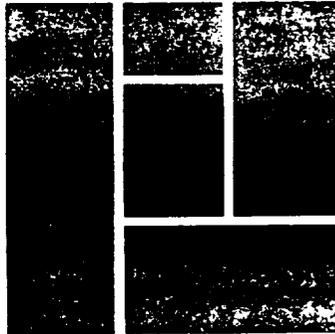


EVALUATION OF THE FEDERAL ONE-TIER  
QUALITY CONTROL PILOT PROJECT



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Project Report

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## EXECUTIVE SUMMARY

This report evaluates the Food Stamp Program's One-Tier Federal Quality Control (QC) Pilot Project conducted in Missouri and North Carolina over the period November 1986 through March 1988.

The food stamp quality control system is designed to measure errors made in eligibility and benefit determinations that result in erroneous payments to food stamp recipients. The present QC system is structured along two tiers--one State and one Federal. The first tier consists of State QC staff who review a monthly sample of food stamp cases to assess the accuracy of eligibility and benefit determinations. The second tier consists of Federal FNS staff who re-review a subsample of the State QC sample to determine whether or not the State QC review findings were correct. Error rates for both underpayments and overpayments are derived from the State and Federal QC determinations.

The pilot project was designed to test a one-tier alternative to the current two-tier QC system. This one-tier QC system would be wholly administered and operated by the Food and Nutrition Service (FNS), with Federal personnel carrying out the QC reviews. Hence, there would be no need for the present Federal re-review (though States might have the opportunity to re-review cases found to be in error). The one-tier alternative tested in the pilot also incorporates a number of labor-saving techniques. The expectation was that the new system would be more efficient and therefore less costly to the Federal government. Moreover, elimination of the Federal re-review should also produce more timely calculations of a State's error rate.

The purpose of the evaluation was to assess the feasibility of a Federal one-tier QC system as demonstrated by the pilot project and to determine whether the one-tier Federal alternative would result in reviews as accurate as those in the current two-tier QC system and at less cost to the Federal government. To achieve this goal, the evaluation had five objectives:

- o document and assess the feasibility of implementing and operating a one-tier QC system;
- o measure and compare the costs of both one-tier and two-tier QC systems in the pilot states;
- o assess the equivalence of the (dollar overpayment) error rates between the two systems, including the frequency and nature of State disagreements with federal error findings;
- o estimate the likely costs and assess the feasibility of implementing a national one-tier QC system; and
- o make recommendations, if appropriate, for improving the present two-tier QC system.

Since the regular two-tier QC system continued to operate in the two States, the one-tier pilot in each State could be compared with its two-tier counterpart. The evaluation contained four major components to meet these objectives: (1) a process analysis (2) an analysis of error rate comparability between the two systems; (3) an analysis of work effort; and (4) an analysis of costs. Data were utilized from five different sources:

- o three waves of in-person interviews with Federal and State reviewers and supervisors of both QC systems;
- o semi-structured interviews—both in person and by telephone—with Federal, State and Regional administrators
- o job tickets on case review files from both QC systems;
- o case record and review data from computerized Integrated Quality Control Systems (IQCS) files; and
- o cost records to estimate costs of operating the one-tier and two-tier systems.

The administrative and staff interviews provided information primarily for the process analysis; the job tickets provided data on work effort which was then used in the analysis of work measurement and total costs; the IQCS files provided the data for the error rate analysis; and the cost records provided data for the cost analysis including examination of the costs that would be associated with adopting a one-tier QC system on a nationwide basis.

The major findings of this evaluation are as follows:

- o It is feasible to operate a Federal one-tier QC system. The system was developed and implemented and a full year's QC sample was reviewed in both States.
- o A delay in the start-up of the pilot operations, the pilot staff's overall lack of QC experience, and other implementation problems reduced the staff's ability to complete cases on a timely basis, an effect that lasted throughout the project. Throughout the demonstration period the one-tier staff carried a large backlog of cases which severely hindered their ability to complete cases by quarterly deadlines and ultimately caused the project to be extended three months beyond its original termination date.
- o In response to the backlog of cases the pilot project changed some review procedures during the year, which likely increased efficiency but which were not part of the pilot's design and favored the pilot project in comparisons with the two-tier QC system. In mid-course the pilot project switched from written to telephone verification except for error cases and dropped a few of the verification procedures required by the 310 Handbook, such as random bank checks and verification of the age of all household members.
- o The North Carolina pilot appeared to have never completed reviews of the equivalent of a quarterly case assignment within three months time, and it is questionable whether the Missouri pilot ever achieved this form of steady state. This assessment is tentative, however, because the late start and large case backlog make it difficult to determine whether either pilot site reached a steady state.
- o Based on time recorded on job tickets, first-party reviews in the pilot project took slightly less time than in the two-tier QC system. It was estimated that first-party reviews took 30 minutes less in the Missouri pilot than in the regular two-tier system in Missouri (8.45 vs. 8.96 hours). In North Carolina the pilot reviews required about 25 minutes less than the State

reviews in the two-tier system (8.86 vs. 9.24 hours). This conclusion must be interpreted with caution, however, because only about half of the reviewers' total time was recorded on the job tickets in both the pilot project and the regular QC system.

- o There is no strong evidence that the error rates would be any different under a one-tier than a two-tier QC system. The North Carolina pilot error rates tended to be higher than the regular QC error rates before adjustment for the Federal re-review and lower after adjustment. In Missouri the pilot error rates were generally the same or higher for overpayments and lower for underpayments, both before and after adjustment for the Federal re-review. However, few of the differences between the two systems were statistically significant.

In Missouri the pilot project overpayment error rate was 5.7 percent and the two-tier overpayment error rate (after adjustment) was 5.6 percent, practically the same. In North Carolina the pilot error rate was lower, 6.1 percent compared to 7.3 percent for the two-tier QC system (after adjustment), a difference statistically significant at only the 15 percent level. Moreover, after controlling for differences in case characteristics of the samples, the difference in the overpayment error rate between the two QC systems in North Carolina diminishes.

The underpayment error rate was less in the Missouri pilot (2.0%) than in the Missouri two-tier QC system (3.1%), and the difference was statistically significant. The pilot in North Carolina also had a lower underpayment error rate (4.1%) than the two-tier system (4.9%), but the difference was not statistically significant.

- o Resolutions of disagreements over case findings of re-reviewed cases provide little to no evidence that there is a difference in the quality of reviews between the pilot project and the two-tier QC system. However, the higher proportion of incomplete cases in the pilot project provides some evidence of lower quality reviews.
- o If the present two-tier QC system was replaced nationwide by a Federal one-tier system as tested in the pilot project, and the QC sample sizes were limited to 1,200 per state, it is estimated that the costs to the Federal government would decline by \$2 million, or 7.5 percent. This savings is solely due to a reduction in the total number of cases that would be reviewed under the two systems—71,000 under the current system and 55,000 under the Federal one-tier system. The reduced caseload would yield savings to the Federal government of almost 17 percent, but the changeover to the one-tier system would increase Federal costs by 11 percent.

- o Under a comparison of equal sample sizes (55,000 under both QC systems), a Federal one-tier QC system would cost the Federal government \$3.5 million—or 16 percent—more than the two-tier QC system. This is because under the one-tier system the Federal government would be paying 100 percent instead of the present 50 percent of first-party reviews, which more than offsets the savings of eliminating the Federal re-review process. However, costs to both Federal and State governments of a one-tier system under this comparison would decline by over \$10 million. All of the savings would accrue to the States.
  
- o There are three qualifications to the above cost comparisons. First, the estimates vary according to alternative underlying assumptions and should be regarded as approximate. Second, reducing the current national QC sample size from 71,000 to 55,000 under a one-tier system will reduce both the efficiency of estimating error rates and the usefulness of the QC results for management purposes in those States that now have samples larger than 1,200 cases. Third, the estimated costs of a national one-tier system do not include certain State functions that would likely be performed, the most important of which is the re-review of cases found in error by the one-tier system.



## 1. INTRODUCTION AND BACKGROUND

The quality control (QC) system is designed to identify the types and causes of errors and measure the amount of errors made in eligibility and benefit determinations that result in erroneous payments. To accomplish these goals the Food and Nutrition Service (FNS) acts with the States to operate what is commonly characterized as a two-tier QC system.

Under the current two-tier system, the State QC program functions as the first tier in the review process. Each State draws a statistically valid monthly sample from their food stamp cases. State QC reviewers conduct an extensive review of these cases to verify the accuracy of eligibility and benefit determinations. Federal FNS personnel, constituting the second tier of the QC program, subsample the completed food stamp QC reviews and perform a re-review of these cases to validate the correctness of the State QC reviews. Federal-State disagreements on case findings are resolved through a two-step arbitration process. Information from both the State QC determinations and the Federal re-review determinations are combined and a regression-adjusted estimator is used to derive separate official error rates for underpayments and overpayments.

The decision by FNS to test a Federal one-tier QC system as a possible alternative to the current two-tier QC system developed in response to concerns over various aspects of the current QC system. While the two-tier QC system is judged by FNS to be fundamentally sound,<sup>1</sup> several issues related to the system exist, including the cost of the program, the degree of uniformity across States, and the timeliness of the QC process due to the time required

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1/ See, The Food Stamp Program Quality Control System, A Report to the U.S. Congress, May 1987.

for a Federal re-review. In addition, technical issues have been raised by the States regarding the statistical validity of the regression procedure used to calculate the error rate and the definition of an error. These concerns took on greater significance as both the number of States found liable by FNS for overpayment errors and the amount of their liabilities grew and as States began to contest their legal liabilities in court.

In light of the strong emphasis on and dispute over financial liabilities, the concerns over the current QC system outlined above raise questions of the basic framework of the QC system and whether this is the most reasonable and efficient way to structure the program. It was within this general context that FNS undertook an examination of alternative ways to operate the QC system.

A one-tier QC system was designed to yield results as accurate and defensible as the two-tier QC system but in a more timely fashion and at less cost to FNS than the current QC system. To accomplish this goal, the one-tier approach institutes a system wholly administered and operated by FNS with Federal personnel carrying out the QC reviews. Thus, as the name implies, there is only one-tier in this alternative QC structure. The one-tier QC approach essentially eliminates the need for a Federal re-review.

Because a one-tier QC system would significantly change an important part of the Food Stamp Program at the State, regional and national levels, it was decided that a feasibility test of the proposed one-tier QC system was advisable. A one-tier QC pilot project was conducted in Missouri and North Carolina over the period November 1986 through March 1988. Using a parallel approach to the regular QC system, Federal workers were hired and trained to conduct QC case reviews in accordance with Federal regulations on food stamp cases falling within the 12 sample months of October 1986-November 1987. In the interest of reducing the cost and time associated with reviewing food

stamp QC cases, the one-tier pilot incorporated several new operational and organizational features. These included using a generic structured interview and worksheet review form (FNS-1169); substituting quarterly case review deadlines for monthly case review deadlines to allow QC staff to geographically cluster their assigned cases; and creating the position of a verification specialist to complete routine computer verification matches. Operating on the premise that these new features would facilitate the QC review staff's ability to complete reviews in fewer time, the one-tier pilot was also staffed with less QC review staff, thereby reducing labor costs.

FNS contracted with The Urban Institute to design and conduct the evaluation of the pilot project. The evaluation had five objectives:

- o document and assess the feasibility of implementation and process of a one-tier QC system;
- o measure and compare the costs and work effort of both one-tier and two-tier QC systems in the pilot States;
- o assess the equivalence of the (dollar overpayment) error rates between the two systems, including the frequency and nature of State disagreements with federal error findings;
- o estimate the likely costs and assess the feasibility of implementing a national one-tier QC system; and
- o make recommendations, if appropriate, for improving QC reviews and the QC system.

Since the regular two-tier QC system continued to operate in the two States, the one-tier pilot in each State could be compared with its two-tier counterpart. The evaluation contained four major components to meet these objectives: (1) a process analysis (2) an analysis of error rate comparability between the two systems; (3) an analysis of work effort; and (4) an analysis of costs. Data were utilized from five different sources:

- o three waves of in-person interviews with Federal and State reviewers and supervisors of both QC systems;
- o semi-structured interviews—both in person and by telephone—with Federal, State and Regional administrators
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- o cost records to obtain comparative costs of the one-tier and two-tier systems.

The administrative and staff interviews provided information primarily for the process analysis; the job tickets provided data on work effort which was then used in the analysis of work measurement and total costs; the IQCS files provided the data for the error rate analysis; and the cost records provided data for the cost analysis including the costs that would be associated with adopting a one-tier QC system on a nationwide basis.

The remainder of this report details the findings of the evaluation. Section 2 describes the organization, practices, and procedures of the one-tier pilot project and compares and contrasts them to those of the two-tier QC system. The planning, implementation and operation of the pilot project are documented and assessed in Section 3. The next three sections compare the one-tier QC pilot with the two-tier QC system by time recorded using job tickets (Section 4); error rates (Section 5); and cost of conducting the reviews (Section 6). Section 7 addresses whether the pilot project was adequately staffed. Section 8 ends the report by summarizing the results of the previous sections and drawing conclusions about the feasibility, performance, and cost of adopting a Federal one-tier quality control system.

## 2. QC PRACTICES AND PROCEDURES IN THE PILOT STATES: ONE-TIER VS. TWO-TIER

This section describes the organization, practices and procedures of the one-tier Federal QC pilot project, and compares and contrasts them with the two-tier State-Federal QC system in North Carolina and Missouri as it operated during FY 1987. Because the one-tier pilot by definition does not include a Federal re-review, this section does not focus on the second tier of the two-tier system but rather focuses on differences between the one-tier pilot and the first tier of the two-tier QC operations. (A more complete description of State-level QC practices in Missouri and North Carolina and a description of second-tier Federal re-review practices in these two States can be found in Appendix A.)

### QC Universe and Sample

Under the one-tier pilot project QC case reviews were completed on a statistically valid sample of food stamp cases for each state. The QC universe from which monthly samples were drawn consisted of active food stamp cases. An "active" or "positive" case refers to a household which was certified prior to, or during, the sample month and issued benefits for the sample month. Both pilot sites were required to complete 1200 active food

regulations. A negative case refers to a household that was denied certification or whose benefits were terminated effective in the sample month. In Missouri, the QC sample consists of 2,400 active and 800 negative food stamp cases. In addition, the regular State QC unit is also responsible for carrying out QC reviews on AFDC and Medicaid cases. In FY1987 the Missouri State QC sample for these programs consisted of 2,400 active and 356 negative AFDC cases, and 560 active and 110 negative Medicaid cases. In North Carolina, the regular QC sample consists of 1,200 active and 800 negative food stamp cases. In addition, the State QC unit in North Carolina is responsible for completing QC reviews on AFDC cases. In FY1987 the AFDC QC caseload consisted of 1,200 active and 300 negative cases. Each State in the regular QC system pulls about 10 percent over the required minimum samples of cases and reviews these cases in addition to the required number.

Thus, the number of cases requiring a QC review was less in the one-tier pilot project than in the two-tier system, not only because there was only one assistance program involved in the review but also because the one-tier QC pilot did not include a negative case sample. Unless Federal regulations were changed, a one-tier QC program would also be responsible for reviewing negative cases if this approach were adopted on a national basis.

#### Organizational and Staffing Structure

Under the one-tier pilot project, the FNS Regional Offices assumed administrative responsibility for the QC system in the pilot sites. This is in contrast to the regular QC system, under which the first tier is administered by the States. In both Missouri and North Carolina, the regular QC units are located within the State Department of Social Services. North Carolina is a county-administered social service delivery system, with the

Department of Social Services (DSS) divided into four regions plus a central office. Missouri's social service system is centralized and therefore does not possess the regional layer of administration found in North Carolina.

The one-tier pilot project initially had 11 personnel in each site: 1 Project Manager, 1 Senior Reviewer, 1 Verification Specialist and 8 reviewers. Due to staff turnover, the actual number of reviewers in both sites ranged between 6 and 8 per pilot site over the course of the project. Project Managers were stationed in their respective regional offices; the rest of the pilot staff were based in the pilot sites. In comparison, the number of regular QC staff employed by North Carolina and Missouri in FY1987 was significantly larger at both the reviewer and supervisory levels. In North Carolina there were 31 QC staff and in Missouri there were 78 QC staff (not including clerical support).<sup>2</sup>

The difference in the number of staff between the one-tier pilot project and the two-tier regular QC system is attributable both to the much smaller total number of cases reviewed by the one-tier pilot (no AFDC and Medicaid cases, no negative food stamp cases, and 1200 rather than 2400 positive food stamp cases in Missouri) and to the one-tier design assumption that Federal workers would be able to complete reviews in less time than their State counterparts due to time-saving techniques built into the design.

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<sup>2/</sup> In Missouri under the regular QC system, the first tier of the Q C program was comprised of 1 QC Director, 3 Case Analyst Supervisor II's, 11 Case Analyst Supervisor I's, 53 Case Analysts (QC reviewers) and 12 clerical staff. In North Carolina, the first tier unit was comprised of 1 Quality Assurance Chief Coordinator, 2 Program Consultants who function as assistants to the Chief Coordinator, 25 QC reviewer, 1 full-time and 4 part-time clerical staff.

### QC Staff Job Responsibilities

The job responsibilities of the one-tier pilot and two-tier QC reviewers were, for the most part, identical. Both received a monthly assignment of cases that required a complete review in order to determine whether a household's level of eligibility and benefit allotment was correct for a given time period as based on written Federal policies and procedures. Activities in the review process include: a desk review of the case record, standard verifications through computer matching on automated data bases, home interviews with the clients, collateral verifications, verifications through written correspondence or telephone, determination of whether or not an error had been made in the disposition or award, write-up of the case and other administrative duties such as monthly reports and maintenance of manuals.

The job responsibilities of the one-tier pilot reviewers did differ in three important ways from the two-tier reviewers, however. First, as noted, the one-tier reviewers were only responsible for carrying out reviews on active food stamp cases while the State QC reviewers were responsible for conducting reviews on both active and negative cases. Second, two-tier reviewers were responsible for reviewing more than one benefit assistance program. Finally, in the one-tier pilot computer verification checks were to be the sole responsibility of a newly created position—the verification specialist—whereas in the regular QC system some reviewers performed their own computer verification checks.

