevertheless, HUD's CGP formula provides estimates of modernization needs for every PHA and IHA, regardless of size, and will be used to determine the total level of modernization funding allocated to small PHAs   Therefore, we have used the CGP shares to estimate backlog and accrual funding levels for the universe of PHAs as a basis for comparing the effects of capitated funding alternatives

Under CGP, a PHA's modernization funding is determined by applying its formula share estimates for backlog and accrual modernization to the total national pool of modernization funds. Each participating PHA's share of available funds is determined by the needs-based formula.   In Fiscal Year 1992, $2.6 billion was made available for public housing modernization to be allocated among CGP and CIAP agencies.   After adjusting for funds allocated to Alaska and the territories, the total FY 1992 funding for PHAs in our analysis was $2.4 billion.   As indicated earlier, we have used the CGP formula shares to estimate public housing funding for all PHAs, regardless of size.

PHAs participating in CGP receive a single annual grant, which may be applied to either backlog or accrual modernization needs as needed   However, modernization formula shares are constructed on the basis of a predictive analysis that considers these two sources of modernization needs separately and, according to statute, half of the total funding for public housing modernization is intended to address backlog needs, while half is intended to address accrual needs.   Therefore, we have constructed estimates of each PHA's accrual modernization funding allocation and backlog modernization funding allocation, as well as its total modernization funding allocation under the CGP formula.   An individual PHA's accrual funding allocation was calculated by applying its accrual formula share value to half of the total funding available for public housing modernization at the national level.   Correspondingly, a PHA's backlog funding allocation was calculated by applying its backlog formula share value to half of the total funding available for public housing modernization at the national level.   Table A.4 reports the total level of modernization funding provided to the PHAs included in the analysis in FY 1992, as well as the distribution of funding by PHA size.   As noted earlier, not every PHA is represented among the 3,253 included in our analysis.   Therefore, the sum of modernization

Table A.4

Final FY 1992 PHA Modernization Funds
by PHA Type and Region

| PHA TYPE | MODERNIZATION FUNDS (millions) |
|---|---|
| Extra Large | $989 |
| Northeast | 523 |
| South | 182 |
| Central | 231 |
| West | 53 |
| | |
| Large | $544 |
| Northeast | 153 |
| South | 207 |
| Central | 105 |
| West | 80 |
| | |
| Medium | $327 |
| Northeast | 71 |
| South | 114 |
| Central | 77 |
| West | 65 |
| | |
| Small | $545 |
| Northeast | 91 |
| South | 256 |
| Central | 133 |
| West | 65 |
| | |
| Total PHAs | $2,404 |
| Northeast | 838 |
| South | 758 |
| Central | 546 |
| West | 263 |

Note  Subtotals do not add up to totals due to rounding

funding across analysis PHAs falls short of the total funding available, and the overall allocation between backlog and accrual modernization diverges slightly from a fifty-fifty split. Specifically, the PHAs in our analysis sample account for a total of $2.4 billion in modernization -- approximately $1.2 billion attributable to accrual needs and $1 2 billion to backlog needs.

*Vacancies.* A key factor for simulating the impacts of capitated funding alternatives is clearly the number (or share) of units that are vacant at any PHA or IHA. Ideally, one would base a capitated funding system on a PHA's total occupied unit months, not on a simple occupancy rate calculated at a single point in time. To illustrate, a unit occupied for 11 months out of a year should receive 11/12 of the funding provided to a unit that is occupied for a full year. Unfortunately, reliable data on occupied unit months were not available for the universe of PHAs and IHAs. Therefore, the analysis is limited to more basic estimates of PHA-wide vacancy rates.

Data on vacancies were provided by HUD in a file called VACANCY.DAT, which was extracted from the FORMS data base. This file specifically reports the total number of vacant units recorded between 1989 and the summer of 1991. Units that were vacant at the time of the count were included regardless of the reason for vacancy; so, for example, units in a building about to undergo substantial modernization would be included in the vacancy count. Vacancy rates are calculated as the ratio of vacant units to total units, and the number of households served by a PHA is calculated as the total number of units minus the number of vacant units. We identified 145 agencies that were included in the FDS file but missing from the VACANCY file. For these agencies, a vacancy rate was imputed by assigning the average vacancy rate for agencies in the same size category and region.

