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Analyzing Corrective Action and AFDC Dynamics
An Econometric Approach

by

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This paper summarizes the methodology and the results of an in-depth study of quality control and corrective action in the Aid to Families with Dependent Children (AFDC) program.[1] The objective of the research was to evaluate the impact of various quality control induced corrective actions on AFDC caseload and expenditure levels. To fulfill this objective, detailed econometric analyses of corrective action policies and underlying AFDC dynamics were conducted in six jurisdictions. The rationale for and results of these analyses are presented in the balance of this paper.

AFDC and Corrective Action

The motivation for the research reported here emanates from a continuing set of concerns about the efficiency and equity of the nation's largest public assistance program -- AFDC. These questions have been directed primarily at how well such a large and complex system has been able to manage a myriad of federal guidelines, individual state options for program eligibility and payment levels, and various social, political, and fiscal crises. Inevitably, with the growth of the AFDC program in the late 1960s and early 1970s came the concerns with fraud, abuse, and effective management. The one central focus for addressing these concerns and for restoring public confidence in the administration of the program has been the quality control efforts of the Department of Health and Human Services (HHS).

The Quality Control Program has had an interesting and politically volatile history. During the initial period of the program (1963-1970), many states had been admittedly lax in their approaches to quality control, their efforts falling short of what QC proponents in Congress and the Department of Health, Education, and Welfare (HEW) expected. Consequently, in April 1973, the Department adopted a new and more rigid posture toward the program. Regulations were announced that threatened financial penalties for states reporting AFDC program error rates in excess of prescribed levels. The development of the new Quality Control sanctions policy clearly reflected an increased level of commitment on the part of HEW to error reduction and the elimination of potential fraud and abuse in the program.

By and large, the threat of fiscal sanctions produced acceptable and responsive plans for corrective actions intended to reduce measured error rates. Although the specific corrective action mechanisms developed and subsequently implemented differed substantially between jurisdictions, the goals remained the same -- to reduce fraud, abuse, and administrative error, and to mitigate the possibility of incurring fiscal penalties.

By the late 1970s, measured error rates had declined in virtually all jurisdictions, and in some jurisdictions dramatically. However, it remained unclear precisely how specific corrective actions had affected AFDC caseload and expenditure levels, if at all. It was generally recognized that a variety of factors interact to generate caseload and expenditures; that these factors vary between AFDC jurisdictions; and that individual factors produce different impacts on the components of caseloads and expenditures -- openings, closings, and average payments -- in different jurisdictions. It appeared that what was needed was more detailed information on the specific impact of corrective actions on each of these components. To what extent, for instance, have corrective actions acted to reduce the number of applications received, to raise the number of applications rejected, or to increase the number of active cases removed from the public assistance rolls? Indeed, have corrective action activities affected AFDC caseload and expenditure levels at all?

In order to determine the independent impact of corrective actions on AFDC caseload and expenditure dynamics, the Public Assistance Data Analysis Laboratory at the Social Welfare Research Institute (SWRI) undertook a series of studies involving six jurisdictions: New York City, Upstate New York, the California counties of Los Angeles, Alameda, and San Diego, and the entire State of Florida. Through both qualitative and quantitative methods, the research staff attempted to isolate and measure the independent impact of quality control induced corrective actions on caseloads and expenditures in these jurisdictions. Detailed econometric models of AFDC programs were constructed, corrective action impacts were estimated, and a variety of program simulations were used to identify the component sources of change in AFDC.

The Research Methodology

During the mid 1970s, the Social Welfare Research Institute developed a multiple equation, time series, econometric model which could be used in virtually any AFDC jurisdiction to evaluate the underlying determinants of change in public assistance caseload and expenditure levels. While the SWRI methodology is general, the time series estimator is data-intensive and specific to each jurisdiction. Thus, the model is able to incorporate many of the complex administrative factors like corrective actions that are indeed unique to individual areas.

The theoretical model of the caseload and benefit determination process identifies a number of "filters" or "screens" through which each family in the population explicitly or implicitly flows in the determination of welfare participation.[2] According to this model, one screen determines eligibility; another, the family's probability of applying for assistance; and others, the probability that their application is processed, the probability that the processed application is accepted, and finally, the probability that a participating family's AFDC case will be closed.

This theoretical model can be formally translated into a mathematical identity that contains several individual equations. In the most disaggregated version, regression equations are estimated for each of the following components of the "caseload identity:"[3]

1) Applications Received
2) Application Processing Rate
3) Acceptance (Rejection) Rate
4) Closing Rate

With this methodology, the determinants of each component can be estimated, and explicit attention can be focused on evaluating the independent impact of corrective actions. Moreover, the ability to model the overall dynamics of the AFDC program is greatly enhanced, for a large number of independent factors can enter the model, and each can be statistically evaluated.

Regression modeling of AFDC dynamics requires the proper specification of a variety of factors likely to affect caseload and expenditure levels over time. These factors include changes in benefit levels, economic and employment opportunity conditions, and most important for the research being discussed here, changes in administrative factors, particularly corrective actions. The most useful feature of the SWRI model has been its ability to statistically isolate and measure the individual and combined impacts of factors precisely like quality control induced corrective actions.