The Verification Specialist position was created by the designers of the one-tier pilot project with the objective of reducing the time reviewers spend on verification tasks. In addition to standard clerical duties, the Verification Specialist was assigned the responsibility of ordering case files

from and returning them to the counties, performing computer verification matches, initiating verification of any information that did not require a household release form, assisting the Senior Reviewer with the case assignments, and transmitting case dispositions to the Washington Computing Center (WCC). For the most part, the Verification Specialists in both pilot sites did not do any verification beyond the computer verification matches but did perform the other duties listed above.

The Senior Reviewer position in the one-tier pilot closely resembled that of the regular QC Coordinator in North Carolina and the combined positions of the Supervisor I and Supervisor II in Missouri. Acting as the lead staff person, the Senior Reviewer was responsible for the day-to-day supervision of staff and conducting second-party reviews on the QC cases completed by their staff for correctness.<sup>3</sup> The most notable difference between the supervisory positions under the two-tier system and the one-tier pilot project was that one-tier Senior Reviewers were expected to spend approximately a quarter of their time completing a monthly average of four first-party case reviews, an activity solely the responsibility of the QC reviewers under the regular QC system. In actuality, the one-tier Senior Reviewers completed substantially fewer first-party reviews than originally required of them.

The Project Manager position in the one-tier pilot closely resembled that of the QC Director position in the two-tier QC system. Both assumed overall responsibility for QC operations in the State. General responsibilities included reviewing and negotiating error cases, disseminating materials

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<sup>3/</sup> The supervisory review, commonly referred to as a second-party review, is a desk review as opposed to an initial or "first-party" review which involves many more tasks.

pertaining to changes in policy or procedures, and ongoing staff training. Although not envisioned in the design of the pilot project, the Project Managers in both pilot sites also conducted some first-party reviews when, due to staff turnover, there existed a shortage of one-tier reviewers.

The regular two-tier QC system in both Missouri and North Carolina also had an additional administrative layer made up of Supervisor II's in Missouri and Program Consultants in North Carolina. These staff members were positioned between the QC Director and the first-line supervisors. They had no counterparts in the one-tier pilot project.

### Case Review Process

The following description and comparison of the case review process is divided into the major components associated with a QC case review under both the one-tier pilot project and the regular QC system: case assignment, computer verification, case file review, home visits, additional verification, case disposition and case write-up.<sup>4</sup>

### Case Assignment

Once the monthly sample of cases has been drawn, the first step in the case review is to assign individual cases to the reviewers. The timing of case assignments differed between the two pilot sites and between each pilot site and its regular two-tier counterpart. In the State QC system, case assignments were made on a monthly basis at the beginning of the sample month.

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<sup>4/</sup> This description focuses only on the steps taken for a review of an active case. For negative cases, QC analysts must only complete a case file review, case disposition, and case write-up.

In the one-tier pilot project, the first case assignment was delayed due to the late start-up of the project, which had an impact upon the subsequent timing of case assignments. The Missouri pilot site relied primarily on "double assignments" which consisted of two sample months. Although not part of the original one-tier design, it was felt that by assigning two months at a time, reviewers would be able to more effectively geographically cluster their cases, thereby cutting down on the time needed to complete reviews. The North Carolina pilot site's first experience with a double assignment was not a positive one (as discussed later), so it relied primarily on one-month assignments thereafter. Unlike the regular QC assignment routine in the States, however, these single month assignments made in the North Carolina one-tier pilot were not issued on a regular schedule. For example, there was a two-month break in assignments between March and May to allow reviewers time to catch up on their backlog, while at other times case assignments were made within two to three weeks of one another.

### Computer Verification

In both pilot sites, the Verification Specialist was responsible for performing computer matches on each case to verify information and attaching it to each case file before cases were assigned to reviewers. In the two-tier system, the majority of computer verifications were performed by the reviewers themselves in Missouri and performed by somebody else (usually clerical staff) in North Carolina.

### Reading Case Record Files

To promote efficiency, the original one-tier design specified that the case records would be requested from the county office and read by the QC

reviewers in their own offices. The ordering and returning of case files was to be the responsibility of the Verification Specialist. This is in contrast to the standard practice in the two-tier system under which reviewers read the case and make copies of relevant materials in the county welfare office. From the very start of the pilot project, however, reviewers in the North Carolina pilot site rarely had a case ordered but rather went to the county welfare office and read the case record on-site. At the beginning of the project, the Verification Specialist in Missouri did order and return cases, but some reviewers were unhappy with this procedure and shifted to reading the cases in the county welfare office.

### Home Visits

Under both the pilot project and the regular QC system, after reading the food stamp client's case record file, the QC reviewer conducted a personal interview in the home of the client in order to verify information found in the case record and obtain additional information from the client. The only significant difference between the one-tier and the two-tier QC programs was that the one-tier pilot introduced a structured QC worksheet that included a check-off home interview guide; the two-tier QC system had no standardized interview guide.

### Additional Verification

Verification requirements are listed in the FNS Handbook 310 and both the one-tier and two-tier reviewers were expected to fulfill these requirements in completing their QC reviews. Verification of information can be obtained through written correspondence, telephone, or face-to-face contact. Although information relating to an error must be verified in writing, reviewers under

both systems were given a fair amount of latitude in determining which kind of verification process they used to obtain other information. Most reviewers employed under the regular QC system expressed the opinion that it was always "safer" to get the verification in writing and the need to obtain written verification in general was heavily emphasized. By contrast, the one-tier pilot QC reviewers shifted from trying to obtain most verification in writing to relying on the telephone as the primary means of obtaining verification information. This shift was not in the original pilot design, but was made in response to instructions by upper-level staff who were concerned with the backlog of cases and felt that telephone verification was the fastest way to obtain information.

In the interest of completing the case reviews more quickly, the one-tier review staff were also instructed by their supervisors during the course of the pilot to drop a few of the verification procedures required by the 310 Handbook and followed by the two-tier reviewers. For example, if the client said they did not have a bank account, one-tier reviewers did not do the required random bank search. Also, one-tier reviewers stopped verifying the age of each member of the household and concentrated on verifying the ages of only those household members who fell into an age range which would affect their benefits or eligibility.

#### Case Determination and Write-up

Based on the information obtained from the case record, the home visit, and verifications, reviewers in both the one-tier pilot and the two-tier QC system calculated the benefit allotment to see if it was correct and determined whether the case was in accordance with Federal regulations and policy. The most significant difference between the one-tier and two-tier

write-up process was the new structured "check-off" worksheet designed specifically for the one-tier pilot's use. All State QC programs, including the regular QC programs in the two pilot States, were required to use the national QC form (FNS-380), which generally involved writing answers in narrative form.<sup>5</sup>

### Second-Party Reviews

Perhaps the most significant procedural difference between the State QC system and the one-tier pilot project was that the pilot conducted substantially fewer internal reviews of the QC reviewers' work. In the Missouri pilot, the Senior Reviewer completed a second-party review on 25 percent of each reviewer's assignments.<sup>6</sup> In the North Carolina pilot, the Senior Reviewer conducted second-party reviews on 25 percent of the total monthly assignment of cases determined correct. The Senior Reviewer did no second-party reviews on error cases in either pilot site but sent them to the Project Manager who conducted a second-party review of all such cases.

By contrast, all first-tier QC cases in the regular QC programs in Missouri and North Carolina received two second-party reviews, and error cases were always subject to a third review (i.e., cases in which the benefit allotment was determined incorrect by the QC reviewer). Thus, there was a substantial amount of second-party review activity within regular QC system in Missouri and North Carolina, theoretically, at least, increasing the chance to

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5/ Both Missouri and North Carolina State QC systems developed their own structured QC worksheets which were approved and put into effect at the beginning of FY 1988.

6/ In the early months of pilot project, all of the cases received a second-party review in Missouri.

catch possible mistakes or inaccuracies in the review before the case dispositions were transmitted to WCC.

### Error Cases

In the one-tier QC pilot, all error cases were re-reviewed by the State.<sup>7</sup> After reviewing an error case and, if necessary, consulting with the policy unit within the FNS regional office, the pilot Project Manager sent an error notification to the county welfare agency where the error originated and to the State QC Director. The affected county agency was allowed 10 working days to provide the State agency with its response to the one-tier's error notification. The actual negotiation over the pilot error cases, however, occurred between the State QC unit (with policy assistance from the Policy Unit) and the pilot Project Managers. In North Carolina, a State QC reviewer and later the QC Director herself conducted the initial re-review of the pilot error cases and provided the State's response. In Missouri, the Supervisor I's were responsible for re-reviewing the error cases and drafting the State's response, which was then reviewed by the QC Director and the Policy Unit.

If the State disagreed with the one-tier pilot error finding and the Project Manager reversed his/her initial decision, the case's WCC transmittal disposition was sometimes changed. If no resolution was reached between the Project Manager and the State agency on a case the State disagreed with, then the State could appeal the decision and submit the case to the regional arbitrator and, if necessary, to the national arbitrator.

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<sup>7/</sup> A one-tier approach was adopted on a national basis, it is possible that the States would not review error cases. One-tier Federal QC staff might negotiate directly with the counties where the food stamp case originated. However, in designing the demonstration pilot project, the pilot States were given the opportunity to review error cases and challenge the one-tier reviewers findings.

Under the regular QC system, error cases were sent to the Policy Unit within the Department of Social Services and the county welfare office in which the eligibility worker initially made the allotment error was notified of the error case and the reason for the error. The county welfare offices were given ten days to respond to the States' QC findings. Counties could either accept or challenge the States' findings. The State's decision on whether or not to reverse or maintain its original finding ultimately lay with the Policy Unit.

### Timeframes

To facilitate clustering of case reviews in different geographic areas within the pilot States (thereby reducing the time reviewers spent travelling), the one-tier design called for quarterly case deadlines. Thus, all cases in the three-monthly one-tier samples of a given quarter were not due to be completed until 95 days after the end of the quarter. Interestingly, the majority of one-tier reviewers interviewed in both sites were not aware of the quarterly deadlines, but rather were under the impression that they were to try to meet the same case completion timeframes imposed on their QC reviewer counterparts in the regular QC system. However, in actuality neither of the one-tier pilot sites was able to meet the quarterly deadline on a substantial number of cases.

By contrast, according to Federal regulations, all States under the regular QC system must dispose of 90 percent of all food stamp cases selected in a given sample month and transmit their findings to Washington, D.C. within 75 days of the end of the sample month. And all cases must be disposed of and the findings transmitted to Washington, D.C. within 95 days of the sample month. Failure to meet this deadline can result in monetary sanctions against

the State. There is, therefore, less opportunity for the State QC reviewers to cluster their cases. Interview respondents in the Missouri and North Carolina regular QC programs noted that the 75-day deadline is not necessarily met but that the 95-day deadline is taken very seriously and virtually always met.

### On-going Training of Staff

Overall, the two-tier QC programs in North Carolina and Missouri engaged in more formal on-going training of their staff than did their one-tier counterparts. Under the regular two-tier system, the frequency of training varied among State QC offices, but generally tended to occur on a monthly and sometimes on a quarterly basis. The one-tier pilot design did not specify how many training sessions should be conducted and there was some variation between the pilot sites. The North Carolina pilot site conducted three formal on-going training sessions and the Missouri pilot site conducted six formal training sessions. Additionally, in both the pilot project and the State QC system, reviewers in both North Carolina and Missouri reported that they communicated frequently with their supervisor about policy and procedural questions over cases.

This concludes the comparison of one-tier and two-tier QC practices and procedures in Missouri and North Carolina. The next section discusses the implementation and operation of the one-tier pilot project.

### 3. PLANNING, IMPLEMENTATION AND OPERATION OF THE ONE-TIER QC PILOT PROJECT

This chapter describes the planning, start-up and phase-down operations of the Federal one-tier QC pilot project. The objectives are to:

- o identify key planning decisions made regarding the structure and design of the one-tier pilot project;
- o describe the first four months of the one-tier QC project within the broader context of the project's early development and original design;
- o identify issues and problems encountered in setting up and starting the new system and assess the problems in terms of their effects on initial operations; and
- o describe the phase-down period of the pilot operation and provide a summary of staff opinions and impressions on different aspects of the one-tier QC pilot as a whole.

#### Planning the One-Tier QC Pilot Project

During the planning phase of the one-tier QC pilot project, key decisions were made regarding the structure and operations of the project. This section provides a basic overview of key decisions made during the planning process and how these decisions were carried out prior to starting the pilot project.

The basic design of the one-tier QC pilot project was developed by an Alternative QC Taskforce composed of FNS personnel and formed in 1984 to investigate alternative ways to monitor the Food Stamp Program. From the outset the taskforce sought to design an alternative QC system that would yield an error rate as accurate and as defensible as found in the present QC system but in a more timely fashion and at less cost to FNS than the current QC system.

The Alternative QC Taskforce recommended that the pilot project be conducted in Missouri and North Carolina for a period of 18 months. QC case

reviews would be conducted on twelve consecutive sample months, coinciding with the same annual review cycle between October and September that is followed by the State QC agencies.

To reduce the cost of the QC pilot project several new labor-saving techniques were introduced to the QC review process:

- o **Structured interview and worksheet.** The national QC form was replaced by a newly designed structured interview and worksheet in order to streamline procedures and reduce the time expended during the case review process. The new worksheet largely eliminated the current practice of writing up the QC review in narrative form.
- o **Verification Specialist.** Initial computer matching for verification of standard information on each case was centralized in one new QC staff position, a "verification specialist", in order to reduce the amount of time QC reviewers expended on verification tasks.
- o **Reduction in the number of second-party reviews.** Under the two-tier QC system in Missouri and North Carolina, supervisors review all the QC case reviews completed by their staff for correctness. For the one-tier pilot project, supervisors ("senior reviewers") were only required to conduct a random 25 percent sample of cases in order to reduce the amount of supervisory staff time needed to operate the project and allow supervisors to conduct some of their own first party reviews.
- o **Extension of QC review deadlines.** Instead of monthly deadlines for

tier QC system, the pilot project was designed to operate under quarterly deadlines. This was done so that cases in outlying

a Verification Specialist, a Senior Reviewer and a Project Manager to be assigned to each pilot site.<sup>8</sup>

The rationale for incorporating several new and labor-saving features into the one-tier QC design was to reduce cost and improve efficiency. It was also assumed that a nationwide one-tier QC system would be more legally defensible than the regular two-tier system, because it minimized any differences in practices and procedures across States that influence error rates. With regard to timeliness, it was expected that the one-tier QC design would be inherently superior because it eliminated the lag time associated with conducting a second-tier re-review before being able to calculate the official error rate.

Once the general parameters of the one-tier pilot project had been developed by the Alternative QC Taskforce, the Mountain Plains Regional Office (MPRO) and the Southeast Regional Office (SERO) were given the primary responsibility for making the preliminary arrangements necessary to implement the pilot. An Implementation Taskforce based in FNS National headquarters was formed to oversee the Regional Offices in this endeavor.

MPRO and SERO Regional Administrators negotiated an agreement with North Carolina and Missouri State Welfare Commissioners to allow the one-tier QC pilot project to operate within the two States. FNS agreed to reimburse both States for 100 percent of all administrative costs directly associated with pilot operations (the primary costs being the review by the State of the one-tier pilot error cases). In Missouri, the State was granted the right to

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<sup>8/</sup> It was anticipated that each site would lose one reviewer over the course of the pilot project due to either resignation or termination. Thus, eight QC reviewers were initially hired in each pilot site.

conduct a full-field review of a subsample of 400 cases completed by the one-tier QC reviewers, in addition to a desk review of one-tier error cases not in the subsample. North Carolina did not opt to re-review a subsample of the one-tier QC cases, choosing instead to just review the error cases.

SERO and MPRO were also given the responsibility of hiring staff. Eight reviewers were hired per pilot site. For the Missouri pilot site, of those hired to fill the position of QC reviewer, all except one had some Food Stamp Program experience but only two had either State or Federal QC experience. The Verification Specialist position was filled by a FNS field office secretary. A FNS Food Program Specialist with supervisory and QC experience was hired to fill the Senior Reviewer position. The Project Manager was a Regional Office employee assigned to the position for the duration of the project.

As with the Missouri one-tier pilot site, all except one of the reviewers hired to work for the one-tier pilot in North Carolina had some food stamp experience, but only four had either State or Federal QC experience. A former eligibility worker was hired to fill the Verification Specialist position. Unlike the Missouri pilot site, however, the Senior Reviewer position in North Carolina was filled by an FNS employee who had no food stamp or QC experience. As in Missouri, the Project Manager for the North Carolina pilot site was an FNS Regional Office employee assigned to the position for the duration of the project.

MPRO and SERO designed the training program for the one-tier QC pilot staff. Training occurred between November 10-21 in Missouri and between December 1-5 in North Carolina. A few FNS staff members from Washington D.C., including some of the Implementation Taskforce members, attended both training sessions to observe and answer questions. The training session covered

general food stamp policy, QC policy, safety issues, Federal personnel practices, and the specific responsibilities of QC reviewers. The Verification Specialist in the Missouri pilot site received additional training in mid-December on how to conduct computer matches and transmit cases to WCC.

Because the Senior Reviewer in the North Carolina pilot had no previous food stamp or QC experience, she received some one-on-one training from the training specialist in addition to attending the training session for reviewers. The Project Manager trained the Senior Reviewer on how to conduct second-party reviews.

### Pilot Start-Up Operations

This section addresses the characteristics of the first four months of the pilot project in both sites, paying particular attention to the problems of greatest consequence for the operation of the project as a whole. Each problem is discussed separately for the sake of clarity. It should be noted, however, that it was the interdependent and overlapping nature of these problems that made them so prominent. The extent to which new procedures unique to the one-tier QC design were successfully implemented is also discussed.

#### Start-Up Problems

The most serious problems encountered during start-up of the pilot project were the delay at the beginning, logistical problems, and staffing and work performance issues.

Late Start-Up. The most serious problem for the project was that the actual start-up date occurred six to eight weeks later had had been originally

scheduled. The late start-up was due in large part to a long delay in securing funding and a resultant further delay in hiring staff for the pilot project. Funding for the project was not approved until mid-September and staff were still being recruited in one site well into November. In addition, agreements with the two pilot States were not finalized until late September. Thus, instead of getting staff on board and trained during the month of October as initially planned, training did not get under way until the second week of November in Missouri and the first week of December in North Carolina.

In Missouri, the first case assignments for the sample month of October were not made until late November and the November cases were not assigned until mid-December. In North Carolina, most of the October and November sample month cases were not assigned until early December. Thus, there existed a backlog of cases at the very beginning of the QC pilot project, placing staff in the difficult position of trying to "catch-up" before operations had started. The failure of the pilot sites to complete their cases within expected deadlines during the first few months is attributable in large part to the late start-up date and the backlog in cases it created.