Table A.5 reports the distribution of PHAs by vacancy rate and PHA size category. Extra large PHAs are the most likely to experience high vacancy rates, while most small PHAs have substantially lower vacancy rates Specifically, only 4 of the 23 extra large PHAs (17 percent) have vacancy rates under 6 percent; almost half have vacancy rates above 15 percent, and 4 (17 percent) are more than 30 percent vacant. In contrast, 43 percent of small PHAs have vacancy rates under 6 percent, and only 11 percent have more than 15 percent of their units vacant Among large and medium sized PHAs, about half have vacancy rates under 6 percent, and 9 to 16 percent have more than 15 percent of their units vacant.

Note that we have not made a distinction between short-term versus long-term vacancies, between individual units vacant in buildings that are otherwise occupied versus boarded up buildings, or between habitable vacancies versus vacancies that are awaiting modernization All of these distinctions are of course important to the actual outcome of a capitated funding system, but complete data on the characteristics and reasons for vacancies are not available. Therefore, vacancy rates used in this report represent the share of all units in a PHA's inventory that were vacant for any reason.

*Local Cost Adjustments.* Differences in local cost levels for individual PHAs are reflected by the R S. Means Index, which measures temporal and cross-sectional variations in construction

Table A.5

Distribution of PHAs by
Vacancies

| | Extra Large | | Large | | Medium | | Small | |
|---|---|---|---|---|---|---|---|---|
| **VACANCY RATE** | | | | | | | | |
| 0 - 5% | 4 | (17.4) | 63 | (48.1) | 143 | (54.0) | 1,214 | (42 8) |
| 6 - 10% | 4 | (17.4) | 33 | (25.2) | 77 | (29.1) | · 819 | (28.9) |
| 11 - 15% | 5 | (21.7) | 14 | (10.7) | 20 | (7.5) | · 490 | (17.3) |
| 16 - 20% | 4 | (17.4) | 12 | (9 2) | 12 | (4.5) | 107 | (3.8) |
| 21 - 30% | 2 | (8.7) | 7 | (5.3) | 10 | (3.8) | 118 | (4.2) |
| 31% + | 4 | (17.4) | 2 | (1.5) | 3 | (1.1) | 86 | (3.0) |
| **TOTAL PHAs** | 23 | | 131 | | 265 | | 2,834 | |

costs. This index is used by HUD in computing modernization funding needs under the CGP formula. An alternative cost adjustment variable was also considered for this analysis. Specifically, HUD uses the local government wage index produced by the Bureau of Labor Statistics to adjust operating subsidy estimates under the PFS.

*Fair Market Rents.* Local Fair Market Rent (FMR) values for various sized units were linked to PHA identifiers by Abt Associates. Specifically, for each PHA, the Abt file provided 1990 values of FMRs for efficiency units, one-bedroom units, two-bedroom units, three-bedroom units, and four or more bedroom units.

*Tenant Rent Contributions.* Data on rents charged to public housing residents were provided by HUD in a file called RENT.DAT, extracted from the SORES data base. These data reflect actual rent charges for Fiscal Year 1989, and provide the best available measure of potential PHA revenue from tenant rent contributions. Unfortunately, 356 of the 3,253 agencies that appear in the FDS file are missing from the RENT file. It was not considered plausible to assign all of these cases a tenant rent value of zero, nor was it acceptable to drop 356 cases from the financial analysis. Therefore, tenant rent charges were imputed for cases in which these data were missing. Specifically, agencies with missing tenant rent payments were assigned the average per unit rent value for agencies in the same size category and region.

*Debt Service.* Data on the imputed value annual payments for the retirement of public housing debt were provided by HUD in a file called PHDEBT.DAT, which was prepared for a HUD analysis of public housing rent levels. Although HUD no longer makes payments under the Annual Contributions Contracts (ACCs), these imputed debt service values reflect HUD's best estimates of what the federal government would be paying on debt service on all debt incurred through 1988. The true imputed cost to the federal government of public housing debt service is actually somewhat higher than these estimates, due to capital costs incurred since 1988.