<u>To measure the net impact of corrective actions on the caseload, it is necessary to isolate the effects of these activities from all other factors.</u> Our methodology does this by accounting for as many of the other factors as possible. It is useful, therefore, to distill these various factors into three general categories, each of which is associated with a general hypothesis of caseload dynamics. These are:

1) the alternative income hypothesis
2) the economic opportunity hypothesis
3) the institutional hypothesis

The alternative income hypothesis suggests that AFDC caseload trends can be explained in terms of families' "voluntary" decisions regarding work and welfare. According to this hypothesis, which is based on neoclassical economic theory, families will make a choice between the benefits available from public assistance (e.g., cash, medical care, and food stamps) and the "benefits" available in the labor market (e.g., wages and fringe benefits). This choice, theory suggests, will be made with the objective of maximizing the family's utility. Utility is evaluated in terms of an optimal bundle of goods derived from work and/or welfare. If potential benefits from public assistance increase relative to potential labor market earnings, more families will choose public asistance over the labor market. Implicit in this hypothesis (at least in its strict formulation) is the assumption that the work-welfare tradeoff is unconstrained by employment availability or by restrictions imposed by welfare authorities. Jobs are assumed to exist at some given market wage and the opportunity to apply for and receive welfare benefits is limited only by explicit program regulations.

The employment opportunity theory amends the unconstrained market assumption of the neoclassical hypothesis. It postulates that the lack of adequate job opportunities at a sufficiently high level of earnings or a sufficiently stable rate of employment deprives many families of a real choice between work and welfare. Economic recessions, combined with "structural" unemployment, decrease market options so that many families are forced to turn to public assistance for economic survival, at least on a temporary basis.

The health of a jurisdiction's economy -- particularly within individual labor markets -- is therefore presumed to be a major determinant of caseload and expenditure levels. There is one principle implication of the employment opportunity hypothesis for understanding AFDC dynamics: if basic labor market opportunity is not available, then marginal changes in welfare benefits or average wages may have little impact on the size of the caseload.

Institutional theories focus on the impact that changes in public assistance laws, welfare department regulations (particularly with respect to corrective action), and political factors have on AFDC application rates, overall acceptance policy, and terminations. The critical issue is not necessarily the degree to which economic factors affect the number of families who require public assistance; rather it is how many of these families actually apply for AFDC benefits and subsequently participate in the welfare system. Institutional theories attribute the explosion in AFDC during the late 1960s primarily to more liberal welfare policies, a growing awareness of eligibility, changing social mores, and a host of other cultural and political factors. The same theories trace the slowdown in caseload growth in the 1970s to a rapidly spreading political and fiscal conservatism, increased emphasis on verification of factors affecting eligibility, more frequent and thorough reviews of existing caseloads, and the impact of other corrective action policies.

An observed reduction in the AFDC caseload can therefore be due to any number of competing factors: a relative decline in benefit levels, growing employment opportunity, or various types of corrective action policies. The task, then, is to decipher a variety of relevant information about caseload behavior in order to isolate the effect of each of these factors. Only in this manner can the independent impact of corrective actions be determined.

The theoretical base for the caseload model suggests which types of variables should enter each of the regression equations. The number of applications received in a given month, for example, is a function of variables rooted in all three theories of caseload behavior. These include economic conditions, benefit levels in relation to potential labor market earnings, and the methods used to determine eligibility.

The processing and rejection rates should, according to theory, be determined by institutional (administrative) factors alone. However, economic variables (e.g., the unemployment rate) may also affect the rigidity or leniency with which eligibility criteria are applied. The closing rate equation could contain many of the variables that appear in an applications equation: for example, benefit levels in relation to labor market earnings, as well as overall economic conditions can affect the rate at which voluntary terminations occur. However, institutional factors, especially corrective actions, are often important since individual welfare administrations have the discretion to alter existing activities and to implement totally new programs as well. In the following section of this paper we present the theoretical foundations and the functional forms of each of the caseload component equations.

Applications Received

Applications received by a welfare service office take the form of a flow; caseload, on the other hand, is a stock. Presumably, however, a steady state level of applications exists even when there are no current changes in the levels of any of the factors that determine the number of applications filed. Although the size of the relevant sub-populations may remain nearly constant, some AFDC families find employment or become married; such cases could be closed. At the same time other families become eligible for benefits as a result of divorce, desertion, childbirth, or other sources of income loss; new cases would therefore open. Hence, the caseload level (or stock) can remain constant, while the flow of applications, openings, and closings will be a positive number in each time period.

Welfare "cycling" is one form of turnover which argues for a non-zero steady state level of applications when caseload size is constant. Welfare "cyclists" are families that resort to the use of welfare on an intermittent basis when labor markets or family conditions do not provide steady incomes. The actual levels of explanatory variables can be used to estimate the steady state number of applications received. However, there are also "shocks" to the level of applications due to changes in independent variables. When employment opportunities are curtailed in the labor market, for example, applications may increase sharply for several periods, and then return to a new steady state level.

Based on this approach, an empirically testable applications received equation (AP.REC) might include any or all of the following types of variables suggested by each of the major caseload hypotheses:

$$AP.REC(t) = \beta_0 + \beta_1(B/Z) + \beta_2 UR + \beta_3 \Delta UR + \beta_4 EMP + \beta_5 \Delta EMP + \beta_6 CACL\text{-}1 + \beta_7 FHF + \beta_8 \Delta FHF + \sum_{i=9}^{n} \beta_i ADM_i + \varepsilon(t)$$

Alternative Income Hypothesis

The first term in the applications equation, B/Z, is used to test the alternative income hypothesis. This ratio applies to families "at the margin," who are making the decision of whether to work or enroll in AFDC. According to theory, their decision is based on the relative returns to the alternative income flows. Consistent with the neoclassical assumptions associated with this hypothesis, we assume that these families believe that both options are open to them with equal probability.