Logistical Issues: Office Space, Equipment and Computers. Problems were also encountered with regard to office space and equipment. For example, the Missouri pilot's central office was not completely renovated until the second week in December. In the North Carolina pilot site, telephones were not installed and the copier machine did not arrive until early February. Both sites also experienced recurring difficulties with the use of their computers. The computer for the Missouri pilot did not arrive until January and, due to delays in installing the telephone lines and problems with the software, it could not be used to transmit case dispositions to Washington on a regular basis until mid-April. Hardware problems in the North Carolina pilot's

computer prevented transmissions from occurring until mid-April in this site as well.

Thus, even if the project staff had been hired earlier, a full-fledged start-up of operations in either pilot site could not have occurred because of delays in securing all the necessary equipment and furnishings.

Staffing and Work Performance Issues. Under any circumstance, the backlog of cases and lack of equipment would have posed a problem for QC reviewers in meeting case completion deadlines. The problem was magnified because the majority of reviewers in Missouri and half of them in North Carolina did not have prior QC experience, and none had working knowledge of the time-saving techniques (e.g., structured interview and worksheet, verification procedures, clustering) being tested under the one-tier QC design. The late start of the project had also negated the possibility of allowing reviewers to take on just a few cases at first and work up to a full caseload at a more gradual pace. As it was, reviewers were expected to assimilate a vast amount of new information on policy and procedures in a very short period of time. The extent to which individual reviewers were able to do so was reflected in the quality and quantity of their case reviews—some of which were quite good and others which were not, according to the supervisory staff.

The lack of prior QC experience on the part of many reviewers also placed an extra burden on the Senior Reviewers in the form of increased need for individual training, consultation, and monitoring of cases. This created a particularly difficult situation in North Carolina where the Senior Reviewer also had no prior QC or food stamp experience. In both sites the position of Project Manager was a full-time job entailing, on occasion, tasks outside of their specified job responsibilities (i.e., conducting regular second-party reviews, transmitting cases to WCC).

## Implementing the Pilot Design

In general, the pilot project was implemented in both sites according to the basic design. However, some modifications in the design were made in response to the issues and problems encountered during the start-up.

Time-Saving Techniques. The three specialized time-saving techniques were implemented with varying degrees of success. The structured interview and worksheet were used in both sites from the very start of the project, and after an initial learning period reviewers understood and felt confident using the worksheet. In contrast to the uniformity with which the worksheet was introduced and implemented, the extent to which the Verification Specialist position and clustering of case assignments actually adhered to the original design differed between the two sites.

In Missouri the Verification Specialist performed initial and additional computer matches from the outset of the project. A printer was acquired in February to speed up the time involved in retrieving the verification information from the State agency computers. An additional part-time employee was hired in February for the sole purpose of making copies of the QC case reviews as requested by the State. Both of these changes allowed the Verification Specialist more time to fulfill her regular job duties. In addition to performing computer matches, the Verification Specialist also assisted the Senior Reviewer in making assignments according to geographical regions, ordering case files from and returning case files to the State agency when requested, and performing routine clerical activities. Contrary to the job responsibilities outlined in the operations manual, the Verification Specialist did not obtain non-computer verification information for the reviewers because of lack of time and QC experience, and was initially unable

to transmit case results to WCC due to the computer-related problems discussed above.

In North Carolina there was only partial implementation of a Verification Specialist function during the start-up period, which in turn increased the amount of verification and clerical work for reviewers and the Senior Reviewer. The project operated without a Verification Specialist until the beginning of January. Between January and April the Verification Specialist's project activities were limited to providing clerical support and providing initial computer matches for the sample months of January-March.

In practice, both sites somewhat modified the concept of clustering presented in the original design. As originally envisioned, the Senior Reviewer would hold back cases located in outlying counties and assign the cases in geographic clusters to reduce reviewer travel time to the minimum level possible. In essence, geographic clustering of cases was intended to offset the effect of the reduced number of staff in the one-tier project compared to the two-tier QC system. The two-tier system tended to concentrate a portion of its reviewers in urban areas and spread the rest around the State so that the geographic distribution of cases was roughly reflected by the geographic distribution of reviewers. The one-tier pilot not only had fewer reviewers than the regular system, but they were also more concentrated in their geographic distribution (one office in North Carolina and two offices in Missouri).

Because the pilot began late, thereby creating an instant backlog in cases, the time efficiency associated with having the Senior Reviewer hold back cases from one month to the next diminished in value and was rarely practiced. Instead, reviewers had ample opportunity to cluster cases from their own backlog. In addition, Missouri provided the reviewers an

opportunity to more effectively cluster their cases by assigning two sample months at a time.

Second-Party Reviews. The pilot design anticipated that the Senior Reviewers would probably need to conduct a second-party review of most cases in the beginning of the pilot project, but that this need would taper off as reviewers became more competent in carrying out case reviews. An ongoing 25 percent random second-party review of cases by the Senior Reviewer would then become the standard practice. The pilot design left the decision to the Senior Reviewer and Project Manager as to when to cut back the proportion of cases receiving second-party reviews.

In Missouri, the number of second party reviews was gradually reduced from 100 percent to approximately 25 percent over a 5-month period. A few reviewers in need of extra supervision continued to have a substantial number of their reviews receive a second-party review. The Missouri pilot was able to provide this amount of supervisory review by dividing the work between the Project Manager and the Senior Reviewer. In contrast, the North Carolina QC reviewers did not receive as much review of their work because this pilot site opted to start the practice of random second-party reviews on 25 percent of the sample cases immediately after the Senior Reviewer was trained. Thus, only the first 4-5 cases of each North Carolina QC reviewer received a second-party review before cutting back to the random 25 percent practice.

#### Pilot Phase Down Operations

Two major issues were associated with the pilot project during its final months. First, the phase-down period was characterized by a significant push on the part of the pilot staff to complete all outstanding case reviews. At the same time, the pilot project experienced some staff attrition,

particularly in the Missouri site. It should also be noted that the pilot was extended three months beyond the original schedule in order for the staff to complete the case reviews on the entire annual sample. Originally, all case reviews (including second-party reviews) were scheduled for completion by January 1, 1988. In actuality, cases were still being completed until March 31, 1988.

#### Status of Cases During the One-Tier Phase-Down Period

The final one-tier QC case assignments in both pilot sites were made around the end of September 1987. Due to the backlog of incomplete or only partially complete cases from prior months, as of November 30—when the pilot project was originally scheduled to be finished with the first-party reviews—the North Carolina pilot staff had roughly a quarter (291 cases) of the full annual sample still to complete. Of this total, 198 cases still required home visits. The Missouri pilot also experienced a significant backlog of cases, although not quite as many as North Carolina. As of December 5, the Missouri pilot staff still had 243 cases to complete, 150 of which required home visits. Thus, during the final phase-down of the pilot project, staff had not only to complete their last case assignments but also to complete reviews on previously assigned cases that had been only partially finished or never started.

#### Staff Attrition

At the same time that the pilot staff was attempting to eliminate the substantial case backlog, the number of staff available to perform the reviews was decreasing. In Missouri, the Senior Reviewer left the pilot in early November and was replaced by one of the pilot QC reviewers. Most of the rest

of the staff, including the Project Manager, left the pilot gradually between late January and late February. During the final month of March the Missouri pilot project was staffed by one QC reviewer, the acting Senior Reviewer, and the Verification Specialist. The pilot in Missouri officially ended on April 1, 1988.

The North Carolina one-tier QC pilot experienced less staff attrition during the phase-down period than did the Missouri pilot. One QC reviewer left the pilot on January 1, 1988, but the rest remained until the scheduled termination date of February 26, 1988. The Verification Specialist, Senior Reviewer, and Project Manager continued to work on the project until March 15, 1988, the formal conclusion date of the project.

#### Pilot Staff Opinions and Impressions

The following discussion summarizes some of the opinions and impressions of the one-tier QC staff interviewed about different aspects of the project over the course of the pilot period. Because only a portion of the total one-tier QC project personnel were interviewed at any given time, this section should not be interpreted as a conclusive representation of the opinions of all project personnel. Overall, however, this summary should shed light on what the staff thought about some important issues during the start-up and steady-state operation of the one-tier QC pilot.

#### Staffing Issues

The most commonly expressed opinion on the topic of staffing was that a full-time clerical worker was needed in addition to the Verification Specialist. Pilot staff at all levels commented on the need for additional clerical support. The majority of reviewers did not think that using a

Verification Specialist saved time in the case review process and stated that their preference would be to initiate the computer matches for verification themselves. Some reviewers, however, did like having their computer verification matches run for them. The overall consensus, as noted above, was that there was a definite need for additional clerical support beyond what the Verification Specialist could provide and that, between the two positions, clerical support was more valuable.

Some verification tasks originally assigned to the Verification Specialist, such as carrying out routine kinds of verification beyond computer matching, were never tested. However, most reviewers felt it was just as well that this aspect of the original one-tier design was not implemented because they were of the opinion that it was more efficient and preferable to attend to all the verification associated with a case themselves.

Most staff in both sites felt that the quantity of work was more than could be handled by one Senior Reviewer. Most of the Missouri project staff interviewed thought that, at least in the beginning of the project, there should have been a Senior Reviewer based in each office, and a few reviewers maintained that two Senior Reviewers were needed over the entire course of the demonstration project. Many staff from both sites also stressed that it was very important that the Senior Reviewer have previous program, policy, and supervisory experience in the area of food stamps and QC. Most reviewers also stressed that the performance of the one-tier pilot project would have benefited from having more reviewers with food stamp or QC experience.

#### Structured Interview and Worksheet

By the final months of the pilot project, all personnel interviewed about the structured interview and worksheet thought that the basic concept of a

check-off worksheet was good but there was dissatisfaction with particular aspects of the form. Positive comments included that it (1) provided uniformity across reviews, (2) covered all the information needed, thereby making it easier to complete the review, (3) reduced the amount of time spent writing-up the case, and (4) was an easy document to use for second-party reviews. Staff also thought that the worksheet needed to be refined, particularly in terms of reducing its length, eliminating duplicative categories, and providing more space for recording answers. Some also mentioned that the high number of entries in the document made it cumbersome and caused reviewers to make recording errors.

### Case Assignments and Clustering

Many, though not all, staff made negative comments about being assigned two sample months of cases at the same time. Many reviewers felt that it was psychologically difficult to be responsible for so many cases at one time and confusing to keep track of cases from two different sample months to the point that it hindered their ability to finish reviews as quickly as when receiving only one month's sample at a time. However, other reviewers thought that two-month case assignments allowed them to cluster their home visits more efficiently and that the positive aspects of double assignments offset the negative aspects.

### Training

The majority felt that the initial training session was too short and covered too much material. Most suggested that training should last 3-4 weeks and that reviewers should be given more case examples and/or "practice cases" to work on before being expected to carry a full caseload. A few staff

mentioned that the training session should have been more carefully planned. The need for more individual training instead of group training was also mentioned, as well as the need to place more emphasis on how to organize tasks and where to find information.

Most staff felt that the on-going training had been helpful but noted that, because they were so behind in their work, it was difficult to justify spending time on on-going training. Most felt that their problems and questions were being adequately addressed by the Senior Reviewer on a case-by-case basis.

#### Learning Curve/Workload/Caseload

In general, upper level personnel thought the reviewers had a faster learning curve than the reviewers themselves did. Most reviewers felt it took 4-5 months for them to feel knowledgeable about and comfortable with their jobs. Staff from both sites reported feeling a great deal of pressure and stress during the pilot. Many expressed anxiety about never being able to "catch up" and noted that this had negatively affected their ability to judge their performance or the performance of the project as a whole. Several staff mentioned that the caseload was simply too high to begin with and that, even if the project had started on time, they would still not have been able to complete the entire caseload. At the end of the project, reviewers were asked to name what they thought a reasonable caseload might be, one which required a steady work effort while not compromising quality. Almost all the reviewers interviewed thought that a monthly caseload should consist of 12 cases as opposed to the 14-15 cases per month they had been expected to average over the course of the pilot.



#### 4. ANALYSIS OF QC CASE REVIEW TIME

This section examines the time spent on review activities by first line QC reviewers in the one-tier pilot project and the regular two-tier system, as indicated by the reviewers' time recorded on "job tickets." It has two objectives: (1) to present a general discussion of job tickets and their accuracy as a measure of work effort, and (2) to analyze the job ticket data for differences between the one-tier (pilot) and two-tier (regular) QC systems in the time required to complete reviews. Job tickets were received from Missouri and North Carolina QC reviewers in both the one-tier pilots and two-tier systems. In the pilot, job tickets were completed for the QC samples drawn between October 1986 and September 1987. In the two-tier system, the States agreed to provide job tickets for three of the twelve months—for the period September to November 1987 for Missouri and for the period July and September 1987 for North Carolina.

##### Design and Measurement Issues

A key element in evaluating the pilot project is the time needed by first line reviewers to complete the reviews. In designing the pilot project it was anticipated that significant savings in reviewer time would be realized from (1) having a Verification Specialist perform some of the routine review functions, (2) following a structured worksheet when reviewing cases, and (3) geographic clustering of cases. The extent to which these elements enhanced reviewer efficiency should be reflected in the amount of time needed to complete QC reviews, and in the time spent by QC reviewers on functional activities such as home visits, verification, and travel.

Job tickets were used to obtain data on reviewer time by functional activity. Both the pilot and the regular two-tier system used job

tickets to record time spent on all functional activities from the beginning (computer verification and case record review) to the end (second-party review) of the QC review process. The job tickets used in the two systems were similar.<sup>9</sup> (A sample copy of the job ticket used in the pilot project and the associated instructions for using it are in Appendix B.)

To simplify the analysis, related time categories on the job tickets have been aggregated into functional categories. For instance, the individual categories of Home Visit, Verification, and Additional Verification were summed to produce one aggregate category--Verification. There are two advantages to aggregating the components in this manner. First, reviewers may have differed from one another in assigning particular activities to the same category. Second, the individual categories on the early and revised pilot job tickets in Missouri were slightly different (the early job ticket combined verification and the Home Visit). Aggregating to the functional categories provides comparability along both dimensions. The functional categories are:

- o Computer Verification
- o Case Record Review
- o Verification Activities (Home Visit + Verification + Additional Verification)
- o Write up/Eligibility (Write up + Determining Eligibility)
- o Travel
- o Other (copying documents and sometimes consultation with other reviewers concerning a case)

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9/ The only difference was that the job tickets for the regular QC system did not identify the individual reviewer. This difference was by design; since there were so few job tickets per reviewer (an average of about 6 in Missouri and 12 in North Carolina) over the three-month period, any analysis of differences in review time by reviewer would have been meaningless.

For a given case, the time in each of these categories sums to the total first-party review time spent by the QC reviewers.

### Accuracy of Job Tickets

Data from the job tickets provide a rich source of detail on the QC review process for individual cases. As with any measurement instrument, however, questions can be raised as to the accuracy of the information recorded on the job tickets. Two important data measurement issues are: (1) how time was allocated for activities that involved more than one case, and (2) how to correct for missing and incomplete data.

Certain activities of first-party QC reviews may be described as batch activities, i.e., dealing with several different cases at the same time. Examples of batch activities include drafting verification letters to employers, landlords, banks etc.; sending letters for interview appointments; and traveling to a location to conduct two or more household interviews. For all batch activities the reviewers were instructed to allocate their time proportionately across the affected cases. For example, if a reviewer traveled to a town to interview two households, half of the travel time was to be assigned to each case. Interviews with the reviewers indicated that they encountered no important problems in following this proportional allocation rule.

The job tickets from both QC systems were generally complete with the exception of data on the second-party review time for the pilot project. This information was available for only a minority of the one-tier cases (15 percent in Missouri and 44 percent in North Carolina). Thus the analysis below is confined to time spent on first party reviews.

## Job Ticket Analysis

During the demonstration period October 1986 to September 1987, 2,535 cases were reviewed by pilot QC reviewers (1,312 in Missouri and 1,223 in North Carolina). These figures were drawn from the number of pilot cases reported in each State on the FNS 380-1 computerized record. Information from the 380-1 database was matched with job ticket files. Job tickets were received for nearly the entire samples—1293 tickets (98.6% of cases reviewed) were received from Missouri and 1200 (98.1%) from North Carolina.

Proportionately more job tickets were missing for error cases than for nonerror cases.<sup>10</sup> (Appendix Table C summarizes this one-tier QC information, by month and State.) In Missouri the majority of cases without job tickets were assigned toward the end of the project when operations had begun to wind down. Since error cases were likely to be more difficult to resolve, and consequently take more time, these were among the last few remaining difficult cases and their information may not have been transmitted simply because the project closed down. This cannot be the explanation in North Carolina, however, because most of the missing cases were assigned in the earlier months of the project.<sup>11</sup>

In the regular two-tier QC system, job tickets were completed by State reviewers on three sample months—September to November in Missouri and July

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<sup>10/</sup> Errors in this section refer to cases with overpayment, underpayment, or ineligible determinations.

<sup>11/</sup> It should be noted that the WCC 380-1 and job ticket error disposition information sometimes conflicted. Such instances may have been produced by arbitration and re-review. For the work effort component of the analysis, the original findings were maintained, except when they were not indicated on the job ticket. In these instances of missing information, error dispositions from the 380-1 database were used.

to September in North Carolina. In total, 628 job tickets were received from Missouri and 271 from North Carolina.<sup>12</sup> Like the pilot job tickets, not all two-tier cases on the WCC 380-1 database had job ticket information.

(Appendix Table D summarizes the characteristics of the two-tier cases without job tickets.) In Missouri 4 QC cases were missing job tickets and in North Carolina 29 were missing. In Missouri, 1 of the 4 was an error case and in another the client was unwilling to give information (recorded as incomplete)—the other two cases were correct. In North Carolina, 28 of the 29 two-tier cases missing job tickets were errors—the one remaining case was correct.<sup>13</sup>

#### Job Tickets Used for Analysis

The sample used for the following analyses consists of completed reviews; cases that were not subject to review (e.g., a household never received food stamps or was undergoing a fraud investigation) or incomplete (clients refused to participate, had died, or moved out of state) were not included. These cases were excluded because they generally required less time for a first-party review and the proportions of incomplete and not subject to review cases were quite different for the pilot than for the two-tier system (see Appendix Table E). If a one-tier system were implemented the proportion

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<sup>12/</sup> While not requested, job tickets for an additional 232 negative cases—reviews of households denied assistance—were received from North Carolina. These were not included in the job ticket analysis because the pilot did not review negative cases. On average, QC workers in North Carolina spent only 1 hour and 25 minutes to review these negative cases.