*Unit Size Distribution.* Data on the distribution of public housing units by unit size (number of bedrooms), were provided by HUD in a file called PFS.DAT, which was extracted from the Comprehensive Grant Formula data base. For each PHA, these data report the percent of units that have more than three bedrooms and the percent of units that have more than two bedrooms. Using these variables, we calculated the number of units with three or more bedrooms, the number of two bedroom units, and the number of efficiency and one-bedroom units.

*Resident Characteristics in Public Housing Agencies.* For a subset of PHAs, data on resident characteristics were extracted from HUD's Multifamily Tenant Characteristics System (MTCS). This data base provides information at the individual household and project level, and resident attributes were aggregated to the PHA level by HUD staff. Specifically, estimates of average household size, average household income, share of households headed by a single mother, and share of households on welfare were provided for all PHAs with greater than 500 units. Small PHAs are not included in the MTCS data base.

# APPENDIX B: COMPUTATION OF PAYMENTS
# UNDER ALTERNATIVE FORMULAS

## Base Case Funding Levels

1. For each PHA, apply the ratio of the FY 1992 Performance Funding System (PFS) total over the FY 1989 total, to each agencies' formula payment in FY 1989

2. For each PHA, apply the Comprehensive Grant Program (CGP) formula shares to the total FY 1992 pool of CGP funding to determine the PHA's allocation for backlog and accrual modernization needs.

    a.    Total 1992 funding for public housing modernization under CGP and CIAP is $2.6 billion, $2 4 of which was allocated to agencies in our analysis.

    b.    According to statute, half of the total modernization funding is for accrual needs and half is for backlog needs

    c.    A PHA's accrual modernization funding is computed as accrual share times half of total modernization funding available

    d.    A PHA's backlog modernization funding is computed as backlog share times half of total modernization funding available.

    e.    A PHA's total modernization funding is computed as backlog funding plus accrual funding

3. For each PHA, add 1992 operating funding plus total 1992 modernization funding to arrive at base case funding level

4. For each PHA, divide by the total number of units to yield current average per unit funding levels.

## Formula A1. Total Current Pool of Operating and Mod Funds Allocated Equally Across Occupied Units

1. Sum across all PHAs to arrive at a total 1992 pool of operating and modernization funds

2. Sum across all PHAs to arrive at the aggregate number of households served (occupied units).

3 Divide the total 1992 pool of operating and modernization funding by the aggregate number of households served to yield a constant payment level per household.

4. For each PHA, multiply the per household payment level times the number of households served (occupied units) to yield the formula A1 payment.

5. For each PHA, divide the formula A1 payment by the total number of units (occupied or vacant) to yield average per unit funding under the formula.

Formula A2: Current Pool of Operating Funds plus Accrual Portion of Mod Funding Allocated Equally Across Occupied Units; Backlog Portion of Mod Funding Allocated by CGP Formula

1 Sum across all PHAs to arrive at a total 1992 pool of operating funds plus the accrual portion of modernization funds

2. Divide the total 1992 pool of operating and accrual modernization funding by the aggregate number of households served (from Formula A1), to yield a constant payment level per household.

3. For each PHA, multiply the per household payment level times the number of households served (occupied units), to yield the capitated portion of the formula A2 payment.

4. For each PHA, add the backlog portion of current modernization funding (calculated under the CGP formula) to the capitated payment to yield the total formula A2 payment.

5 For each PHA, divide the formula A2 payment by the total number of units (occupied or vacant) to yield average per unit funding under the formula

Formula A3: Current Pool of Operating Funds Allocated Equally Across Occupied Units; Modernization Funding Allocated by CGP Formula

1. Sum across all PHAs to arrive at a total 1992 pool of operating funds.

2. Divide the total 1992 pool of operating funding by the aggregate number of households served (from Formula A1), to yield a constant payment level per household.

3 For each PHA, multiply the per household payment level times the number of households served (occupied units), to yield the capitated portion of the formula A3 payment.