The maximum benefit (B) varies with family size, and is specific to each jurisdiction modeled. The calculation of B begins with a hypothetical family of four. The resulting aid standard is then adjusted by the average family size in the relevant jurisdiction. The payment amount a family actually receives from the AFDC program is not necessarily the full "standard of need." The final grant equals the standard (minus any rateable reduction) minus some portion of income the family receives from other sources. However, the appropriate minimum figure for B is the standard (corrected for rateable reduction if applicable) because this is the potential public assistance income a family can choose to obtain, if no other income source is available.

In computing the potential benefits available to a poor family two other factors should be taken into account. First, since Medicaid provides comprehensive medical coverage for AFDC recipients, a value has been imputed for this coverage based on estimated premiums for the most comprehensive insurance offered in the private health system. Second, the bonus value of food stamps must also be taken into account. This value is calculated by the U.S. Department of Agriculture for various family sizes and income brackets. The estimated value of food stamps is taken to be the bonus value imputed to a family of four, again adjusted for the average number of recipients per AFDC case, and constrained by the income level that they are guaranteed by the maximum cash benefit.

The denominator, Z, of the benefit-wage ratio represents an alternative market wage plus available income supplements. These may include the imputed value of medical benefits and food programs. Medicaid is available to non-public assistance recipients in most states provided their income falls below a certain percentage of the standard of need. The relevant wage for Z is a weighted average of wages in a select group of industries where one would expect to find workers with characteristics similar to those of AFDC recipients. These include non-durable manufacturing and service industries in which employees are predominantly female, and jobs are characterized by low training levels, high turnover, and weak job attachment.

Employment Opportunity Hypothesis

The number of applications received in a given month should also be affected by the current state of the labor market. UR in the AP.REC. equation represents the seasonally unadjusted unemployment rate in the jurisdiction being modeled. This variable is used to proxy changes in the overall level of employment due to seasonal and cyclical factors. The use of the level suggests that at higher unemployment rates the steady state applications rate is persistently greater due to, for example, a greater degree of welfare "cycling." The change in the unemployment rate (ΔUR) may also enter the applications equation to account for short-run deviations from the steady state during rapid fluctuations in the economy.

The "structural" employment theory of AFDC caseload behavior may also be applied directly to the applications received equation. To proxy employment opportunities we rely on EMP, the number of workers employed in specific industries, both non-durable manufacturing and service, characterized by low training, high turnover, and weak job attachment. These industries include (1) food and kindred, (2) apparel and other textile products, (3) hotels and motels, and (4) eating and drinking establishments. Variables were constructed to reflect actual employment levels in each jurisdiction in each of the industries individually, as well as in combination to reflect employment levels in both the manufacturing and service sectors.

Institutional Hypotheses

Legal, political, and demographic variables also greatly influence the trend in welfare applications. The most important of these are factors which relate to the size of the eligible population. Since there are no reliable time series on this population sub-group, we had to rely on proxy variables which bear some relationship to the true number. Chief among these variables is an interpolated series on the number of female headed families with children under age 18. These were derived from various Census of Population counts. In its present functional form, FHF can either enter as a level or a first difference. As a level it proxies for the hypothesis that out of any eligible pool there will be a given steady state number of applications: the larger the eligible pool, the greater the steady state level. As a first difference, FHF suggests that as the eligible pool grows in the short-run, there will be a direct and immediate response in the form of additional applications above the old steady state level.

Administrative variables also affect the number of applications filed, although one might expect that such factors would be better suited to the processing, rejection, and closing rate equations. Nonetheless, among the ADM variables, we might list such factors as "simplified eligibility," which reduces the "hassle" involved in applying for AFDC; the number of workdays in a month, which proxies for the accessibility of welfare service offices to the population; and other factors, particularly corrective actions, such as an applicant pre-screening mechanism, which may contribute to a more restrictive application procedure that may discourage potential applicants from applying for assistance. Changes in these laws and regulations are closely tied to political attitudes. They may also proxy for an administration's desire to make quality control performance, as reflected by a jurisdiction's error rate statistics, a high-level priority.

Some aspects of the changes in political sentiment can be captured in the applications equation by a specially constructed congressional voting index based on economic issues. This was specially prepared with data from Americans for Democratic Action (ADA), a Washington-based lobbying group.

Proxies for information diffusion, which may also affect the number of applications, are often difficult to obtain. The diffusion of information may arise as the result of activity by Welfare Rights Organizations (WROs) or outreach programs originating in the welfare service office itself. More importantly, the diffusion of information may also arise as the result of personal contacts between welfare participants and members of the eligible population not yet on welfare. This can be proxied by linear or non-linear forms of the AFDC participation rate and/or a lagged acceptance rate.

Another institutional factor which may affect the flow of applications during a given month is the number of cases closed in a previous month. This variable may take the simple form of the number of cases closed lagged one period (CACL-1), or possibly even two or three periods, depending upon the reapplication dynamics at work in a specific jurisdiction. This factor became especially pronounced in some jurisdictions during the early 1970s when corrective action policies involving comprehensive recertification activity became prevalent. Many recipients that had their cases closed for administrative reasons, but who actually remained categorically eligible, returned to the welfare service offices in subsequent months to reapply for assistance.

All of the three theories can therefore affect the applications equation. How much of the total variance in applications is explained by each theory is a matter for the empirical analysis which formed the basis for this paper.