<sup>13/</sup> The fact that these job tickets were missing and that the missing tickets were disproportionately error cases was not discovered until several months later when the job tickets received were matched against the WCC 380-1 data base. The State could not find the missing job tickets and could not explain their absence.

of incomplete and not subject to review cases should, presumably, approximate that of the present two-tier system. Because the pilot sites had a higher proportion of these two types of cases that required less time to review, inclusion of these reviews would bias comparisons between the two systems. For this reason, our analyses are based upon the subsamples of completed cases.<sup>14</sup>

### Examination of the Learning Curve

Before proceeding to a comparison between the pilot and two-tier job ticket data it is also important to note that, because the majority of pilot QC reviewers began the project with little or no QC experience, it is not appropriate to directly compare their performance over the entire project with that of the more experienced two-tier QC reviewers. One might expect the times of the relatively inexperienced reviewers to be longer for the early months of the demonstration. As time passed and they gained more experience, their times should have declined, exhibiting a learning curve effect.

As expected, there is clear evidence of a learning curve (see Appendix Table G for the average time spent by the month the cases were completed); however, it is not clear that only the initial months should be dropped from the comparative analysis. There are at least two reasons to expect that the work done on cases completed after October 1987 may not be representative of how the one-tier system would operate on an on-going basis: (1) some reviewers left and others were distracted by searching for another job, and (2) it is unclear how the recording of review time may have changed near the end of the project after new cases were no longer assigned (the last set of cases was assigned in late September and early October 1987 in North Carolina and

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<sup>14/</sup> The number of completed cases by reviewer and average review times by functional component are shown in Appendix F.

Missouri, respectively). This reasoning suggests that cases completed in the middle of the demonstration period would provide the best basis for comparison.

Regression analysis was used to determine with more precision the shape and extent of the learning curve within each State and system. The main advantage of using this methodology rather than simply the information presented in Appendix Table G is that the time trend, or learning curve, may be separated from month-to-month changes over time caused by changing error rates. Regression analysis was applied to each of the four samples — the pilot reviews in each State and the two-tier reviews in each State. Within each sample the regression models identified the effect of the month the case was completed (also referred to as completion month) and the effect of error status upon total review time.<sup>15</sup>

#### Regression of Pilot Sample

Table 4.1 reports regression coefficients of hours per first-party review for the pilot sample, by the month the case was completed. (A full description of the methodology used for these models may be found in Appendix H.) The estimates confirm our expectations regarding the existence of a substantial learning curve. Both States clearly show a general decline in the estimated time for reviewing correct cases. In Missouri this time fell from 11.5 to 6.8 hours (between January 1987 and March 1988) and in North Carolina

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<sup>15/</sup> The r-squared statistics for the models presented in this section will generally be low—between .03 and .20—indicating the models do not explain much of the variance in total reviewer time. However, the purpose of the analysis is not to determine the predictors of review time, but rather to determine the effects of when the case was completed and error status upon review time. Only if those omitted variables that may explain reviewer time are correlated with when the case was complete or error status, will the estimates of the learning curve and the effect of errors be biased.

from 11.2 to 7.1 hours (between January and October 1987). The estimates for correct cases in Missouri show that average review time appears to stabilize for the August to November 1987 period, and then fall again until March. Because of the likelihood that the drop at the end of the pilot period was due at least in part to factors other than continued learning, we have chosen the cases completed between August and October 1987 as the best reflection of how much review time would be required in a mature, stable one-tier system in Missouri.

Table 4.1

Estimated First-Party Review Time  
in the Pilot Sites  
by State and Error Status

Completion Month	Missouri		North Carolina	
	Correct Cases	Error Cases	Correct Cases	Error Cases
Hours				
12/86	9.85	8.81	10.93	10.93
01/87	11.52	11.92	11.24	14.05
02/87	10.13	10.53	10.67	13.48
03/87	10.21	10.61	10.45	13.25
04/87	9.00	10.67	10.30	12.60
05/87	9.60	11.27	8.72	11.02
06/87	9.47	11.14	8.42	10.72
07/87	8.83	9.74	8.63	10.91
08/87	8.22	9.13	8.02	10.30
09/87	8.00	8.91	8.37	10.66
10/87	8.21	8.87	7.15	9.39
11/87	8.06	8.71	7.39	9.62
12/87	7.92	8.58	7.87	10.10
01/88	7.17	8.29	8.06	9.49
02/88	6.96	8.08	10.13	11.57
03/88	6.75	7.87	8.71	10.15

The same concerns as to the nature of the work done in the initial and final months that were present for the Missouri data also apply to the North Carolina pilot data. The estimates for the correct cases display three very distinct phases: (1) an initial period from December 1986 to April 1987 with

high but declining review times, consistent with a learning curve, (2) a period of five months beginning in May 1987 that show fairly constant review time, and (3) the last six months of the project (October 1987 to March 1988) which show no clear pattern. Using the same criteria that was employed to select the steady state period for Missouri, we have chosen the cases completed between May and September 1987 to represent the steady state of the pilot operation in North Carolina.

The estimates in Table. 4.1 indicate that review time of error cases generally declined over the course of the project. On average, the time required to review an error case compared to a nonerror case was about one hour more in Missouri and two hours more in North Carolina.

#### Regression of Two-tier Sample

A similar regression was used to analyze the two-tier data. The sample in this analysis consists of the complete North Carolina two-tier cases drawn from the QC samples for July, August, and September 1987 and the complete Missouri two-tier cases from the September, October, and November 1987 QC samples.

Table 4.2 shows the results of this regression. (See Appendix I for a description of the model and its parameters.) Review time for correct cases was less in Missouri than in North Carolina—around 8.3 hours in Missouri compared to 9.3 hours in North Carolina. The difference is more marked for the time to review error cases. Average review time in North Carolina was unaffected by the presence of an error, while in Missouri reviewers required approximately two and a half additional hours to review an error case compared to a nonerror case. The interpretation of this difference is not clear. It should be noted that the North Carolina two-tier reviewers are the group missing job tickets for 40 percent of the error cases (as shown on the WCC

Table 4.2

Estimated First-Party Review Time  
in the Regular QC System  
by State and Error Status

Completion Month	Missouri		North Carolina	
	Correct Cases	Error Cases	Correct Cases	Error Cases
Hours				
07/87			6.94	6.92
08/87			9.04	9.02
09/87	8.50	10.90	9.32	9.30
10/87	8.17	10.57	9.51	9.49
11/87	8.62	11.02	9.54	9.52
12/87	8.54	10.94		
01/88	8.45	10.85		
02/88	7.86	10.26		

380-1 database). If these missing error cases required significantly more time than the included error cases, the conclusion that these reviewers finished error cases as quickly as correct ones would be inappropriate.

Since the QC reviewers in the two-tier system were more experienced than their pilot counterparts and did not have the problems associated with implementation and phase-down, one would expect to see little variance of first-party review time with respect to the completion month. This hypothesis is supported by the relatively constant average review times across months within each State.

To summarize the results of the above comparisons within and between the two QC systems:

- o A learning curve (of similar magnitude) is clearly present in both pilot sites.
- o For the North Carolina one-tier pilot, the cases completed between May and September 1987 provide the best example of a mature, stable QC review process. In Missouri, the stable period is between August and October 1987.

- o The presence of an error significantly increased review time for the one-tier system in both States, with the effect slightly stronger in North Carolina.
- o Error cases significantly increased the review time in the Missouri two-tier system, while review time was about the same for error and nonerror cases in North Carolina. However, this result for North Carolina may be biased as the estimate is based upon only 60 percent of the error cases.

#### Comparison of Pilot and Two-Tier First-Party Review Time

The main purpose of the preceding regression analysis was to determine a period when the pilot work effort was not distorted by inexperience or conditions specific to phasing down the project. Having established a set of cases that appear to have been completed during a steady state, these cases will now be compared to the two-tier data.

Our analysis of the differences in review time between the pilot and the two-tier regular system was done separately for Missouri and North Carolina. This was to ensure that differences between the two states that were unrelated to differences between the two QC systems did not distort the comparison (e.g., one state having a much higher proportion of clients with earnings.)

Table 4.3 below presents the estimated times for first-party reviews under each system in each State. (The models and methodology used to produce these results are described fully in Appendix J.) In Missouri, there is no significant difference between the two QC systems in the time to complete correct cases. For error cases, this result does not hold. The Missouri review time in the pilot project appears to be relatively unaffected by errors (an additional effort of approximately 9 minutes), while review time of error cases in the two-tier system was approximately 2 hours more. Comparing the average of correct and error cases (weighted by the probability the case was in error) indicates that reviewers in the pilot project spent 35 minutes less, on average, than their two-tier counterparts.

Table 4.3

Estimated First-Party Review Time In Hours  
by QC System, by State, and Error Status

System	Correct Cases		Error Cases		Weighted Average Review Time
	Review Time	No. of Cases	Review Time	No. of Cases	
Missouri Pilot	8.41	205	8.56	60	8.45
Missouri Two-Tier	8.41	474	10.88	122	9.04
N.C. Pilot	8.39	348	10.74	79	8.92
N.C. Two-Tier	9.26	219	9.18	40	9.24

In North Carolina, the review time of the two systems is quite different for both error and correct cases, but the effects offset one another. Pilot reviewers completed correct cases almost an hour faster than regular two-tier reviewers, but were an hour and a half slower for error cases. After adjusting for the error incidence, pilot reviewers required 20 minutes less than their two-tier counterparts for an average case. Again, the odd result that the time taken by regular QC reviewers in North Carolina was approximately the same for correct and error cases should be noted. If, as discussed earlier, the estimate of review time of error cases is biased downwards because 40 percent of the job tickets for error cases was missing, the actual difference in average review time cases between the two systems in North Carolina would be more than 20 minutes.

Analysis of One-Tier Innovations

After analyzing the total first reviewer time in the preceding discussions, it is useful to consider the proportion of total review time spent on the functional components to examine the effects of the pilot innovations (i.e. the structured worksheet, use of a Verification Specialist, and geographic

clustering). As before, the sample for this analysis is comprised of all of the two-tier cases and those pilot cases that represent a steady state.

Table 4.4 compares the proportion of total QC reviewer time spent on each of the first-party review functional categories, by State and system. The data do not allow complete separation of the effects of the specific innovations, but they are, nonetheless, suggestive.

**Table 4.4**  
**Proportion of Total 1st Reviewer Time**  
**Spent in Functional Categories by State and System**

State/System	Computer Verific.	Case Record Review	Verific. Activities	Write up/ Eligibility	Travel	Other
Percent of Total Time						
MO Pilot	3.1	16.1	26.8	31.2	18.8	0.41
MO Two-tier	3.6	17.0	21.9	39.4	13.2	0.49
NC Pilot	3.5	18.2	26.1	30.8	19.2	0.22
NC Two-tier	3.6	14.8	24.1	33.1	18.1	0.67

The proportion of time spent writing up the case and determining eligibility is less in the pilot sites, particularly in Missouri (31.2 percent compared to 39.4 percent in the two-tier system). This same pattern is illustrated, to a lesser degree, in North Carolina. These differences between systems may well stem, at least in part, from the implementation of the revised worksheet which simplified recording procedures. The differences in proportion correspond to about 45 minutes in Missouri and 15 minutes in North Carolina for a case requiring 9 hours of review time.

Estimates of travel time might be expected to reflect effects of geographic clustering. If there is an effect, it is not in the expected direction. The data show two-tier QC reviewers spending a significantly lower proportion of

time on travel in both states, with the Missouri effect again being the more pronounced of the two. The differences may be explained by the number of reviewers in each State. The two-tier system in Missouri employed 53 reviewers compared with only 8 to 10 for the pilot. The 53 reviewers were more uniformly distributed across the State, allowing individual reviewers to spend less time traveling. In North Carolina the regular two-tier system had 26 reviewers compared with 8 to 10 for the pilot. In effect, the larger number of reviewers in the regular QC system allowed for a greater degree of natural clustering than was possible with the 8 to 10 reviewers available in the pilot sites. It should also be noted that in neither State was it clear that pilot reviewers were in fact able to organize their caseloads to take advantage of geographic clustering.

The data for computer verification (performed by a Verification Specialist in the pilot project and by a mixture of reviewers and clerical staff in the two-tier system) show some slight evidence of time savings. However, the absolute amount of time spent was so small that these small differences in the fraction of a case's total time devoted to this activity are relatively negligible. The 0.5 percent difference in Missouri translates to approximately 3 minutes for a typical 9-hour case. In North Carolina the difference corresponds to about 1 minute.

#### Summary and Caveats

The analysis of work effort based upon job tickets for the one-tier pilot and the regular two-tier system generally reveals small differences in the time necessary to complete cases. After adjusting for the incidence of error cases

In North Carolina the difference was about 20 minutes, again favoring the pilot project (8.92 hours in the pilot and 9.24 in the two-tier). Although the times for an average case are relatively similar within each State, the times for error cases varied a great deal. The North Carolina two-tier and Missouri pilot reviewers processed error cases about as quickly as correct cases, whereas the North Carolina pilot and Missouri two-tier reviewers required approximately two additional hours, relative to correct cases. These differences suggest that the different review systems may not be processing error cases in the same manner, though the low proportion of job tickets on error cases returned by the North Carolina two-tier system makes this conclusion suspect.

The estimated times were based on the entire group of job tickets received for all complete two-tier cases for three months and a steady-state subsample of the complete pilot cases. The subsample was drawn to obtain cases that appear to be unaffected by initial difficulties (inexperience and implementation problems) or biases introduced in the phase-down. This subsample should be representative of how the one-tier system would perform on an ongoing basis.

The innovations introduced into the pilot project appear to have had varying effects. The structured worksheet probably had a significant effect in reducing the review time to determine eligibility and write up the case in the pilot sites (in Missouri this difference was about 45 minutes, in North Carolina it was approximately 15 minutes).

Any effects caused by the geographic clustering of cases in Missouri are unclear for two reasons: (1) it is not apparent to what extent this practice was followed in the pilot project, and (2) the two-tier system had many more reviewers (53 in Missouri and 26 in North Carolina) who were better distributed across the State, thereby reducing average travel time.

Finally, the impact of the Verification Specialist appears minimal—pilot review time was less by approximately 3 minutes in Missouri and 1 minute in North Carolina. Also, these estimates may not be representative of the Verification Specialist's performance on an ongoing basis because equipment and implementation difficulties made it more difficult for the Verification Specialist to perform her duties.

The results above should be interpreted with caution for at least two reasons. First, though the analysis here indicates the pilot sites were able to complete cases slightly faster than their two-tier counterparts, it is not clear to what extent the pilot project was adequately staffed in each State. Interviews with the pilot reviewers indicated they felt the workload was heavy, and at times, even overwhelming. But the reviewers in the regular QC system, especially in North Carolina, also complained of a heavy workload.

A second consideration is related to the fraction of the first-party reviewers' total work hours that were recorded on the job tickets (where total work hours are defined as the number of paid hours net of holidays, sick days, and annual leave). Only about 55 percent of the total work hours were recorded on job tickets in the Missouri and North Carolina pilot projects.<sup>16</sup> These relatively low proportions are surprising since most of the pilot project reviewers in both sites felt their workloads were generally very heavy. Such low proportions indicate that the average time recorded on the job tickets understate the true work effort. However, inferences regarding the shape of the learning curve for a given State and QC system should not be affected

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<sup>16/</sup> This probably explains the difference in review time between an earlier FNS survey which indicated an estimated review time by regular QC reviewers of 13 hours per case and the review time on the job tickets of approximately nine hours per case.

unless the proportion of total time recorded on the tickets had considerable month to month variation (such monthly data were not available). On the other hand, if the proportions of total time recorded on job tickets were quite different for the two systems within a given State, one might conclude that the average time recorded on job tickets is not comparable across systems. Such circumstances would challenge the validity of our conclusions that pilot reviewers were approximately 30 minutes faster, on average, than their two-tier counterparts in each State.

Comparable estimates of the proportion of total work time recorded on job tickets for the regular QC systems are more difficult to compute because there are no data indicating how individual reviewers split their time between food stamp, AFDC, and Medicaid reviews (reviewers in the pilot project only conducted food stamp reviews). Using the assumption that AFDC and Medicaid reviews required the same amount of time as those for Food Stamp cases, the proportion of total time recorded on job tickets for the two-tier reviewers is about the same as for the pilot reviewers — approximately 50 percent.

Information recorded on the job tickets does not address the quality of the reviews. The analysis in Section 5 explores this issue further with respect to error rates reported by the two systems.

## 5. ANALYSIS OF ERROR RATES

A major objective of a quality-control system for food stamps is to estimate the extent to which eligibility workers in a given state are making errors in the determination of allotments. In this section, the error rates for the one-tier pilot and the two-tier regular systems are compared.

The purpose of this analysis is to determine (1) whether there are differences in error findings between the two QC systems, and (2) whether those differences remain, after controlling for differences between the two samples that might be related to the difficulty of the completed cases.

The error rate, which is the focus of this section, is defined as the dollar error amount expressed as a percentage of the allotment level. It is used by the Federal Government to assess State performance relative to a legislated standard and by States to assess their own performance.

The implementation of the pilot involved changes that might lead to either an increase or a decrease in the error rate relative to the rate observed in the regular QC system. As implemented in Missouri and North Carolina, the one-tier pilot used streamlined procedures such as centralized verification and structured review worksheets and interview formats. On the one hand, these changes should have saved the reviewer's time for reallocation to more difficult verification questions. On the other hand, the detection of more errors might be expected under the regular QC system than under the pilot simply because a subsample of records receive a Federal validation re-review. In the pilot, only error cases were re-reviewed by the State (except for a validated subsample of 400 cases in Missouri, discussed later). Furthermore, the regular QC system involves more second-party reviews at the State level. The comparison is further complicated because the regular QC system has been

in use for many years, making it immune from any start-up problems involved in implementing the pilot.

Two types of analyses of error rates are reported. The first is a direct comparison of the error rates for the one-tier pilot and two-tier regular QC systems. This comparison is only appropriate if the true error rates in the two samples are the same. The question then, is, how much of this error was detected by the reviewers in each quality control system. If the difficulty of the caseloads and the ability of the eligibility workers for the two systems are the same, any differences in error rates should reflect differences in the abilities of the systems to detect errors. In a second analysis the presumption that the true error rates are the same for the two samples is relaxed. A set of control variables (such as amount of earnings and number of case members in the reviewed cases) which the literature suggests is related to error occurrence, is introduced into the model. This allows us to ask whether, after controlling for caseload difficulty, the pilot and the regular QC system perform equally well.