4 For each PHA, add modernization funding (calculated under the CGP formula) to the capitated payment to yield the total formula A3 payment.

5 For each PHA, divide the formula A3 payment by the total number of units (occupied or vacant) to yield average per unit funding under the formula.

Formula B1: Total Current Pool of Operating and Mod Funds Allocated Among Occupied Units, with Payment Adjusted by Local R.S. Means Index

1. Normalize the values of the R.S. Means Index so that the average across PHAs (weighted by number of occupied units) is 1.0.

     a.     Calculate the average of R.S. Means Index values across PHAs, where each PHA's Index is weighted by the number of occupied units.

     b.     For each PHA, divide the raw Index value by the weighted average value to yield a normalized index value.

2. For each PHA, multiply the capitated payment calculated under Formula A1 by the normalized index value to yield the Formula B1 payment.

3 For each PHA, divide the Formula B1 payment by the total number of units (occupied or vacant) to yield average per unit funding under the formula.

Formula B2: Current Pool of Operating Funds plus Accrual Portion of Mod Funding Allocated Among Occupied Units, with Payment Adjusted by Local R.S Means Index, Backlog Portion of Mod Funding Allocated by CGP Formula

1. For each PHA, multiply the capitated payment calculated under Formula A2 by the normalized R.S. Means Index value to yield the capitated portion of the Formula B2 payment

2. For each PHA, add the backlog portion of current modernization funding (calculated under the CGP formula) to the capitated payment to yield the total formula B2-payment.

3. For each PHA, divide the Formula B2 payment by the total number of units (occupied or vacant) to yield average per unit funding under the formula

Formula B3: Current Pool of Operating Funds Allocated Among Occupied Units, with Payment Adjusted by Local R S Means Index, Modernization Funding Allocated by CGP Formula

1. For each PHA, multiply the capitated payment calculated under Formula A3 by the normalized R.S Means Index value to yield the capitated portion of the Formula B3 payment

2. For each PHA, add current modernization funding (calculated under the CGP formula) to the capitated payment to yield the total formula B3 payment.

3. For each PHA, divide the Formula B3 payment by the total number of units (occupied or vacant) to yield average per unit funding under the formula.

## Formula C1: FMR-based Payment Replaces all Current Operating and Modernization Funds

1. For each PHA, inflate 1990 FMR values to yield 1992 values, using an average annual inflation rate of 3.7 percent.

2. For each PHA, inflate 1989 values of tenant rent payments to yield 1992 values, using an average annual inflation rate of 3.7 percent.

3. For each PHA, calculate total FMR-based rent revenue by multiplying the number of occupied units in each unit size category times the applicable FMR.

   a. Estimate the number of occupied units in each size category by multiplying the total number of units greater than three bedroom, two bedroom, and efficiency/one bedroom times the share of all units that are occupied.

   b. Multiply the number of occupied units in each size category by the FMR for that size category.

   c. Sum across size categories to yield total FMR-based rent revenue for the PHA.

4 For each PHA, calculate the federal FMR-based payment by subtracting 1992 tenant rent contributions and imputed debt service.

5. For each PHA, add 7 percent to the total estimated FMR-based revenue to reflect administrative fees.

6 For each PHA, this FMR-based payment represents the total Formula C1 payment.

7. For each PHA, divide the Formula C1 payment by the total number of units (occupied or vacant) to yield average per unit funding under the formula.


## Formula C2: FMR-based Payment Replaces Current Operating Funding plus Accrual Portion of Mod Funding; Backlog Portion of Mod Funding Allocated by CGP Formula

1. For each PHA, add the backlog portion of current modernization funding (calculated under the CGP formula) to the FMR-based payment calculated under Formula C1 to yield the total Formula C2 payment

2. For each PHA, divide the Formula C2 payment by the total number of units (occupied or vacant) to yield average per unit funding under the formula

Formula C3. FMR-based Payment Replaces Current Operating Funding; Modernization Funding Allocated by CGP Formula

1. For each PHA, add current modernization funding (calculated under the CGP formula) to the FMR-based payment calculated under Formula C1 to yield the total Formula C3 payment.