Processing Rate

After applying for AFDC, applicants are filtered through a processing screen. Whether an application is accepted in the same period in which it is received or placed in the pending file to be processed at a later date depends on the overall rate at which applications are processed by a welfare service office. The variables that determine the speed at which applications are processed should be a function primarily of administrative and perhaps political factors. To estimate the processing rate (PROC.RT.) we might use an equation with the following variables:

$$PROC.RT(t) = \beta_0 + \beta_1 WDAYS + \beta_2 RECSYS + \beta_3 STRIKE + \beta_4 WRKLOD + \beta_5 UR + \sum_{i=6}^{n} \beta_i ADM_i + \varepsilon(t)$$

The number of business days in a month that welfare offices are open (WDAYS), for example, directly affects the number of applications that may be processed, particularly in light of regulations regarding the length of time applications may be kept pending. In some months (e.g., November and December) there are more holidays than in others. During these months one would expect the processing rate to be lower because there is less time available to process given flows of applications. The conversion from a manual filing system to computerized record keeping (RECSYS) is another factor that might affect the speed at which applications can be processed. Additionally, an exogenous shock to the welfare system, such as a social worker strike (STRIKE), can significantly slow the processing of new applications. An unexpected flow of new applications may so overload welfare offices that the processing rate actually declines. This may be accounted for by a proxy variable for the size of the monthly workload (WRKLOD).

Economic conditions, on the other hand, may have a more indirect impact. A higher unemployment rate may be cause for speeding up the disposition of applications in order to get financial assistance to the needy as rapidly as possible. Use of the UR term may therefore be warranted in this otherwise institutionally determined function.

ADM represents a series of dummy variables to proxy legal restrictions on pending applications and other changes such as simplified eligibility. Additionally, some ADM factors may be explicitly implemented as QC corrective actions; others implicitly work as though they were corrective actions. For example, the elimination of a home calls policy in initial eligibility determination may free up staff time which may be used for other aspects of the verification process. If legal restrictions on the length of time an application may be kept pending become more strict, one might expect the processing rate to increase. Simplified eligibility mandates that an applicant's word be trusted when documentation is unavailable to support his/her application. Thus, less time will be spent processing an application under simplified eligibility, although more time may be spent reviewing active cases to screen out ineligible cases which might result. Such reviews can be proxied with other ADM terms in the closing rate equation.

Rejection Rate

As in the case of the processing rate, we also expect the rejection rate to be highly responsive to changes in administrative/corrective action policy. But the probability of rejection should also be a function of the proportion of eligible families that are already receiving aid, some political variables, and possibly even economic factors that affect short-run eligibility. Consequently, it is possible that both employment opportunity and institutional variables will enter the rejection rate equation. For example:

$$REJ.RT(t) = \beta_0 + \beta_1 ADDVER + \beta_2 ADAIX + \beta_3 UR + \beta_4 EMP + \beta_5 (C/FHF) + \sum_{i=6}^{n} \beta_i ADM_i + \varepsilon(t)$$

There are a number of specific administrative variables that could affect the rejection rate. Additional verification and documentation of factors affecting a potential recipient's eligibility (ADDVER), for example, allows more intense review of applications and may lead to higher rejection rates. Additionally, the use of comprehensive training programs may lead to more thorough and structured application of eligibility criteria by intake personnel, thus affecting the rejection rate.

During periods of program retrenchment, marginal cases may run a high probability of rejection; during more "liberal" times the balance may swing in favor of accepting more applicants. To proxy for this type of general political sentiment, the Americans for Democratic Action index (ADAIX) is a prime candidate for the rejection rate equation. The use of UR or one of the employment opportunity variables (EMP) can be included to proxy for the response of welfare agency personnel to changing economic conditions.

Finally, it is possible to model the "exhaustion" of the eligible pool with estimated AFDC participation rates similar to those mentioned in the discussion of the applications received equation. During periods when the participation rate (C/FHF) is small, but growing, this variable may be able to proxy for the information diffusion process. However, at very high participation rates it is possible that the rate has just the opposite effect. Instead of leading to a greater number of applications, it could lead to a higher rejection rate. It is also possible that very high participation rates proxy for a larger number of categorically ineligible families applying for welfare. If this is so, we can expect that the rejection rate would increase after C/FHF reached some fairly high ratio.

Closing Rate

The last equation in the caseload identity is the closing rate equation. We expect the closing rate to have a fairly constant steady state value associated with levels of variables that determine the eligible population. When there are changes in employment structure, changes in the relative attractiveness of AFDC, or changes in the eligibility criteria, the closing rate can jump sharply and then return to historical levels. Therefore, both levels and changes in the levels of explanatory variables are entered into this equation, similar in spirit to the AP.REC. function.

In many respects, the closing rate equation should bear a "mirror image" likeness to the applications equation. The alternative income hypothesis variables, such as the relative benefit-wage ratio, should have an impact on case closings as well as new applications. The employment opportunity terms should enter as well, for the decision to leave AFDC is conditioned on the ability to obtain suitable employment. Finally, the institutional hypothesis variables may enter the equation to proxy administrative changes and corrective actions, such as California's Monthly Income Reporting Form (CA-7) and other types of recertification policies.

Some of the independent variables from the processing rate equation should also be included since closing a case depends on caseworkers and their workloads. Based on the foregoing comments, the testable equation for the closing rate may assume the following form:

$$CLO.RT(t) = \beta_0 + \beta_1(B/Z) + \beta_2 UR + \beta_3 EMP + \beta_4 \Delta EMP + \beta_5 WDAYS + \beta_6 STRIKE + \beta_7 CA\text{-}7 + \sum_{i=8}^{n} \beta_i ADM_i + \varepsilon(t)$$

With the functional specification of the closing rate, the equation system for the AFDC caseload model is complete. One should note at this point that the development of a caseload components model provides the opportunity for testing a much richer array of explanatory variables than permitted by earlier simple single equation models. This is, above all else, the real value of such an evaluation tool.