#### Comparison of Error Rates of the Pilot and the Two-tier QC Systems

Error rates were constructed for both the one-tier pilot and the regular QC systems. The "error rate" is the average error amount divided by the average allotment amount. In the pilot system this is straightforward. In the two-tier regular system, the average error amount is a weighted combination of the error amounts found in the State first tier and those found in the 400-case subsample re-reviewed by the Federal second tier.<sup>17</sup> Separate

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<sup>17/</sup> More detail on the method of calculating the error rate can be found in Appendix K.

rates are calculated for cases with overpayment and ineligibility errors and for cases with underpayment errors.

### Overpayment Error Rates

In the pilot system, calculation of the error rates for overpayment errors (which include ineligibility errors) is done using the full sample of complete cases. <sup>18</sup> For this analysis, underpayment errors are treated as non-error cases, with error amounts set to zero. The average overpayment error is simply the average of error amounts for all cases in the sample. Estimates of the unadjusted error rates for the pilot are in row 1 of Table 5.1. Estimates adjusted for non-completed cases are in row 4. For Missouri, the pilot error rate prior to adjustment is 5.56 percent. The adjustment for non-completed cases increases the rate to 5.69 percent. For North Carolina the pilot error rates are somewhat higher—5.95 percent for the pre-adjustment rate and 6.13 percent for the adjusted rate. Thus, the adjustment for incomplete cases has little effect on the overall pilot error rate in either State.

In the regular two-tier system, calculation of the error rates is somewhat more complicated. The final error rate is a combination of the findings of the State reviewers and the findings of a Federal re-review of a 400-case subsample. The average error amount found by the Federal re-reviewers in that subsample is adjusted to take into account the differences between the sample of the 400 cases and the full sample, as well as to adjust for differences within the 400 subsample between the Federal and State findings.

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<sup>18/</sup> In Missouri, 13.8 percent of the pilot cases and 14.6 percent of the State sample of regular QC cases had overpayment errors. In North Carolina, the corresponding percentages were 14.3 percent and 12.1 percent.

Table 5.1

## Overpayment Error Rates for Missouri and N. Carolina

	<u>Missouri</u>	<u>North Carolina</u>
<u>Pilot:</u>		
1. Error rate before adjustment for non-completed cases	5.56%	5.95%
2. # cases completed / # cases	1172/1312	1055/1223
3. Standard error of error rate	0.59%	0.65%
4. Error rate adjusted for non-completed cases	5.69%	6.13%
<u>Regular QC system:</u>		
5. State estimate of error rate	5.34%	5.35%
6. # cases completed / # cases	2419/2540	1167/1222
7. Error rate after adjustment for Federal re-review results*	5.55%	7.30%
8. Standard error of error rate	0.39%	0.68%
9. Error rate after adjustment for non-completed cases	5.59%	7.33%
<u>Difference between regular QC and pilot error rates:</u>		
10. Regular QC minus pilot error rates before adjustment for noncompletion	-0.01%	1.35%
11. Regular QC minus pilot error rates after adjustment for noncompletion	-0.10%	1.20%
12. Standard error of adjusted difference assuming zero covariance	0.71%	0.94%
13. Test-statistic of adjusted difference	-0.14	1.28

\* Regression equations relating Federal re-review overpayment error amounts to State error amounts (regular QC system):

Missouri:  $F_i = -0.0125 + 1.04 S_i$  N=408

North Carolina:  $F_i = 2.79 + 0.960 S_i$  N=400

Estimated error rates for the regular two-tier QC system are also presented in Table 5.1. Row 5 contains the estimates of the unadjusted overpayment error rate based on the initial State findings. In both Missouri and North Carolina, the error rate based on State findings is approximately 5.35 percent — smaller than the pilot estimates in both States (by 0.22 percentage points in Missouri, and by 0.60 points in North Carolina.)

Row 7 contains the estimates based on the adjusted Federal findings. In Missouri, there is little difference in the estimates based on the Federal re-review: the error rate increases by 0.21 percentage points to 5.55 percent. In North Carolina, however, the re-review yields a much higher error rate. The resulting error rate is 7.30 percent, higher than the original finding by almost 2 percentage points. (The regressions used to construct the adjusted findings are located at the bottom of Table 5.1.)

Finally, Row 9 contains the regular system estimates after adjusting for non-completed cases. Once again, there is little change in the final rates: the Missouri rate increases by 0.04 percentage points (to 5.59 percent), while the North Carolina rate increases by 0.03 percentage points (to 7.33 percent).

The difference in the final adjusted overpayment rate between the one-tier pilot and the regular two-tier system was larger in North Carolina than in Missouri. In North Carolina, the final adjusted overpayment rate is 6.13 percent in the pilot and 7.33 percent in the regular system, a difference of 1.20 percentage points (row 11). While sizable, this difference is not statistically significant.<sup>19</sup> The rough equality of the error rates from the

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<sup>19/</sup> A test of the hypothesis that the statistics are equal (under the conservative assumption that there is zero covariance of the payment errors) yields an approximately normally distributed test statistic of 1.28 with a marginal significance level of 20 percent for a two-tail test.

regular QC system State findings and the pilot suggests that the difference in the outcomes is due primarily to the Federal re-review in the regular QC system. Adjustment for non-completed cases also makes little difference. That adjustment reduces the difference between the pilot and regular QC system error rates by only 0.15 percentage points, approximately 12 percent.

In Missouri, the pilot and regular system error rates after the Federal re-review are almost identical. Prior to adjustment for non-complete cases, the difference between the two rates is only 0.01 percent. The difference between the adjusted rates is only slightly larger — 0.10 percent. There are conceptual reasons to expect each system to perform better than the other, but the fact that a fledgling system performs as well as a system that had been in use for many years is surprising—particularly since, as shown in Section 4, the pilot spends significantly less time on error cases than does the regular QC system.

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Throughout this section we test hypotheses using two-tailed tests at the ten-percent significance level. This means that the probability that we improperly reject that the true value is zero is ten percent. This is referred to in the statistics literature as a type I error. Our use of this hypothesis test has implications for the probability of a type II error: that is, the probability that we accept the hypothesis that the true value is zero when it is not zero.

For example, in North Carolina, we obtain a point estimate of the difference in the error rates across systems of 1.20 percent. Using a two-tailed test with a ten percent significance level, we accept the hypothesis that the difference in error rates is zero. Note, however, that if the true difference in the error rates is 0.94 percent (one standard error above zero), the probability of rejecting a zero difference, using the ten-percent significance level, is only 26 percent. If the true difference in the error rates is 1.87 percent (two standard errors above zero) the probability of rejecting a zero difference increases to 64 percent. Only if the true difference in the error rates is close to three standard errors from zero will the probability of rejecting a zero difference be above 90 percent.

## Underpayment Error Rates

Calculation of error rates for underpayment errors also uses the full sample for complete cases. In this case, overpayments and payments to non-eligibles are treated as non-error cases and set to zero.<sup>20</sup> Estimates of the underpayment error rates are shown in Table 5.2.

In North Carolina, the estimate of the underpayment error rate for the pilot is 4.10 percent (row 4), following adjustment for non-completed cases. The estimate for the regular system based solely on the State error findings is 3.08 percent (row 5). The Federal re-review increases the error rate to 4.86 percent (row 7) prior to adjustment for non-completed cases and to 4.91 percent (row 9) after adjustment. However, the difference between the final regular system findings and the pilot findings is not significantly different from zero (row 13). These results provide further evidence that the pilot reviewers and State regular QC reviewers performed about the same in North Carolina and that the difference in the underpayment error rate is due largely to the Federal re-review.

In Missouri, the underpayment error rate in the pilot (after adjustment for non-completed cases) is 1.99 percent (row 4). In the regular system, the error rate based on the State's findings is 2.49 percent (row 5), somewhat larger than the pilot finding. The Federal validation re-review increases the estimated error rate to 3.07 percent (row 9). The difference between the pilot error rate and the final regular system rate is statistically significant

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<sup>20/</sup> In Missouri, 6.1 percent of the pilot cases had underpayments as compared to 7.9 percent in the State findings for the regular QC cases. In North Carolina the pilot underpayment incidence rate was 8.3 percent, while the State regular QC rate was 6.5 percent.

Table 5.2

Underpayment Error Rates for Missouri and N. Carolina

<u>Pilot</u>	<u>Missouri</u>	<u>North Carolina</u>
1. Error rate before adjustment for non-completed cases	1.94%	3.94%
2. # cases completed / # cases	1172/1312	1055/1223
3. Standard error of error rate	0.31%	0.59%
4. Error rate adjusted for non-completed cases	1.99%	4.10%
<u>Regular QC system:</u>		
5. State estimate of error rate	2.49%	3.08%
6. # cases completed / #cases	2419/2540	1167/1222
7. Error rate after adjustment for Federal re-review results*	3.04%	4.86%
8. Standard error of error rate	0.24%	0.48%
9. Error rate after adjustment for non-completed cases	3.07%	4.91%
<u>Difference between regular QC and pilot error rates:</u>		
10. Regular QC minus pilot error rates before adjustment for noncompletion	1.10%	0.92%
11. Regular QC minus pilot error rates after adjustment for noncompletion	1.08%	0.81%
12. Standard error of adjusted difference assuming zero covariance	0.39%	0.77%
13. Test-statistic of adjusted difference	2.77	1.05

\* Regression equations relating Federal re-review overpayment error amounts to State error amounts (regular QC system):

Missouri:  $F_i = 0.728 + 0.988 S_i$  N=408

North Carolina:  $F_i = 2.61 + 0.775 S_i$  N=400

at the 0.5 percent significance level (two-tailed). As before, the impact of the adjustment for non-completed cases is small in both QC systems.

These results suggest that the regular QC system tends to detect more underpayment errors than the pilot. It should be noted, however, that this outcome is largely a result of the Federal re-review.

#### Error Analysis of Pilot Subsample Re-reviewed by Missouri

In Missouri, a subsample of 400 cases drawn from the pilot sample was subjected to a re-review by the State. These cases were intended to provide a more direct comparison between the pilot and the State review in the regular QC system. The assumption was that the reviews would be independent, implying that the State's re-review in the pilot would be comparable to the State review in the regular QC system. This would then allow direct comparison between the pilot and an element of the regular QC system.

In actuality, the data do not provide an unbiased comparison between the two systems. The first-party State re-reviewers in the pilot worked with no knowledge of Federal findings; but second-party re-reviewers did have access to the Federal findings. Thus the reported findings by the State may have been influenced by the Federal results.

based on the results of the State and pilot findings, together with the decisions of arbitrators for cases that could not be resolved. This error incidence rate is significantly larger than the pilot finding of 13.1 percent.

The final average overpayment amount is also larger than that found by the pilot project. The pilot review found an average error amount of \$8.45, while the final amount was \$8.84. These two sets of findings, however, are not significantly different at the 10 percent significance level.

The underpayment incidence rate is also significantly higher in the final determination of findings than in the pilot only findings. The pilot findings show underpayments in 4.5 percent of the cases, while the final case determination shows 5.8 percent of the cases with underpayments.

The average underpayment amount based on the pilot findings is \$1.48. The final determination shows an average underpayment of \$1.69 — a difference that is statistically significant at the 5 percent level.

These results provide evidence that a second (outside) review may serve to increase the ability of the overall system to find errors. Because the State reviewers knew the pilot findings, however, this is not evidence of what the State reviewers in the regular system might have found if given the pilot caseload. Such evidence would require that each system be presented the same cases for analysis, without any information concerning the findings of the other system.

#### Comparison of the Characteristics of the Pilot and Regular QC Samples

The comparison of the raw error amounts is only meaningful if the difficulty of assessing the proper payment for the cases in the two samples is comparable. It is possible that, simply by chance, the characteristics of the pilot and regular two-tier system samples could differ, resulting in different

error rates. To assess the comparability of the cases in the pilot and regular system samples, this sub-section compares average error amounts in the two samples, controlling for a set of case characteristics that have been shown<sup>21</sup> to be associated with the amount or incidence of errors.

One way to get an idea of the similarity of the samples completed by the two QC systems is to run a regression relating the type of QC system reviewing a case to the characteristics of that case.<sup>22</sup> (Regressions for each State, relating the QC system reviewing a case to a set of variables thought to affect the error amount of a case, are reported in Appendix M.) The results of these regressions are quite different for the two States. In Missouri, only 2 of the 10 variables hypothesized to affect error amounts or incidence are significantly related to the type of QC system. Both (number of deductions and total case earnings) have effects consistent with the hypothesis that the regular system had less difficult cases for review.

In North Carolina, the results are very different. Seven of the ten independent variables in the North Carolina sample have statistically significant effects. Five of these variables have effects that match those expected if the pilot had less difficult cases for review. For example, cases with more household members had a significantly higher likelihood of being in the regular QC sample. If the pilot workers did not complete more difficult cases, for whatever reason, we would expect they would have fewer cases with a

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21/ Michael Puma and David Hoaglin, The Effect of Caseload Characteristics and Socioeconomic Conditions on Food Stamp Payment Error Rates, Abt Associates Inc., Cambridge, MA, June 1987.

22/ Appendix L presents the means of a number of variables for the pilot and regular QC samples in North Carolina and Missouri. The evidence shows some differences in North Carolina in the characteristics of the pilot and regular QC samples. In particular, the regular system has a higher average number of SSI recipients per case, more unearned income and assets, but lower average AFDC payments. In Missouri, the two samples appear to be more closely matched.

lot of household members. This would imply the observed relationship: cases with a relatively high number of members are less likely to be in the pilot QC sample. No data are available that allow us to separate whether the pilot had easier cases because they did not complete hard cases or simply as a result of the "luck of the draw." But, the strength of the relationships between the type of QC system and the variables describing difficulty of the caseload makes it seem unlikely that the relationships result from luck alone.

Two clear implications emerge from this analysis. First, it is necessary to control for variables that affect error amounts before drawing any conclusions about the relationship between error amounts and the QC system. Second, if variables that are not included in the regression are related to both the error amount and the QC system, we will get biased estimates of the difference between the samples. This holds whether the relationship between the omitted variables and the QC system is due to chance or to high non-completion rates that are related to anticipated error amounts.

#### Comparison of Error Amounts Controlling for Case Characteristics

To examine the possibility that findings from a direct comparison of the error amounts for the pilot and regular QC systems may result from differences in the caseload difficulty rather than differences in the QC system, we use two types of regressions to control for case characteristics. These analyses address the question: Do the error rates in the pilot and the regular system differ after controlling for differences in the caseload?

The first type of regression relates the error amount to a set of variables shown to be associated with error amounts or incidence. The dependent variable matches the variable constructed for calculating official error rates.

The second type of analysis takes into account that a linear relationship is inappropriate to describe a variable for which 85 to 90 percent of the observations are equal to zero. The method for this analysis has two stages: the first investigates whether the presence of an error depends upon the QC system, controlling for differences in case characteristics; the second stage investigates whether the dollar amount of the error, for those cases with errors, has any relationship to the QC system, controlling for case characteristics. The two stages are then combined to obtain an estimate of the difference in the per-case average error amount across the two QC systems, controlling for differences in the caseload—the same concept obtained in both the raw calculations and the linear regressions.

The error amount for the regular QC system combines the findings of the State reviewers and Federal re-reviewers. To separate the two sets of findings we use two error amount variables for the analysis. The first measure uses only the State review findings; the second is an estimated Federal error amount, predicted from the State findings. (More detailed descriptions of these two variables can be found in Appendix N.)

The control variables can be divided into three categories. One set of variables measures the incidence of case characteristics that affect the likelihood that a case is in error. These factors include: number of household members, number of SSI recipients in the case, number of recipients with other sources of institutional unearned income, number of household deductions, and number of types of assets owned. A second set of variables measure the dollar value of income. These measures directly affect the level of benefits for which the family was eligible, and hence the size of any error found by reviewers. In the third category are two variables that may be associated with the difficulty of a case: length of certification period and

time from certification until selection for review. Cases that are certified for short periods of time tend to have less stable case characteristics, and hence are more subject to error. A longer time between the date the case was last certified and the date when the case was selected for re-review allows a longer period in which the case characteristics may change, thus making the case more likely to be in error.

We use ordinary least squares to control for these case characteristics and to estimate the difference in the error amount when the two systems face a case with the same characteristics. If we use the State finding of error amount as the measure of regular QC system errors, in North Carolina the regular QC sample has a \$1.71 lower error amount compared to the pilot sample, after controlling for the difficulty of the caseload. This difference is statistically different from zero, using a two-tailed test, at a significance level of just over ten percent. If we use the predicted Federal error finding for the regular QC cases, the regular QC system has an estimated \$0.35 higher error amount than the pilot. Controlling for potential causes of error thus reduces the difference in the error amount between the regular QC system and the pilot.

In Missouri, the coefficient on the difference between the QC systems is small and not statistically significant using either dependent variable. Being in the regular QC system rather than the pilot is associated with a \$0.12 lower error amount using the State review findings and a \$0.14 higher error amount after substituting the predicted Federal error amount for the regular QC cases.

These estimates do not, however, take into account any learning curve or phase-down effects of the pilot. Since the second and third quarters of the experiment would seem to provide the best estimate of the "long-run" ability of the pilot to find errors, the model was reestimated using eight zero-one

indicators to mark the quarter of the experiment for which a case is sampled and whether a case is in the pilot or the regular system. The model thus allows both the pilot and regular QC system to have different error amounts for each quarter, while controlling for differences in case characteristics. (Estimates using this model are in Appendix N.)

The results using the Federal error amount predicted from State findings do not indicate a time trend. In North Carolina, the pilot system has a \$2.12 lower error amount than the regular QC system in the second quarter and a \$1.67 higher error in the third quarter. Both differences are statistically insignificant. In Missouri, the findings are similarly inconsistent. In the second quarter, the pilot QC findings are \$1.95 lower than those of the regular QC sample, while in the third quarter the pilot QC error amount is \$0.26 higher. These differences are also statistically insignificant.

To summarize, the least squares regression findings indicate that, after controlling for case characteristics, there is:

- o no effect of the type of QC system on overpayment error amount;
- o a higher regular QC underpayment error amount in Missouri;
- o no effect of the type of QC system on underpayment error amount in North Carolina.