2. For each PHA, divide the Formula C3 payment by the total number of units (occupied or vacant) to yield average per unit funding under the formula.


Simulating Future Payment Levels: Base Case

1. For each PHA, federal payments for both operating and modernization costs are assumed to increase due to inflation at an annual rate of 3.7 percent.

    a     For the 1-year scenario, increase federal payments to each PHA by a factor of 1.037.

    b.    For the 5-year scenario, increase federal payments to each PHA by a factor of $1.037^5$.


Simulating Future Payment Levels: Capitated Payments

(Note: Formula C2 is the basis for simulating the future effects of a capitated payment system. This is the formula in which an FMR-based payment replaces current operating funding plus the accrual portion of modernization funding, while the backlog portion of modernization funding is allocated by CGP formula).

1. For each PHA, inflate 1992 values of backlog modernization funds, using an average annual inflation rate of 3.7 percent

    a     For the 1-year scenario, increase backlog modernization funding by a factor of 1 037

    b.    For the 5-year scenario, increase backlog modernization funding by a factor of $1.037^5$.

2. For each PHA, inflate 1992 FMR values, using an average annual inflation rate of 3.7 percent

    a.    For the 1-year scenario, increase FMRs by a factor of 1.037.

    b.    For the 5-year scenario, increase FMRs by a factor of $1.037^5$

3. For each PHA, calculate an average (per household) tenant rent payment, and inflate using an average annual inflation rate of 3.7 percent.

a   Average tenant rent payment is calculated as total tenant rent divided by total occupied units.

b.   For the 1-year scenario, increase average tenant payment by a factor of 1.037.

c   For the 5-year scenario, increase average tenant payment by a factor of $1.037^5$.

4. For each PHA, construct estimated number of occupied units after one year under a capitated system.

a.   For PHAs with vacancy rates under 6 percent, number of occupied units is unchanged.

b.   For PHAs with vacancy rates between 6 and 10 percent, vacancy rate is reduced by 5 percentage points, to yield the predicted number of occupied units.

c.   For PHAs with vacancy rates between 11 and 30 percent, vacancy rate is reduced by 2 percentage points, to yield the predicted number of occupied units.

d.   For PHAs with vacancy rates over 30 percent, vacancy rate is multiplied by a factor of 0.9525 to yield the predicted number of occupied units.

5. For each PHA, construct estimated number of occupied units after five years under a capitated system.

a.   For PHAs with vacancy rates under 6 percent, number of occupied units is unchanged.

b   For PHAs with vacancy rates between 6 and 10 percent, vacancy rate is reduced by 5 percentage points, to yield the predicted number of occupied units.

c.   For PHAs with vacancy rates between 11 and 30 percent, vacancy rate is reduced by 10 percentage points, to yield the predicted number of occupied units.

d   For PHAs with vacancy rates over 30 percent, vacancy rate is multiplied by a factor of 0.2375 to yield the predicted number of occupied units.

6. For each PHA, calculate total FMR-based rent revenue after one year and after five years by multiplying the predicted number of occupied units (after one year and five years) times the share of units in each size category times the applicable FMRs (inflated to one year and five years).

    a. Estimate the number of occupied units in each size category by multiplying the share of units greater than three bedroom, two bedroom, and efficiency/one bedroom times the estimated number of occupied units after one year.

    b Multiply the number of occupied units in each size category by the FMR for that size category

    c. Sum across size categories to yield total FMR-based rent revenue for the PHA.

7. For each PHA, calculate tenant rent payments after one year and after five years by multiplying the average per household rent payment (inflated to one year and five years) by the estimated number of occupied units (after one year and after five years).

8. For each PHA, calculate the federal FMR-based payment by subtracting 1992 tenant rent contributions and imputed debt service.

9. For each PHA, add 7 percent to the total estimated FMR-based revenue to reflect administrative fees.

10 For each PHA, add the backlog portion of current modernization funding (calculated under the CGP formula) to the FMR-based payment to yield the total federal payment after one year and after five years.

11. For each PHA, divide the one year and five year payments by the total number of units (occupied or vacant) to yield average per unit funding.