The Simulation Methodology

Each of the component equations described above provides a rich source of detail about several aspects of AFDC program dynamics. To determine the ultimate impact of corrective actions on caseload and expenditure levels, however, it is necessary to reaggregate the caseload from these estimated component parts. This is accomplished with a computer simulation program that uses the values of estimated relationships between the caseload components and their determinants (i.e., the regression coefficients) and all exogenous or predetermined data to produce simulated estimates of actual caseload and expenditure levels.[4]

This simulation procedure generates a caseload estimate solely from the exogenous data and the initial values of caseload and applications pending. Mathematically the reconstitution is as follows:

$$(1) \quad CA\text{-}\hat{OPEN}(t) = [AP.\hat{REC}(t) + \hat{PEND}(t-1)]*[PRO.\hat{RT}(t)]*[1-REJ.\hat{RT}(t)]$$

$$AP.\hat{REC}(t) = \Sigma_i \beta_i x_{it}$$

$$PRO.\hat{RT}(t) = \Sigma_j \beta_j x_{jt}$$

$$REJ.\hat{RT}(t) = \Sigma_k \beta_k x_{kt}$$

After the initial period, the number of pending applications [PEND(t-1)] is calculated internally as the residual of applications received plus pending applications from month t-1 less applications disposed (processed) in month t.

$$(2) \quad \hat{PEND}(t) = [AP.\hat{REC}(t) + \hat{PEND}(t-1)]*[1-PR\hat{O}.RT(t)]$$

The number of closings is calculated by applying the estimated closing rate to the current month caseload.

$$(3) \quad CA.\hat{CLO}(t) = [CLO.\hat{RT}(t)]*[CA\hat{SES}(t-1) + CA.\hat{OPEN}(t)]$$

Following this step the caseload identity can be reconstructed.

$$(4) \quad CA\hat{SES}(t) \equiv CA\hat{SES}(t-1) + CA.\hat{OPEN}(t) - CA.\hat{CLO}(t)$$

In this complete set of simulation equations there are but two predetermined values -- the size of the caseload and the number of pending applications in the month immediately preceding the first simulation period. Once these two values are plugged into the simulation program, the only factors that can influence the estimated size of the caseload or total expenditures are the exogenous X(i) variables. These X(i) variables determine the estimated number of applications received, the estimated processing rate, and the estimated rejection rate. These in turn determine the number of new case openings (and the size of the pending file carried forward to the next month).

Another set of X(i) factors determine the estimated closing rate. When multiplied by last month's estimated caseload plus the current month's estimated new openings, the closing rate yields closings in the current month. Further, subtracting the current month's estimated closings from this month's new openings gives the net change in the caseload in the current month. Adding the net change to last month's caseload yields the current month's estimated caseload. Finally, the caseload simulation program "loops" through this routine for each month in the simulation period producing monthly estimates of caseload. Total expenditures are computed by simply multiplying the caseload estimate by the actual average expenditure per case.[5]

$$(5) \quad \widehat{EXP.TOT} = [EXP/CASE(t)]*[\widehat{CASES}(t)]$$

One final step is necessary to fully evaluate the independent impact of various corrective actions on AFDC caseload and expenditure levels. "Counterfactual" simulations are run which, in effect, remove the corrective action related factors from each jurisdiction's equation system. This process yields several sets of counterfactual caseload and expenditure estimates. In essence, these estimates reveal what the caseload and expenditures would have been in each jurisdiction had corrective actions not been undertaken. The difference between the original simulated estimates and the counterfactual estimates indicates the independent impact of corrective actions.

The Empirical Results

The major findings of this research are presented in Tables 1 and 2. Table 1 indicates the total impact of all corrective action related factors (incorporated into each jurisdictions AFDC model) on caseload and expenditure levels for three points in time. It presents, in order of increasing magnitude, the percentage reduction in each jurisdiction's caseload attributable to corrective actions alone. In effect, these percentage estimates represent the caseload reduction impact of corrective actions relative to our best simulated estimate of actual caseload. As such, they indicate how much higher the caseload would have been had corrective actions not been undertaken.

Table 2 indicates the total impact of all corrective action related factors on cumulative expenditures over three time periods (i.e., between the beginning of the simulation period in a jurisdiction and December 1974; between the beginning of the simulation period and December 1976; and over the entire simulation period). Again, these percentage estimates indicate how much higher total cumulative expenditures would have been had corrective actions not existed.

As both of these tables indicate, corrective actions have had highly variable effects on AFDC caseload and expenditure levels, but in almost all cases they have been highly successful in reducing these levels. Exclusive of the Florida results[6], the impact of corrective actions on caseload ranged from a mere one percent to over 31 percent, with Alameda County representing the low end and New York City the high end of the distribution. The reason for this differential variability is that while some corrective actions tend to have only short-term "implementation" effects, others produce long-term results.

In the case of Alameda County, the only corrective action variable to significantly affect caseload and expenditure levels was a short-term (25 month) monthly reporting variable. The monthly income and eligibility reporting system requires that all recipients complete a computer generated form each month on the basic factors affecting eligibility and size of the grant. In effect, the monthly reporting form is used to recertify the entire caseload on a monthly basis. Failure to complete and return the form results in the termination of aid. Since the introduction of this type of system acts as a type of exogenous "shock" to the true underlying determinants of program size and cost, it is not surprising to find that it had a significant initial impact in caseload reduction. It appears, however, that as the AFDC population in Alameda became increasingly familiar with reporting requirements and deadlines, recipients were less apt to have their cases administratively closed for failure to comply. As the requirements of this reporting system became more of a permanent fixture of the AFDC program, they represented less of an obstacle to the ongoing receipt of aid.