One problem with the regression analysis presented above is that the dependent variable contains approximately 85 percent zeros. Although this specification uses a dependent variable that matches that of the official error rate, it uses statistical techniques that can yield predicted error amounts outside of the range of the dependent variable. Furthermore, the techniques require the assumption that the effect of a variable on whether an error is found (the change from zero to a positive amount) is the same as the effect on the magnitude of the error when one is found.

The observed average error amount can be rewritten as the product of the probability that a case has an overpayment error and the average error for those cases with errors. This is true since

$$\begin{aligned} E(\text{error amount}) &= \text{Pr}(\text{error}) \cdot E(\text{error amount given an error is found}) \\ &\quad + \text{Pr}(\text{no error}) \cdot 0 \\ &= \text{Pr}(\text{error}) \cdot E(\text{error amount given an error is found}) \end{aligned}$$

where  $E()$  is the expectation (or estimated expectation) for the relevant population. In the analysis of this section, we first estimate an equation for the probability that an error occurs and then estimate the expected error amount given that an error occurs. A correction is included to allow for the possibility that unmeasured factors affecting the finding of an error are correlated with unmeasured factors affecting error amount. (The details of the statistical technique and the findings are presented in Appendix O.)

The estimates for Missouri reveal no significant effect of the type of QC system on the probability of error, after controlling for case characteristics. The point estimate shows that, on average, the probability of error in the regular QC system is approximately 1.18 percentage points higher than for the pilot. The raw incidence figures also show a higher rate of incidence in the regular QC system, though the point estimate is somewhat smaller. In the regular system 14.6 percent of cases have overpayment or ineligibility errors, as compared with 13.8 percent in the pilot.

In North Carolina, the estimates show that the probability that a case is in error is lower for the regular QC system by 2.55 percentage points, which is statistically significant at levels above 8.6 percent. This compares with a raw incidence rate of 14.7 percent for the pilot and 12.1 percent for the regular system, a difference of 2.6 percentage points.

The estimates of the impact of the QC system on the overpayment error amounts, controlling for the presence of zeros in the error amount regression, shows no significant difference between the pilot and the regular QC system in either North Carolina or Missouri. (A more detailed examination of these results can be found in Appendix P.)

#### Summary and Caveats

In general, the North Carolina pilot error rates tended to be higher than the regular QC error rates before adjustment for the Federal re-review and lower after adjustment. In Missouri, the pilot error rates were generally the same or higher for overpayments and lower for underpayments, both before and after adjustment for the Federal re-review. However, as can be seen in summary table 5.3, few of the differences between the two systems were statistically significant.

A comparison of the raw overpayment error rates (row 1) shows no statistically significant differences between the systems, while the underpayment errors (row 4) show a significantly higher rate in the Missouri regular system. When a limited set of controls is introduced for difficulty of case, there are no statistically significant differences in the overpayment rate across the two QC systems. The results for the underpayment rates are unstable: using a two-stage estimation technique the North Carolina pilot shows a higher error amount (and no difference in Missouri), while ordinary least squares shows a higher regular error amount in Missouri (and no difference in North Carolina). These results provide no evidence that either system consistently yields higher error rates.

The analysis is limited in that both the OLS and two-stage analyses are imperfect. The OLS results are biased because a large portion of the cases contain no errors. The two-stage estimates are imprecise because of the inability to accurately predict error incidence. Neither set of estimates shows a significant relationship between the type of QC system and the error rate.

Table 5.3

Difference in Error Rates After Adjustment for Incomplete Cases  
(Regular QC minus Pilot)

	<u>Missouri</u>	<u>North Carolina</u>
<u>Overpayment Error Rate</u>		
1. Regular QC rate minus pilot rate	-.10%	1.20%
2. Implied OLS estimate of regular QC rate minus pilot rate	.12%	.33%
3. Implied two-stage estimate of regular QC rate minus pilot rate	-.01%	.38%
<u>Underpayment Error Rate</u>		
4. Regular QC rate minus pilot rate	1.08%*	.81%
5. Implied OLS estimate of regular QC rate minus pilot rate	1.19%**	.56%
6. Implied two-stage estimate of regular QC rate minus pilot rate	.23%	-.83%**

\* Statistically different from zero (two-tailed test) at less than 10% significance level.

\*\* Regression coefficient used in calculation statistically significant from zero (two-tailed test) at less than 10% significance level.

Source: Calculated from estimates summarized in Appendix Table Q.

## 6. THE ANALYSIS OF QC COSTS

The purpose of the cost analysis is to compare the costs of the Federal one-tier QC pilot project conducted in Missouri and North Carolina with the costs of the two-tier regular QC review system in those States, and to draw inferences about possible costs or savings to be realized from national implementation of a one-tier system. This analysis (1) identifies the important categories of QC costs recorded in State and Federal QC cost documents, (2) assembles quarterly and annual estimates of QC costs, (3) identifies categories of QC costs that are omitted from accounting documents and/or are combined with other cost information, (4) adjusts certain costs of QC to make them more accurate measures of economic costs and more appropriate for use in comparisons of pilot project costs with regular QC costs, (5) compares pilot project costs with regular QC costs in the two States, (6) makes national cost comparisons and (7) identifies the aspects of cost estimation that are most subject to questions of measurement and/or interpretation.

Two main conclusions are reached regarding the national cost comparison. The first is that if a Federal one-tier QC system (as tested in the pilot project) were to replace the present QC review system, the estimated cost savings to FNS would be 7.5 percent; costs would fall from \$27,048,500 to \$25,025,000. The cost savings would be attributable to reduction in the total QC caseload from 71,000 cases to 55,000 cases. The second conclusion is that if the Federal one-tier review system had the same number of cases as the current review system, the one-tier system would be more expensive to FNS than the present QC review system. For comparisons involving 55,000 cases, one-tier QC would be 10.9 percent more costly than the current QC system.

### State-Level QC Costs In Missouri

The regular QC program in Missouri conducts over 5300 case reviews per year and employs a staff of 80 persons. Individual case analysts and their supervisors examine the accuracy of benefit payments for three programs: the Food Stamps Program, Aid to Families with Dependent Children (AFDC) and Medicaid. Workers at all levels are described as generic (i.e., each conducts reviews for all three benefit programs). The QC samples from the three programs are not integrated. The current sampling plan has as targets the completion of 2400 food stamp cases, 2400 AFDC cases and 560 Medicaid cases each year. To reach these targets the actual numbers of cases selected are 5 to 6 percent larger than the targeted numbers. Besides conducting QC reviews on positive cases where benefit payments have been made, over 1200 negative cases where benefits have been denied or terminated are also reviewed each year.

In addition to their normal caseload the Missouri QC staff during 1987 and 1988 also conducted full reviews of about 600 cases from the one-tier pilot project. This number represents a one-third subsample of the pilot project sample in Missouri (400 cases) plus all error cases not in the subsample. These cases represent about a 5 percent increase in cases reviewed during the period when the pilot was in effect without any addition to the QC staff.

State accounting records indicate that the regular QC program incurred total costs of \$2.64 million in the 12 months from July 1986 to June 1987 and \$2.70 million in the 12 months from July 1987 to June 1988. Because members of the QC staff are generic, Missouri does not attempt to keep separate records of the costs of reviews under the three benefit programs. Instead, the costs of the reviews in each three month period are allocated among the three programs

in proportion to the number of cases sampled for review in that quarter. Since the food stamp cases represent less than half of the QC caseload, food stamp QC costs are shown to be less than half of annual total QC costs. A common Federal reimbursement rate of 50 percent is applied to QC costs for all three Federal income programs. Thus, for the July 1986-June 1987 period total Federal reimbursement of food stamp QC costs was about \$629,000; total Federal reimbursement to the State for all three programs was about \$1.3 million. Federal reimbursement for food stamp QC costs was \$584,000 during the July 1987-June 1988 period; total reimbursement to the State was \$1.5 million, including \$121,000 for State reviews of the subsample of pilot project cases.

Three cost accounting documents are helpful for accessing food stamp QC costs in Missouri: (1) Standard Form (SF)-269—the standard Federal form for requesting Federal cost reimbursement, (2) back-up to the SF-269, which is routinely submitted by the State to FNS each quarter (showing total costs of various State QC review activities and all other reimbursable food stamp activities such as certification, issuance and fraud control that underpin the requests for cost reimbursement from FNS), and (3) cost summaries from the Missouri Statewide Accounting Method (SAM), which provide monthly, quarterly and annual detail on State QC costs. The SF-269 back-up (submitted voluntarily by the State) and the SAM accounting reports provide details on important object cost categories not present in the SF-269 data.

Table 6.1 summarizes State regular QC costs in Missouri during calendar year 1987. Total costs were \$2.633 million, with salaries (\$1.528 million) and benefits (\$.366 million) accounting for more than 70 percent of the total. Physical plant expenses (rent) and indirect costs are the other two large cost categories. Measuring the total costs of QC reviews and their distribution by object category as in Table 6.1 is a more straightforward exercise than

Table 6.1

State Costs of Regular QC in Missouri,  
Totals and Percentages by Detailed Object  
Categories, January 1987 to December 1987

Cost Category	Total Costs by Object Category (thousands) (1)	Percent of Costs by Object Category (2)
Salaries	1,528	58.0
Benefits	366	13.9
Travel	79	3.0
Data Processing	64	2.4
Other Direct Costs	390 <sup>a</sup>	14.8 <sup>a</sup>
Office Expenses	25	0.9
Communication	108	4.1
Office and Commun.	9	0.3
Equipment Purchases		
Instit. and Physical	241	9.2
Plant Expenses		
All Other	7	0.3
Indirect Costs	207	7.9
Total Costs	2,633	100.0

Source: Table R.3, columns (4) and (5), in  
Appendix R. Cost data measured in thousands  
of dollars.

<sup>a</sup>Major subcategories of Other Direct Costs appear in  
the next five lines.

deriving a clearcut cost measure appropriate for comparing the costs of the regular two-tier system with the costs of the pilot project.

Three major considerations, mentioned earlier, must be recognized in estimating the costs of food stamp QC reviews in Missouri. First, the QC agency does reviews for two other programs (AFDC and Medicaid) as well as food stamps. Second, unlike the pilot project, which just examined payment accuracy for positive cases, the Missouri QC agency also analyzes negative cases. The length of time needed to review a typical negative case is much shorter than for a positive case, but since a large number are reviewed, their contribution to total QC costs must be estimated. Third, during the life of the pilot project the Missouri QC agency undertook reviews of a one-third subsample of the pilot project sample plus all pilot project error cases not in the subsample. Data on completed reviews from the QC agency indicate that about 40 percent of these reviews were completed during January-December 1987, and the remainder in 1988.

To estimate the costs of the food stamp QC positive reviews undertaken during January-December 1987 we have made four important assumptions:

- (1) That on average, the reviews of positive cases take the same amount of time across all three income programs (food stamps, AFDC and Medicaid).
- (2) That on average, the reviews of negative cases take the same amount of time across the three income programs.
- (3) That on average, negative cases require one-sixth as many agency resources to complete as do positive cases. Data from job tickets in North Carolina suggest that the average reviewer time needed to complete a negative case is about 15 percent of the time needed to complete a positive case (85 minutes versus 555 minutes for positive cases). For activities such as sampling and case assignment, however, a negative case requires resources equal to that of a positive case. The one-sixth assumption was made in recognition of all aspects of conducting reviews for the two types of cases.

- (4) That conducting reviews for approximately 600 pilot project cases (about 250 in January - December 1987) did absorb QC agency resources. The question for the cost analysis is how would costs have behaved if there had been no pilot project? The QC agency was not allowed to expand its staffing to conduct these additional reviews. Our assumption is that, absent the pilot project, the agency's total costs would have been the same as costs actually recorded. In other words, salaries, benefits and other costs would not have been lower in 1987 and 1988 if the State reviews of the pilot project cases had not taken place. The practical import of this assumption is that the agency worked extra hours to complete these cases but that there was no extra compensation to agency employees. The pattern of the quarterly cost data shown in Appendix R, Tables R.1 and R.2, supports this assumption.<sup>23</sup>

The net effect of the preceding four assumptions is that an estimate of the costs of regular food stamp QC reviews during January-December 1987 can be derived using the cost data from Table 6.1 along with data on completed reviews. During January-December 1987, 5484 regular positive cases were completed across the three income programs (2422 food stamp, 2472 AFDC and 590 Medicaid) and 1318 negative cases were completed (equivalent to 220 positive cases). The 2422 regular positive food stamp cases represent 42.46 percent of the 5704 weighted sum (5484 regular positive cases plus the 220 resource-equivalence of the 1318 regular negative cases). Since total QC costs for the January-December 1987 period were previously estimated to be \$2.633 million, the costs of regular food

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<sup>23/</sup> For Missouri fiscal years 1987 and 1988 (covered by Appendix R, Tables R.1 and R.2) the number of regular positive cases, regular negative cases and pilot project cases that were completed were respectively as follows; regular positive cases — 5567 and 5448; regular negative cases — 1350 and 1367; and pilot project cases — 43 and 471. Thus, when FY 1988 is compared with FY 1987, 428 more pilot project cases, 119 fewer regular positive cases and 17 more regular negative cases were completed. The total number of cases completed in FY 1988 increased by 326 (or by 4.7 percent) with hardly any change in total costs (\$2.696 million versus \$2.638 million or an increase of 2.2 percent).

stamp QC reviews is estimated to be \$1.118 million (42.46 percent of \$2.633 million).<sup>24</sup>

It should be noted that the cost estimate of \$1.118 million for conducting regular QC reviews is an estimate of what the reviews would have cost if there had not been an ongoing pilot project active at the same time. This estimate obviously depends on the four assumptions previously listed.<sup>25</sup>

Finally, it should be emphasized that breakdown of food stamp QC costs by object categories is not known. If we assume that food stamp cases have the same distribution of costs by object categories as other cases, then the percentage breakdown would be the same as shown previously in Table 6.1. Under this assumption 58.0 percent of costs are for salaries, 13.9 percent for fringe benefits, 9.2 percent for physical plant expenses, and 7.9 percent for indirect costs. All other costs combined would account for

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<sup>24/</sup> To test for the sensitivity of the cost estimate to the assumption that negative cases require one-sixth the resources of positive cases, we alternately assumed negative cases require one-eighteenth the resources of positive cases (about half an hour per case). Under this assumption the estimated cost of conducting positive food stamp QC reviews rose to \$1.148 million.

<sup>25/</sup> It should also be pointed out that the preceding cost estimate differs from the QC costs which the Missouri agency billed to FNS during calendar year 1987. The Missouri Statewide Accounting Method (SAM) divides QC costs among the three benefit assistance programs on the basis of cases sampled (positive plus negative cases) per calendar quarter. The usual three-way cost division was changed to a four-way division in the period when pilot project cases were being sampled. For calendar year 1987 the \$2.641 million of QC costs in Missouri (including \$8000 of one-time costs excluded from the present cost analysis) was divided as follows: food stamps — \$1.204 million, AFDC — \$1.075 million, Medicaid — \$281 million and food stamp one-tier pilot project — \$.081 million. In the first three categories the Federal cost reimbursement share was 50 percent while it was 100 percent for the State's participation in the pilot project. Thus, actual Federal payments to Missouri during this period for food stamp QC totaled \$.683 million (half of \$1.204 million plus \$.081 million for pilot project review activities).

only 11 percent of the costs for conducting QC reviews of positive food stamp cases in Missouri's regular QC system.

#### State-Level QC Costs In North Carolina

North Carolina's present QC program employs a staff of 35 persons who conduct reviews of 1200 positive food stamp cases, 1200 positive AFDC cases, and more than 1000 negative (food stamp plus AFDC) cases each year. Although the intake workers who make determinations about food stamp eligibility and allotments are county employees (North Carolina has a county-administered welfare system), all QC workers are State employees. The QC reviewers and their supervisors work out of four regional offices of the Department of Social Services (DSS), while the QC Director and central administrative staff are located in Raleigh.

As in many other States the QC program in North Carolina conducts case reviews with generic reviewers. Individual reviewers and supervisors examine both food stamp and AFDC cases. State cost accounting procedures do not make an attempt to distinguish the costs of reviews for the two types of cases. Instead, the costs of all review activities are recorded and then allocated between the two programs on the basis of the number of positive case reviews. Food stamps and AFDC are each assigned half of QC costs. For the twelve months from July 1986 to June 1987 the State identified \$590,000 as the costs of performing QC reviews of food stamp cases and requested Federal reimbursement for half of these costs. From July 1987 to June 1988 food stamp QC total costs were estimated to be \$573,000, and Federal cost reimbursement was \$286,500.

Table 6.2 shows estimates of regular QC costs in North Carolina for calendar year 1987. Ten object cost categories are identified along with the estimated cost total. The regular QC program was estimated to cost \$1.508

million for the January-December 1987 period. The table also shows a percentage breakdown of costs by object category. Labor costs (salaries plus benefits) accounted for about two-thirds of total costs. (Details of the cost estimates appearing in Table 6.2 (including imputations) are given in Appendix S).

The QC cost data displayed in Table 6.2 refer to the costs of conducting positive and negative QC review cases in both the Food Stamp and AFDC programs. To derive a cost estimate appropriate for comparing with the cost of the pilot project, we are interested in the component of costs associated with reviewing positive food stamp QC cases. To do this we have made three assumptions about time needed to complete positive and negative cases (the same as in Missouri):

- (1) That the average resources needed to review a positive food stamp case and a positive AFDC case are the same;
- (2) That the average resources needed to review a negative food stamp case and a negative AFDC case are the same;
- (3) That an average negative case requires one-sixth as many resources to complete as does an average positive case.

In calendar year 1987 the QC agency in North Carolina completed the following numbers of cases; 1239 positive food stamp cases, 1285 positive AFDC cases, 874 negative food stamp cases and 359 negative AFDC cases. Assuming that negative cases take one-sixth the resources to complete, this total caseload would be equivalent to 2729.5 positive cases (2524 actual positive cases and the 205.5 resource equivalence of the 1239 negative cases), and the 1239 positive food stamp cases would represent 45.39 percent of the total caseload. With the total State costs of QC for January-December 1987 estimated to be \$1.523 million (the \$1.508 million from Table 6.2 plus \$15,000 to adjust for the unusually low costs of personal services during January -

Table 6.2

State Costs of Regular QC in North Carolina,  
Totals and Percentages by Detailed  
Object Categories, January-December, 1987

Cost Category	Total Cost by Object Category (thousands)	Percent of Costs by Object Category
Salaries	829	55.0
Benefits	193	12.8
Transportation	84	5.6
Communication	18	1.2
Office Materials	3	0.2
Other	1	0.1
Capital Outlay	0	0.0
Computer Costs <sup>a</sup>	77	5.1
Space Occupancy <sup>a</sup>	79	5.2
Overhead Costs <sup>a</sup>	225	14.9
Total	1,508	100.0

Source: Table S.3 in Appendix S. Cost data measured in thousands of dollars.

<sup>a</sup>Imputed costs from Table S.2.

March 1987), then the estimated cost of the food stamp positive case reviews would be \$691,000 (\$1,523 million times .4539).<sup>26</sup> Under 50 percent cost reimbursement the U.S. Department of Agriculture would have paid North Carolina \$345,500 to defray the costs of these reviews.

The Costs Of Federal Re-Review Activities  
in the Missouri and North Carolina Regular QC System

The present QC review system in the States provides for a Federal re-review of some cases initially reviewed by the State. In both Missouri and North Carolina these reviews are performed on random subsamples of 400 food stamp cases (i.e., one case in six in Missouri and one in three in North Carolina). Most of this work is done by Department of Agriculture employees who work out of FNS field offices, but certain activities also involve FNS employees in regional offices.

Practically everyone who participates in Federal re-reviews also works on Department of Agriculture programs that have no connection with QC reviews. This raises an important apportionment question: What percentage of their time should be assigned to QC? Estimating the costs of Federal re-reviews is highly dependent on how the time of the Federal workers is apportioned between QC review activities and other activities. A second apportionment question arises for Federal employees in the regional offices. Even after the share of their time devoted to QC is known, this must be further divided into time devoted to QC cases in the States of interest (Missouri and North Carolina) as opposed to other States in the region.

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<sup>26/</sup> Under an alternative assumption that negative cases require one-eighteenth the resources of positive cases (about half an hour), positive food stamp cases would have accounted for 47.79 percent of regular QC costs, or \$728,000.

It should also be noted that, although most activities of Federal workers in the regional offices would continue if the present review system were replaced by a one-tier system (as in the pilot project), other activities would not continue. Specifically, there would be a continuing need to review and approve QC sampling plans in the States and to participate in informal and formal arbitration procedures surrounding Federal-State disagreements about payment errors. But the following activities would cease altogether: re-reviews at the field offices, selection of the subsamples to be re-reviewed, supervisory re-reviews of second-tier cases, and activities to create regression estimates of State error rates.

Table 6.3 presents estimates of total costs and breakdowns for nine object categories. The estimated costs of salaries and transportation are based on a survey conducted by FNS in conjunction with a food stamp QC project undertaken at the National Academy of Sciences. The salary estimates combine re-review activities of workers in field offices and regional offices.<sup>27</sup>

In North Carolina the total costs of Federal re-reviews during January-December 1987 were estimated to be \$148,417. The estimated total is about \$10,000 higher than in Missouri primarily because of more staff resources (3.24 versus 3.01 person years). This caused salary and fringe benefit costs to be about \$9,600 higher in North Carolina. Of the other cost categories, transportation costs were somewhat higher in North Carolina while overhead costs were somewhat lower.

Overall, the Federal re-review cost structures were quite similar in the two States. Labor costs predominated, accounting for 79.0 percent of all costs

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<sup>27/</sup> Appendix T derives estimates of the costs of Federal re-reviews in Missouri and North Carolina. Other cost estimates were derived in the manner described in Appendix T.

Table 6.3

Estimated Costs of Federal Re-Reviews in Missouri  
and North Carolina, January 1987 to December 1987

Object Cost Category	Missouri		North Carolina	
	Dollar Amounts	Percen- tages	Dollar Amounts	Percen- tages
Salaries	84,092	60.7	91,485	61.6
Benefits	25,396	18.3	27,629	18.6
Transportation	3509	2.5	5635	3.8
Supplies and Materials	455	0.3	455	0.3
Communication	4923	3.6	4923	3.3
Space Occupancy	4954	3.6	4925	3.3
Computer Usage	500	0.4	500	0.3
Equipment Costs	1000	0.7	1000	0.7
Overhead Costs	13,696	9.9	11,865	8.0
<b>Total Costs</b>	<b>138,525</b>	<b>100.0</b>	<b>148,417</b>	<b>100.0</b>

Source: Table T.2 in Appendix T.

in Missouri and 80.2 percent in North Carolina. Overhead costs were the next most important category in both States, and all other categories individually accounted for less than 5 percent of total re-review costs in 1987.

It should be emphasized that the cost estimates in Table 6.3 may have a considerable margin for error. No Federal employee involved in the second tier of the present QC system (in Missouri, North Carolina or in other States) works exclusively on the QC program for a single State. Thus, for all categories of costs, judgments must be made in attempting to separate QC costs from the costs of other Department of Agriculture activities. The estimation procedures underlying the cost estimates in Table 6.3 are described in Appendix T, but alternative estimation methods may be feasible.

Based on our assumptions, however, the total costs for operating the present QC system (State QC costs plus Federal re-review costs) was \$1,256,500 in Missouri (to review 2400 cases) and \$839,400 in North Carolina during calendar year 1987.

#### Costs Of The One-Tier Pilot Projects

The pilot sites in both Missouri and North Carolina were given budget authorizations for the period from October 1986 to December 1987 (later extended through March 1988), and billing accounts were established in the Denver and Atlanta regional offices of FNS. As costs were incurred in the pilot project they accumulated in these billing accounts.

Although the pilot project was originally scheduled to begin in October 1986, delays were encountered at both sites. Unexpected delays in hiring coupled with time delays associated with training the first-line reviewers caused review activities to commence later than had been planned. The start-up delays, which were longer in North Carolina than in Missouri, are apparent in

quarterly data on salary payments from the two pilot sites. Salary payments during October-December 1986 were much lower than in subsequent quarters, and particularly low in North Carolina. First-line reviewers were generally paid for 4 of 7 pay periods in the October-December 1986 quarter in Missouri but for only 3 pay periods in North Carolina. Because the pilot project fell behind from the outset and did not catch up, substantial review costs (e.g., about one third of salary payments in Missouri) were incurred during October-December 1987 and into the early months of 1988. Thus, the analysis of pilot project costs extends from October 1986 through March 1988.

To make meaningful comparisons between the costs of the QC pilot project and the costs of the regular QC system in the two States, it is essential that capital costs and various one-time costs incurred in establishing the pilot project be identified, measured and separated from other costs. (The procedures used in making these costs distinctions are described in Appendix

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U). Because the pilot project used new employees and innovative case review procedures, various aspects of learning to do the QC reviews would affect the productivity of the reviewers and the costs of the QC reviews in the pilot project. Since much of the necessary learning occurred in the early months of the project, we will place greater reliance on cost data from later periods in the pilot project. The costs of QC reviews from the later periods are closer to the costs of a "mature" system and, hence, more appropriate for comparing with the regular QC review system in the two States.

#### Missouri Pilot Project Costs

Table 6.4 summarizes pilot project costs in Missouri by calendar quarter and for the entire period from October 1986 to March 1988.<sup>28</sup> In deriving the

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<sup>28/</sup> Appendix U provides a detailed derivation of pilot project costs in Missouri.

Table 6.4

**Estimated Costs of the Missouri One-Tier  
Pilot Project: October 1986 to March 1988**

Cost Category	Oct.- Dec. 1986	Jan.- March 1987	April- June 1987	July- Sept. 1987	Oct.- Dec. 1987	Jan.- March 1988	Total	Percen- tages
Salaries <sup>a</sup>	38352	53651	60451	54583	58401	47775	313213	52.9
Benefits <sup>a</sup>	11582	16203	18256	16484	17637	14619	94781	16.0
Transportation <sup>a</sup>	10438	11005	17167	12179	7864	6097	64750	10.9
Office Supplies <sup>a</sup>	382	573	574	573	574	382	3058	0.5
Communication	1254	2272	6357	4081	1739	813	16517	2.8
Telephone <sup>a</sup>	0	513	4068	2814	436	813	8645	1.5
Postage <sup>c</sup>	1254	1759	2289	1267	1303	0	7872	1.3
Space Occupancy <sup>b</sup> (Rent, Util., Furniture)	2710	4066	4065	4066	4065	2710	21683	3.7
Computer Usage <sup>c</sup>	105	591	755	522	292	107	2372	0.4
Verification	104	147	191	106	108	0	656	0.1
WCC Charges	1	444	564	416	184	107	1716	0.3
Equipment Costs <sup>b</sup>	1079	1619	1619	1619	1619	1079	8634	1.5
Office Equip.	608	912	912	912	912	608	4864	0.8
Commun. Equip.	64	96	96	96	96	64	512	0.1
Computer Equip.	407	611	611	611	611	407	3258	0.6
Overhead Costs <sup>b</sup>	8342	12513	12512	12513	12512	8342	66734	11.3
<b>Total</b>	<b>74244</b>	<b>102493</b>	<b>121756</b>	<b>106620</b>	<b>104703</b>	<b>81925</b>	<b>591742</b>	<b>100.0</b>

Source: a-Appendix U, Table U.1, b-Appendix U, Table U.2, c-derivation described in Appendix U.

estimates for Table 6.4 the intent was to estimate costs of an ongoing review system, so set-up costs have been omitted and only the annualized costs of capital expenditures are included. Many of the data items in Table 6.4 have been taken directly from Appendix Tables U.1 and U.2. In certain instances, however, original cost data have been modified in an attempt to more closely approximate the costs of a "mature" one-tier QC review system. In those instances where the Table 6.4 cost estimates depart from estimates in the Appendix tables, an explanation is provided in Appendix U.<sup>29</sup>

For the period from October 1986 to March 1988 total costs of the Missouri pilot project were estimated to be \$591,742. Just over half of these costs were salary payments (\$313,213 or 52.9 percent), while salaries and fringe benefits combined accounted for 68.9 percent of total costs.

Two other cost categories accounted for at least 10 percent of pilot project costs in Missouri: transportation (\$64,750 or 10.9 percent) and overhead costs (\$66,734 or 11.3 percent). Communication and space occupancy, respectively, accounted for 2.8 percent and 3.7 percent of total costs. Costs in the remaining categories (Supplies and Materials, Computer Usage and Equipment Costs) totaled only \$14,064 or 2.4 percent of the total. For the Missouri pilot project, the vast majority of costs were concentrated in four categories; salaries, benefits, transportation and overhead costs.

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<sup>29</sup>/ One exception is travel costs. Total travel costs as shown in Table U.1 were estimated to be \$71,950 for the October 1986-March 1988 period. Some of the travel costs, however, represented trips from Denver to Missouri made by regional supervisory staff to provide advice and training to pilot project staff and to monitor the progress of the project. Based on conversations with supervisory staff we estimate that sixteen such trips were made during the October 1986 - February 1988 period at an average cost of \$450 per trip. The \$7,200 of implied travel costs have been removed from the \$71,950 total in Table U.1 to yield the estimated travel cost total of \$64,750 which appears in Table 6.4.

Certain of the costs shown in Table 6.4 exhibit an apparent seasonal pattern. The low quarter for salaries (and benefits), October-December 1986, reflects the late start of the pilot project. Few employees were hired before November 1986. For the other quarters in Table 6.4 salary payments were highest during April-June 1987. The main explanation for the apparent seasonality in salaries is that the April-June and October-December quarters had seven pay periods whereas the adjacent quarters each had only six. Per pay period the salary payments in the four quarters of 1987 were fairly constant—\$8,942, \$8,636, \$9,097 and \$8343, respectively.

There is obvious seasonality in two other cost categories—transportation and telephone. Telephone costs accrued in early months of the project were paid in the April-June 1987 quarter. The explanation for the seasonality in transportation costs is not obvious. Due to the seasonality in the quarterly costs for some categories, we must be careful in using data from short time periods (e.g., the April-June 1987 and July-September 1987 quarters) as representative of costs in a "mature" one-tier QC review system. For some cost categories it would be safer to use one-fourth of annual costs as an estimate of quarterly costs.

#### North Carolina Pilot Project Costs

Total North Carolina pilot costs for the October 1986-March 1988 period were estimated to be \$588,137.<sup>30</sup> Table 6.5 shows this total and quarterly detail along with cost estimates by detailed object categories. The percentage breakdown of annual costs, shown in the final column of Table 6.5, as well as

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<sup>30/</sup> Appendix U also gives a detailed derivation of pilot project costs in North Carolina.

Table 6.5

Estimated Costs of the North Carolina One-Tier  
Pilot Project: October 1986 to March 1988

Cost Category	Oct.- Dec. 1986	Jan.- March 1987	April- June 1987	July- Sept. 1987	Oct.- Dec. 1987	Jan.- March 1988	Total	Percen- tages
Salaries <sup>a</sup>	27736	64123	72226	64505	71269	48436	348295	59.2
Benefits <sup>a</sup>	8376	19365	21812	19481	21523	14821	105379	17.9
Transportation <sup>a</sup>	3808	8754	10975	10674	8289	3283	45783	7.8
Office Supplies <sup>b</sup>	135	202	202	202	202	202	1145	0.2
Communication- Telephone <sup>a</sup>	0	2659	2545	3069	2019	1709	12000	2.0
Space Occupancy <sup>b</sup> (Rent, Util., Furniture)	1293	1939	2076	2353	2353	2353	12366	2.1
Computer Usage <sup>b</sup>	85	147	382	545	1015	487	2661	0.5
Verification	85	147	157	202	21	0	612	0.1
WCC Charges	0	0	225	343	994	487	2049	0.3
Equipment Costs <sup>b</sup>	405	608	606	609	606	608	3442	0.6
Office Equip.	98	148	147	148	147	148	836	0.1
Commun. Equip.	74	111	111	112	111	111	630	0.1
Computer Equip	233	349	348	349	348	349	1976	0.3
Overhead Costs <sup>b</sup>	6714	10070	10071	10070	10071	10070	57066	9.7
Total	48552	107867	120895	111508	117347	81969	588137	100.0

Source: a-Table U.3, b-derivation described in the text of Appendix U.

the quarterly and annual cost estimates, all show the predominance of labor costs. Salaries accounted for 59.2 percent of the total while salaries plus benefits accounted for 77.1 percent. Roughly three-quarters of the North Carolina pilot project's costs were labor costs.

The two other sizable cost categories in the North Carolina pilot were transportation and overhead costs which, respectively, represented 7.8 percent and 9.7 percent of total costs. All other costs were much smaller. Communication and space occupancy, respectively, accounted for 2.0 and 2.1 percent of costs. Combined, the three other categories (supplies and materials, computer usage and equipment costs) in Table 6.5 accounted for only 1.2 percent of total costs. As in Missouri, practically all the North Carolina pilot site's costs (94.6 percent) were accounted for by four categories--salaries, benefits, transportation and overhead costs.

Since North Carolina had such a late start-up, data from the October-December 1986 period are not helpful for examining questions of the seasonality of costs. Data on salaries for the four quarters of 1987 show that costs were highest in the April-June 1987 quarter. However, that quarter included seven biweekly pay periods, whereas the adjacent quarters included only six. Average salaries per pay period were actually somewhat lower in the April-June quarter (\$10,178) than in the January-March and July-September quarters (\$10,687 and \$10,751, respectively). The seasonality in communication costs is apparent although the total is too small to have an effect on overall seasonality. There is also seasonality in space occupancy costs which reflects the higher monthly rents for the second office site occupied in Raleigh starting in June 1987.

We should point out that the estimates of pilot project costs could have errors. In deriving cost estimates for object categories at least three

potential errors can be identified. First, the wage and salary cost estimates could be too low because the staffing required for an ongoing one-tier review system may exceed what was provided for in the two pilot sites. Second, our adjustment for pay for time not worked could contain errors. Third, the estimates of overhead costs (for both regional and national administration of FSP) may be in error. Although we have attempted to measure one-tier costs accurately, the preceding possible sources of error are acknowledged.

#### A Comparison of Pilot Project and Regular QC Costs in the Two States

This section and the next section compare the costs of the pilot project and the regular QC review system in the two States and make inferences about the costs of a national system of one-tier reviews. Two main topics are examined: (1) a comparison of total costs to the Federal government of changing to one-tier QC reviews in Missouri and North Carolina, and (2) national cost estimates. Although the comparative total (Federal plus State) costs of conducting the QC reviews for positive food stamp cases under the two systems are discussed, attention is focused primarily on the comparative net costs to FNS of the two systems. The main question to be addressed is whether or not FNS would spend less for QC reviews if it substituted a one-tier system (as tested in the pilot project) for the present QC system with its 50 percent reimbursement of State costs plus the costs of Federal re-reviews. (Appendix V compares the distribution of costs by object cost categories).

We reach four main conclusions. (1) Cost comparisons are heavily influenced by the assumptions made regarding the number of cases reviewed in Federal one-tier QC versus the regular QC system. From the perspective of FNS, one-tier QC is less expensive than the present QC system if one-tier QC is operated with maximum state caseloads of 1200 as in the pilot project. The

cost comparison is not favorable to Federal one-tier QC if it reviews the same number of cases as the present system. (2) Based on the cost data from Missouri and North Carolina, there would be a decrease in net costs to FNS if it were to adopt a QC review system in these two states like the system tested in the pilot project and (in Missouri) review fewer cases. The decrease in net costs in the two States combined would be from 8 to 21 percent. (3) The total costs of conducting food stamp QC reviews (including costs paid by the states themselves) would decline substantially if a one-tier system as tested in the pilot project were adopted. (4) If a nationwide system of Federal one-tier reviews were to be implemented (with a reduced number of reviews), we estimate that total costs to the Federal government would decrease by 7.5 percent.

The analysis of costs by object categories conducted in Appendix V reaches two main conclusions. (1) The breakdowns of costs by object categories are quite similar across the pilot project and the regular QC review systems. Labor compensation costs (salaries plus benefits) dominate the QC cost structure of both review systems, ranging from a low 67.8 of total costs in the first tier of North Carolina's present QC system to a high of 80.2 percent for Federal re-reviews of North Carolina's present system. (2) There appears to be a tradeoff in the structure of QC costs between transportation and space occupancy costs. Space occupancy is more important in the present QC review system while transportation was more important in the pilot project. This trade-off reflects the fact that there are more offices in the present system than there were in the pilot project.

Table 6.6 presents summary data on the costs of the two QC review systems. The table shows data from Missouri and North Carolina separately as well as cost data for the two States combined. The State-level costs of the regular QC system are shown as \$1,118,000 in Missouri and \$691,000 in North Carolina.