While the monthly reporting system had only an initial (or start-up) impact on caseload and expenditure levels in Alameda, in San Diego and Los Angeles this system appeared to have a continuing, or ongoing, effect. In Los Angeles (see Table 3) the impact of the program on the caseload has been a function of two separate effects, one which partially counteracted the overall caseload impact of the other. First, monthly reporting directly affected the closing or termination rate because it naturally led to a greater number of closings. However, many of the recipients that had their cases terminated returned within three months to reapply for assistance. Monthly reporting has therefore resulted in an increased level of "churning," or opening/closing cycling, in the program. While the number of case closings has been greater with monthly reporting, reapplications, and consequently the number of openings has been greater as well, resulting in a smaller realized impact on the caseload. Nevertheless, the effect of monthly reporting continues to be felt in these two counties years after its implementation. This may be due to stricter enforcement of the monthly reporting process.

Other corrective actions that contributed significantly to caseload and expenditure reduction included policies directed at tightening the process of initial aid determination. Specifically, in Los Angeles County and Upstate New York, the implementation of more stringent application procedures was responsible for nearly three-fourths of all corrective action induced caseload reduction (see Tables 3 and 4). These policies required the more thorough verification and documentation of factors affecting eligibility, and therefore, were responsible for reducing potential caseload growth by limiting access to AFDC.

With the exception of Florida, corrective actions appear to have had by far the most powerful impact on the New York City caseload (see Table 5). The City's fiscal crisis of 1974-1975 played an important role in forcing the welfare administration to take steps to sharply reduce AFDC benefit expenditures. Confronted with a severe fiscal crisis during the period, New York City utilized a wide range of corrective actions to remove ineligible recipients from the active caseload and to preclude ineligible and possibly some marginally eligible recipients from gaining access to AFDC. Entire caseload recertification programs, more frequent and thorough individual caseload recertifications, and tighter controls in initial aid determination were significant contributors to caseload and expenditure reduction in New York City.

Overall, the most significant corrective actions with respect to caseload and expenditure reduction in the six jurisdictions studied have been tightened application procedures which limit additions to the AFDC caseload, monthly income and eligibility reporting which recertifies each AFDC family on a monthly basis, and large-scale recertification programs which verify continuing eligibility of all recipients on an intermittent basis.

These results suggest that implementation of the Quality Control Program has not only led to measured reduction in error rates, but more importantly has led to real reductions in caseload and expenditure levels. How much further these can be reduced by more strenuous application of "Quality Control" cannot be determined, although we see the need to use caution before becoming overly zealous in attempts to cut caseload and expenditure levels much further through these mechanisms. This might occur only by eliminating from the rolls families that are rightfully enrolled in the program. In the past, this has often led to costly caseload "churning" effects that benefit neither AFDC recipients nor the goals of Quality Control.

Table 1

All Jurisdictions

Percent Reduction in Cases Receiving Assistance

Due to Corrective Actions

Jurisdiction	at 12/74	at 12/76	At Final Simulation Period*
Alameda County	8.6%	3.6%	1.0%
San Diego County	10.1	8.6	7.2
Los Angeles County	8.9	6.0	15.0
Upstate New York	10.0	14.9	16.0
New York City	5.7	18.9	31.3
Florida	35.6	46.7	52.5

Table 2

All Jurisdictions

Percent Reduction in Cumulative Expenditures

Due to Corrective Actions

Jurisdiction	by 12/74	by 12/76	By Final Simulation Period*
Alameda County	5.1%	5.4%	3.6%
Los Angeles County	3.2	4.9	7.1
San Diego County	4.0	7.5	7.5
Upstate New York	7.3	9.4	12.3
New York City	3.4	8.6	14.7
Florida	13.8	25.6	36.6

* The final simulation period varies by jurisdiction because of data availability: Upstate New York and New York City (12/78), San Diego County (6/79), Los Angeles County (9/79), Alameda County and Florida (12/79).

Table 3

Individual Corrective Action Impacts

Los Angeles County

Cases Receiving Assistance

QC/CA Variable	at 12/74 (36 months)	at 12/76 (60 months)	at 9/79 (93 months)
1) STAFRO	-49	-18	-4
2) ELIMHC & 3/74D	-1,161	-4,008	-5,593
3) FEDSAC	-9,896	-3,452	-850
4) PERFM	-138	-51	-13
5) CA-7	-2,058	-3,197	-5,253
6) SANCT	0	0	-2,922
7) GRINTI	0	0	-12,697
8) 11/74D	+339	+124	+31
Total (Excluding Interactions)	-12,963	-10,602	-27,301
Interactions	-689	+13	+2,270
Total Impact	-13,652	-10,589	-25,031

Individual Corrective Action Impacts

Los Angeles County

Expenditures (in thousands)

QC/CA Variable	Cumulative to 12/74 (36 months)	Cumulative to 12/76 (60 months)	Cumulative to 9/79 (93 months)
1) STAFRO	$+189	$-6	$-98
2) ELIMHC & 3/74D	-703	-19,618	-70,793
3) FEDSAC	-34,353	-72,513	-91,123
4) PERFM	+558	+2	-273
5) CA-7	-5,850	-23,410	-68,220
6) SANCT	0	0	-5,062
7) GRINTI	0	0	-76,151
8) 11/74D	+168	+1,525	+2,200
Total (Excluding Interactions)	-39,991	-114,020	-309,520
Interactions	-1,019	-3,359	+8,749
Total Impact	$-41,010	$-117,379	$-300,771

Los Angeles County
Corrective Action Variables

STAFRO	Staff Reorganization - Has value of 1.0 from 3/72 to 8/72 to account for impact of welfare department staff reorganization, including implementation of caseload management and control system, caseload specialization (specialized handling of cases with earned income, stepfathers, WIN, etc.), model case format, and monthly management reports.
ELIMHC	Elimination of Home Calls - Has value of 1.0 from 3/74 to end of regression period to account for the elimination of home visits on initial eligibility determination.
3/74D	3/74 Dummy Variable - Has value of 1.0 in March 1974 to account for initial impact of the elimination of home calls policy.
FEDSAC	Federal Sanctions - Has value of 1.0 from 1/73 to 12/74 to account for elevated processing and closing rates which may have been a result of county reaction, including increased corrective action activity, to federal sanctions policy.
PERFM	Performance Expectations - Has value of 1.0 from 3/73 to 1/74 to account for period when great emphasis was placed by Department's top management on increased performance of staff to meet Federally imposed error rate targets.

Los Angeles County

Corrective Action Variables

SANCT	State Sanctions - Has value of 1.0 from 1/79 to end of regression period to account for existence of a state sanctions policy with regard to county level rates.
GRINT1	Elimination of Group Intakes - Has value of 1.0 from 3/77 to end of regression period to account for the elimination of group intakes. Replacing it was a policy whereby the intake worker would conduct a full one-on-one interview at time of eligibility determination.
REFER	Fraud Referrals - The sum of monthly fraud referrals statewide for AFDC-FG and UP programs entered monthly from 1964 to 1979.
CA-7	CA-7 Monthly Income Reporting Form - Has value of 1.0 from 4/74 to end of regression period to account for existence of monthly eligibility reporting.
CC*CA7	CACL-3 * CA-7 Interaction Term - Has value of cases closed (t-3) from 4/74 to end of regression period to account for differential impact of cases closed (t-3) on applications registered while the monthly reporting system is in effect; zero otherwise.

Table 4

Individual Corrective Action Impacts
Upstate New York
Cases Receiving Assistance

QC/CA Variable	at 12/74 (24 months)	at 12/76 (48 months)	at 12/78 (72 months)
1) APTIT1 & 7/73D	-1,268	-289	+232
2) APTIT3	-6,025	-9,854	-10,038
3) REJTIT	0	0	-1,808
4) RECRT2	-2,646	-601	+160
5) MLOUTS	0	-5,636	-3,780
Total (Excluding Interactions)	-9,939	-16,380	-15,234
Interactions	+89	-235	-1,235
Total Impact	-9,853	-16,615	-16,469

Individual Corrective Action Impacts
Upstate New York
Expenditures (in thousands)

QC/CA Variable	Cumulative to 12/74 (24 months)	Cumulative to 12/76 (48 months)	Cumulative to 12/78 (72 months)
1) APTIT1 & 7/73D	$-11,935	$-16,840	$-18,024
2) APTIT3	-13,712	-79,181	-163,736
3) REJTIT	0	0	-4,544
4) RECRT2	-17,878	-28,082	-30,538
5) MLOUTS	0	-10,803	-66,378
Total (Excluding Interactions)	-43,525	-134,906	-283,220
Interactions	-202	+122	-595
Total Impact	$-43,727	$-134,784	$-283,815

Upstate New York
Corrective Action Variables

APTIT1	Tightened Applications Policy (1) - Has value of 1.0 from 2/73 to 7/73 to account for initial period of tightened applications policy.
7/73D	July 1973 Fitted Dummy - Has value of 1.0 in July 1973 to account for extreme value of rejection rate during period of tightened applications policy.
APTIT3	Tightened Applications Policy (3) - Has value of 1.0 from 11/73 to end of regression period to account for tightened application and verification policies.
REJTIT	Tightened Rejection Policy - Has value of .50 from 1/78 to 5/78 and 1.0 from 6/78 to 12/78 to account for increased rejection rate resulting from increased verification policies.
RECRT2	Recertification Activity Dummy - Has value of 1.0 from 7/73 to 11/73 to account for period of intensified recertification activity.
MLOUTS	Mailout and Recertification Dummy - Has value of 1.0 from 3/76 to 11/76 to capture impact of intensified mailout and recertification activity.

Table 5

Individual Corrective Action Impacts

New York City

Cases Receiving Assistance

QC/CA Variable	at 12/74 (18 months)	at 12/76 (42 months)	at 12/78 (66 months)
1) PROOF	-11,933	-4,992	-2,229
2) TIT4D	0	+2,415	+1,104
3) POL77 & RJ*P77	0	0	-5,007
4) RCM & CC*RCM	-1,447	-3,556	-3,762
5) RECRT*, QCRTE, CC*Q-1, 7/77D	-65	-40,594	-63,239
Total (Excluding Interactions)	-13,445	-46,727	-73,133
Interactions	-506	-1,547	-2,113
Total Impact	-13,951	-48,274	-75,246

Individual Corrective Action Impacts

New York City

Expenditures (in thousands)

QC/CA Variable	Cumulative to 12/74 (18 months)	Cumulative to 12/76 (42 months)	Cumulative to 12/78 (66 months)
1) PROOF	$-54,557	$-119,711	$-147,953
2) TIT4D	0	+20,927	+34,726
3) POL77 & RJ*P77	0	0	-27,750
4) RCM & CC*RCM	-4,832	-28,172	-60,824
5) RECRT*, QCRTE, CC*Q-1, 7/77D	+13,038	-165,313	-602,645
Total (Excluding Interactions)	-46,351	-292,269	-804,446
Interactions	-350	-6,725	-20,697
Total Impact	$ -46,701	$ -298,994	$ -825,143

New York City

Corrective Action Variables

PROOF	Proof of Identification Dummy - Has value of 1.0 in 7/73 and declines monthly by .083 until it reaches zero in 7/74. Accounts for initial impact of tightened application procedures and requirement that applicants have documentation of all factors affecting eligibility.
POL77	1977 Rejection Rate Policy - Has value of 1.0 from 7/77 to 4/78 to account for a new and explicit administrative directive which required automatic rejection of cases with insufficient documentation of eligibility, rather than their placement into the pending category.
RJ*P77	Applications Rejected (t-1) * POL77 Interaction - Has the value of applications rejected from 7/77 to 4/78 to capture the impact of 1977 rejection rate policy on reapplication dynamics.
RCM	Recertifications and Mailouts - Has value of 1.0 in 1/73, 3/73, 4/74, 5/74, 2/75, 12/75, 3/76, 11/76, 3/77, 3/78, and 8/78 to account for specific recertifications and mailouts.
CC*RCM	Cases Closed(t) * RCM - Has value of cases closed in the periods of recertification and mailout activity only, to capture the impact of those closings on applications received.
CC*Q-1	Cases Closed(t-1) * 4/73 - 12/78 Dummy - Has value of cases closed (t-1) from 4/73 to 12/78 to capture the average rate of reapplication for cases closed during the period of quality control/corrective action emphasis.

New York City

Corrective Action Variables

76/77D	1976 - 1977 Modified Dummy - Has value of 1.0 from 6/76 to 2/77 to account for an unidentified factor that raised applications above their historical value.
RECERT*	Generalized Recertification Dummy - Has value of 1.0 from 3/77 to 12/78 to proxy for existence of recertification activity.
TIT4D	Title IV-D (Child Support) Startup Dummy - Has value of 1.0 from 6/75 to 9/75 to account for impact of increased child support enforcement activity resulting from implementation of Title IV-D.
QCRTE	Quality Control Ineligibility Rate - Ineligibility rate in New York City as determined by quality control review.
7/77D	July 1977 Dummy - Has value of 1.0 in July 1977 to account for extreme value in closing rate.

Endnotes

[1] This paper is based on research conducted by the Public Assistance Data Analysis Laboratory of the Social Welfare Research Institute at Boston College. The research was funded by a grant to the Public Assistance Data Analysis Laboratory from the Division of Family Assistance Studies, Office of Research and Statistics, Social Security Administration, Department of Health and Human Services. The authors wish to thank, in particular, David Arnaudo, Acting Director of the Divsion of Family Assistance Studies, for his support in developing the study, and Lynn Ware, Director of the Data Analysis Lab for his thoughtful criticism throughout the period of research.

[2] For a detailed discussion of the theoretical model of the AFDC caseload and benefit determination process, as well as the development of the structural equation system, see Barry Bluestone and James Sumrall, "AFDC Caseload and Benefit Dynamics: New York City," Social Welfare Research Institute, Boston College, July 1977.

[3] The SWRI model can be formally translated into a set of mathematical identities which describe the AFDC system and how caseload and total expenditures change over time. The model begins with a basic <u>caseload identity</u>: AFDC caseload in the current period (period "t") equals AFDC caseload from the previous period, plus cases opened in the current period, minus cases closed in the current period. Mathematically the identity becomes:

$$(1)\ \mathrm{CASES}(t) = \mathrm{CASES}(t-1) + \mathrm{CA.OPEN}(t) - \mathrm{CA.CLO}(t)$$

Openings [CA.OPEN(t)] are disaggregated with an <u>openings identity</u>: openings in the current period are equal to the sum of applications received in the current period and applications pending from the previous period times a processing rate and an acceptance rate (1-Rejection Rate). Again, in mathematical notation:

$$(2)\ \mathrm{CA.OPEN}(t) = [\mathrm{AP.REC}(t) + \mathrm{PEND}(t-1)] * \mathrm{PROC.RT}(t) * [1-\mathrm{REJ.RT}(t)]$$

where

$$(2a)\ \mathrm{PROC.RT}(t) = \mathrm{AP.DISP}(t) / [\mathrm{AP.REC}(t) + \mathrm{PEND}(t-1)]$$

$$(2b)\ \mathrm{REJ.RT}(t) = \mathrm{AP.REJ}(t) / \mathrm{AP.DISP}(t)$$

$$(2c)\ \mathrm{AP.DISP}(t) = \mathrm{CA.OPEN}(t) + \mathrm{AP.REJ}(t)$$

Closings [CA.CLO(t)] are defined in terms of a closing rate: cases closed are equal to the closing rate times the sum of the caseload in the previous period and cases opened in the current period, or

(3) CA.CLO(t) = CLO.RT(t) * [CASES(t-1) + CA.OPEN(t)]

where (3a) CLO.RT(t) = CA.CLO(t) / [CASES(t-1) + CA.OPEN(t)]

The caseload identity in (1) can be reassembled using the rates in (2a), (2b), and (3a) and the number of applications received. This is shown in (4). The product of the three terms inside the square brackets is equal to openings; thus openings plus the previous period's caseload times the "continuing rate" (1-CLO.RT) equals the caseload in the current period.

(4) CASES(t) = (1-CLO.RT(t)) * {CASES(t-1) + [AP.REC(t)
+ PEND(t-1) * PROC.RT(t) * (1-REJ.RT(t))]}

[4] The simulation program for reconstructing the caseload and expenditure identities was designed and written by Alan Matthews of SWRI.

[5] The expenditure estimates presented in this paper are based on this simple methodology.

[6] The data used in the Florida AFDC dynamics model were of a much lower quality than those used in the other five models. As a result, we urge great caution in the interpretation of the Florida results. We have, in particular, very little confidence in the December 1979, fifty percent caseload impact estimate that appears in Table 1.