Table 6.6. A Comparison of Pilot Project and Regular QC Costs

	Missouri	North Carolina	Two States Combined
Two-Tier QC Costs (\$000s)			
State Costs- Actual State Caseload	1118.0	691.0	1809.0
Federal Re-review Costs	138.5	148.4	286.9
Total QC Costs- Actual State Caseload	1256.5	839.4	2095.9
Federal QC Costs- Actual State Caseload	697.5	493.9	1191.4
State Costs- 1200 Cases	559.0	691.0	1250.0
Total QC Costs-1200 Cases	697.5	839.4	1536.9
Federal QC Costs-1200 Cases	418.0	493.9	911.9
Pilot Project QC Costs (\$000s)			
Full Pilot Project Costs	591.7	588.1	1179.9
Full Pilot Project Costs Plus Adjustment for Leave Costs for 14 Months	608.6	596.6	1205.2
Twice April-Sept. 1987 Costs	469.4	471.0	940.3
Efficiency Adjusted Costs	539.6	552.4	1092.0

Source: Estimates based on costs shown earlier in Tables 6.1, 6.2, 6.3, 6.4 and 6.5. Cost data measured in thousands of dollars. Two-tier costs refer to January-December 1987. One-tier costs refer to pilot project costs from October 1986 to March 1988. The adjustment for leave time recognizes that permanent Federal employees use more leave than was available to the temporary employees of the pilot project.

These estimates refer to the January-December 1987 period and are based on cost totals in Table 6.1 and Table 6.2, respectively, after making adjustments to isolate the costs of reviewing positive food stamp cases.

Federal re-review costs, taken directly from Table 6.3, are shown to be \$138,500 and \$148,400 in the two States. Thus, Table 6.6 shows the total cost of the regular QC system in 1987 as \$1,256,500 in Missouri, \$839,400 in North Carolina and \$2,095,900 for the two States combined. Federal costs are shown as \$697,500 in Missouri and \$493,900 in North Carolina. The 50 percent Federal reimbursement of State costs plus full re-review costs totaled nearly \$1,200,000 for the two States combined.

Since Missouri conducts annual reviews of about 2400 positive food stamp cases, the table also shows an estimate of the cost of reviewing just 1200 cases as in the Missouri pilot site. This estimate is half the previous total, or \$559,000. If the State's QC system were to reduce its annual food stamp caseload from 2400 to 1200 it is probable that costs would not decline by half (due to diseconomies of scale), but this is an issue for which we have no data. Note that the combined cost estimate for conducting 1200 reviews in each State is \$1,250,000. Higher costs in North Carolina mainly reflect the higher salaries of QC workers compared to QC workers in Missouri.<sup>31</sup>

Federal costs in a regular QC system that reviewed a maximum of 1200 cases per State would still be half of State costs plus Federal re-review costs. The latter would be unchanged from present re-review costs since the Federal

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<sup>31/</sup> North Carolina also has a high percentage of overhead costs, 14.9 percent of total regular QC costs as shown in Table 6.2. These costs were imputed. (See Appendix S). If the imputation has erred on the high side, this too could contribute to the higher estimated costs of regular QC in North Carolina.

subsample size is 400 for State QC samples of 1200 or more. Total Federal QC costs when State samples are restricted to 1200 are shown as \$418,000 in Missouri, \$493,900 in North Carolina, and \$911,900 for the two States combined.

One distinctive feature of the pilot projects was the employment of temporary workers to conduct most of the first line QC reviews (1112 of 1155 completed cases in Missouri and 752 of 1036 completed cases in North Carolina). Temporary Federal employees differ from both permanent State employees and permanent Federal employees in their low usage of annual leave and sick leave. Temporary employees accrued leave at a slower rate and they used it at a lower rate. The data on hours paid and hours worked in Tables U.1 and U.3 in Appendix U, respectively, showed that temporary (Section 17) employees received only 6.6 percent and 8.9 percent of salaries as pay for time not worked. Although we do not know how much leave time would have been used if these temporary employees had been permanent employees, a conservative estimate would be 11.9 percent, (i.e., 20 days of annual leave, 10 holidays and one day of sick leave per year in a work year consisting of 260 days). The estimate is conservative in the sense that the permanent Federal employees who worked in the pilot projects received 15.10 percent and 17.75 percent of pay for time not worked in Missouri and North Carolina, respectively.

Since the number of hours worked by temporary Federal employees is known (Tables U.1 and U.3 in Appendix U) we can also calculate how many hours they would have been paid if they worked the indicated number of hours (19,658 in Missouri and 16,861 in North Carolina) and also took paid leave and holidays for 11.9 percent of time paid. The resulting estimates 22,313 ( $19,658 + .881$ ) and 18,138 ( $16,861 + .881$ )—6.04 percent and 3.38 percent, respectively, more than actual hours paid to the temporary employees in the two States. These estimates of the increases in total hours paid were used to inflate the actual

salary and fringe benefit cost data. The resulting calculation indicated that labor compensation costs were increased by \$16,866 in Missouri and by \$8468 in North Carolina. This is a conservative adjustment of the additional leave time that would have been used by permanent Federal employees. The extra labor costs raised total pilot projects costs by 2.85 percent (to \$608,600) in Missouri and by 1.44 percent (to \$596,600) in North Carolina. These cost totals appear in the second section of Table 6.6.

A major obstacle for comparing Federal one-tier QC and regular QC costs is presented in trying to estimate the costs of a "mature" one-tier system using data from a temporary pilot project. Table 6.6 shows the results from alternative approaches to estimating these costs. First, the table presents actual pilot project cost totals as previously derived in Tables 6.4 and 6.5 (\$591,700 in Missouri and \$588,100 in North Carolina). These totals include costs from the earliest months of the pilot projects when reviewers were inexperienced and less efficient than in later months. Second, the table shows total costs after adding to labor compensation the estimated cost of the extra leave that would have been used had permanent Federal employees worked in the pilot projects (as derived above). As shown in Table 6.7, these two cost totals roughly match Federal QC costs under the regular QC system (being respectively 1.0 percent lower and 1.2 percent higher for the two States combined). Note, however, that both these cost estimates are far less than the total costs of \$2,095,900 of the regular QC system in the two States (by combined amounts of \$916,000 and \$890,700 respectively).

Table 6.6 then shows three sets of estimates of the costs of a "mature" one-tier system. The first removes two full months of costs from the cost totals (including pay for the added leave time) assuming that two lost months approximate the cost of initial staff inefficiency. Both pilot projects

Table 6.7. One-Tier Federal Cost Differential (Percentage): Difference Between Pilot Project and Regular QC Costs

	Missouri	North Carolina	Two States Combined
Comparisons Based on Actual State Caseloads			
Full Pilot Project Costs	-15.2	19.1	-1.0
Full Pilot Project Costs Plus Adjustment for Leave Costs for 14 Months	-12.7	20.8	1.2
Twice April-Sept. 1987 Costs	-23.2	5.5	-11.3
Efficiency Adjusted Costs	-32.7	-4.6	-21.1
	-22.6	11.8	-8.3
Comparisons Based on State Caseloads of 1200			
Full Pilot Project Costs	41.6	19.1	29.4
Full Pilot Project Costs Plus Adjustment for Leave Costs for 14 Months	45.6	20.8	32.2
Twice April-Sept. 1987	28.1	5.5	15.9
	12.3	-4.6	3.1
Costs Efficiency Adjusted Costs	29.1	11.8	19.8

Source: All cost comparisons based on cost estimates in Table 6.6. Cost savings to FNS are indicated by entries with negative signs.

operated for about 16 months (with North Carolina starting and ending about two weeks after Missouri). We subtracted two-thirds of the costs of the July-September 1987 quarter to arrive at the 14-month cost totals shown in the table (\$535,500 in Missouri and \$521,200 in North Carolina). As shown in table 6.7, these costs fell below the costs of the regular QC system by 23.2 percent in Missouri, exceeded cost by 5.5 percent in North Carolina and for the two States combined fell below regular QC costs by 11.3 percent.

The second estimate of "mature" one-tier costs takes the cost data from the April-June and July-September 1987 quarters and doubles them. This procedure implicitly assumes the pilot projects were in a "steady State" in these months—i.e., making determinations about payment accuracy for 100 cases per month (not including dropped cases) and doing this among cases recently assigned (within the past two or three months). Microdata on case assignments and error rate determinations by sample month suggest this was not achieved by the pilot projects during April-September 1987 (particularly in North Carolina).<sup>32</sup>

Table 6.6 shows estimated costs when cost data from these six months are doubled. In Missouri the estimate of \$469,400 is 32.7 percent below regular QC costs to FNS. The estimate is 4.6 below regular QC Federal costs in North Carolina. For the two States the combined costs across the pilot project sites were 21.1 percent lower than the regular QC costs to FNS (Table 6.7).

The third procedure for estimating the costs of a "mature" one-tier system used job ticket data on the trend in average review times (for completed cases) over the course of the pilot project. As noted in Section 4 of this report the average time needed to complete a QC case as recorded on the job tickets decreased noticeably between the start and end of both projects.

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<sup>32/</sup> This issue is discussed in more detail in Section 7.

Under our efficiency-adjusted estimating procedure we noted the relative efficiency with which cases were completed in the first half of the pilot project relative to the last half of the project. For cases in the QC samples from April to September of 1987 (the last six months) the average review time was 7.770 hours in Missouri and 8.305 hours in North Carolina. For each of the first six sample months we then divided the average job ticket review time by these last-six-month averages. The resulting relative efficiency measures ranged from .682 to .850 in Missouri, from .682 to .962 in North Carolina, and averaged .7750 and .8425 respectively in the two States.

The two overall relative efficiency measures (.7750 and .8425) were used to deflate actual pilot project costs for the October 1986-June 1987 period (essentially the first half of the period when QC reviews were being conducted). These deflated costs were then added to actual costs from the last half of the projects (July 1987-March 1988) to yield the efficiency-adjusted costs estimates shown in Table 6.6. As shown in Table 6.7, these estimates are lower than Federal costs of regular QC in Missouri by 22.6 percent, but 11.8 percent higher in North Carolina. For the two States combined the cost saving to FNS is estimated to be 8.3 percent.

We believe this third cost measure probably is the most appropriate for gauging the costs of a "mature" one-tier system. It incorporates actual information on improvements in reviewer times over the course of the pilot project as well as using data from the individual States to adjust actual State costs. In the national cost estimates and comparisons to be discussed in the next section, primary emphasis is placed on efficiency-adjusted costs in comparing regular QC with nationwide Federal one-tier QC. Note that of the three cost measurement methods, this shows the smallest average Federal cost disadvantage for the pilot project vis-a-vis the regular QC review system, 8.3

percent versus 11.3 and 21.1 percent for the 14 Months and the twice-April-September estimates, respectively.

A sharply different cost comparison emerges from the summary data in Table 6.7 when the comparisons involve equal numbers of cases within each State. The bottom part of the table compares costs to FNS when the present QC system and Federal one-tier QC each review 1200 cases in each State. Fourteen of fifteen cells in the bottom section of Table 6.7 now show FNS would incur increased costs if one-tier QC were to replace the regular QC system in these two States (and review the same number of cases). The comparisons of efficiency-adjusted costs show costs to FNS rising by 29.1 percent in Missouri, by 11.8 percent in North Carolina and by 19.8 percent for the two states combined.

When the two groups of cost comparisons are reviewed, the importance of State caseloads becomes apparent. For a particular method of pilot project cost measurement, the comparisons for North Carolina are identical. Thus Missouri dominates the overall results; making Federal one-tier less expensive in comparisons of actual State caseloads but more expensive for State caseloads of 1200. All of the swing in the efficiency adjusted costs differential, from a cost reduction of 8.3 percent across the two States to a cost increase of 19.8 percent, is explained by this single factor.

To conclude the cost comparisons within the two States, we find that under all three methods for estimating the costs of a mature one-tier system, it has a cost advantage for FNS vis-a-vis the regular QC two-tier system in Missouri and North Carolina. The range of estimated cost savings to FNS for the two States combined is from 8.3 percent to 21.1 percent. This favorable cost comparison for Federal one-tier QC become a cost disadvantage (of from 3.1 percent to 19.8 percent), however, for comparisons based on equal numbers of QC reviews in the two systems. Finally, all cost comparisons show a substantial

reduction in total costs (including State costs which are not reimbursed by FNS) when Federal one-tier QC replaces the present QC system in these two States.

### Nationwide Costs of Implementing One-Tier QC

Each year the States conduct over 70,000 QC reviews of positive food stamp cases. Combined, the 2400 reviews in Missouri and 1200 reviews in North Carolina represent about 5 percent of the national total. This section examines the costs of a national implementation of one-tier QC. Generalizing from the findings in two States to national totals has more than a few potential pitfalls. Therefore, the discussion will be qualitative as well as quantitative. Since the plausibility of any national projection depends on the accuracy of the projection methodology, we place as much emphasis on the way the national estimates were derived as on the resulting quantitative estimates.

A major question that must be addressed in a national cost comparison involves the aggregate number of case reviews in the two QC review systems. Under the present (or regular) QC review system 70,677 reviews were conducted by the States in 1986. Included in this total are all the reviews conducted in States whose present QC samples exceed 1200. Sample sizes in excess of 1200 accounted for 15,755 cases in 1986 or 22.3 percent of the national QC review caseload. If Federal one-tier QC were to be implemented nationwide, one option would be to limit the maximum sample size in the States to 1200 (as in the two pilot sites). Replacing the regular QC system with a Federal one-tier system which limited individual State samples to 1200 would lead to cost savings purely from a reduction in the number of QC reviews as well as other savings to be realized under Federal one-tier QC. National implementation of such a QC review system would reduce the aggregate number of cases from 71,000 to 55,000.

One cost comparison to be made will compare the costs of the present QC system of 71,000 cases with a Federal one-tier system that reviews 55,000 cases.

Some proponents of Federal one-tier QC might argue that it will lead to cost savings due to its greater efficiency. Innovative elements in the design of the pilot project (clustering, use of the verification specialist, use of the streamlined review form and reducing the volume of second party reviews) can be cited as factors leading to its increased efficiency. We presume that cost comparisons designed to assess comparative efficiency should be based on equal numbers of cases. Therefore, a second comparison in our national cost analysis will stress the comparative costs of the present QC system with a Federal one-tier review system that reviews the same number of cases. In this comparison each QC review system will be assumed to review 55,000 cases. For both national comparisons we focus primarily on costs incurred by FNS and not the totality of QC costs including costs borne by the States.

If Federal one-tier QC with a nationwide caseload were to replace the present QC review system, sample sizes would be reduced in fifteen states. The precision of estimated error rates based on sample sizes of 1200 in these states would be adversely affected. In this report we do not attempt to make quantitative estimates as to the size of the loss of precision. However, before a smaller QC system were adopted this issue should be given careful consideration by FNS.<sup>33</sup>

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<sup>33/</sup> Maximum sample sizes of 1200 per state would reduce the present samples in the following states: Alabama, Arizona, California, Florida, Illinois, Kentucky, Michigan, Missouri, New Jersey, Ohio, Oregon, South Carolina, Washington, West Virginia and Wisconsin. One analysis of the association between QC sample size and the precision of estimated error rates is found in WESTAT, "A Statistical Evaluation of Food Stamp Quality Control" Prepared for Office of Analysis and Evaluation, U.S. Department of Agriculture, (September 1987).

The changeover from the present QC review system to Federal one-tier QC raises several issues that could affect cost comparisons of the two systems. In addition to questions about total sample sizes, at least two other issues should be noted. (1) Would the changeover be made by the Department of Agriculture alone or in conjunction with a similar changeover in the AFDC and Medicaid programs? If the QC review systems for these programs are left unchanged there would continue to be QC agencies in the States but their caseloads would be substantially reduced, i.e., by 40 to 45 percent. If there were scale diseconomies associated with reviewing fewer cases, the smaller scale of remaining State operations could increase costs to the Department of Health and Human Service (HHS). Our cost analysis focuses only on costs to FNS and does not address this issue. (2) What costs would still be incurred by the States after Federal one-tier QC is implemented? Three activities can be identified; participation in sampling, reviewing error cases, and participation in informal negotiations and formal arbitration where there are disagreements over error findings.<sup>34</sup> Our cost analysis has not developed State-level estimates of these costs. We assume these costs to FNS would be zero. The effect of this assumption is to make the cost comparisons somewhat more favorable to Federal one-tier QC than would otherwise be the case.

At the national level the cost elements needed to compare a one-tier QC system with the present system are exactly the same as in the two States where the pilot project was tested. Increased costs will be incurred by FNS if half

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<sup>34/</sup> The States might continue to review negative cases. Since our cost comparisons focus only on the costs of positive cases, the costs of negative cases fall outside the scope of the comparisons.

about 20,000 cases (14,400 in the 36 States with State samples of at least 1200 and Federal re-review samples of 400 and the remaining 5600 from the smaller States). The number of Federal re-reviews would not change if the maximum State sample size was reduced to 1200.

The national cost calculation can now be derived from the preceding cost averages and case totals. The total cost of State review activities is \$36,978,900 (71,000 cases times \$520.83 per case) and for Federal re-reviews it is \$7,172,400 (20,000 cases times \$358.62 per case). Thus, total costs of the present QC system are estimated to be \$44,151,300 and the costs to FNS are \$25,661,800. The total costs of the Federal one-tier system are estimated to be \$25,025,000 (55,000 cases times \$455.00 per case).

Using the preceding cost-per-case estimates, a Federal one-tier system (as tested in the pilot project) would incur lower total costs than the regular QC system (\$25,025,000 versus \$44,151,300). Due to 50 percent Federal reimbursement of State costs, however, the total costs to FNS of the present system are \$25,661,800 and the Federal one-tier system would cost only 2.5 percent less than the present system to review the same number of cases.

A second illustrative comparison to be made involves the Federal costs of the present QC review system, but reviewing 55,000 cases and a Federal one-tier system reviewing 55,000 cases. Since all the necessary cost calculations have already been made they can simply be repeated. Total Federal costs for reviewing 55,000 cases in the regular QC system are \$21,495,200 (half of 55,000 times \$520.83 plus 20,000 times \$358.62). Costs under Federal one-tier QC for reviewing 55,000 cases are \$25,025,200. A changeover to Federal one-tier QC that left unchanged at 55,000 the number of QC reviews would increase costs to FNS by 16.4 percent (using the efficiency-adjusted costs concept as developed for Table 6.6).

It should be emphasized that the preceding cost comparisons between nationwide Federal one-tier versus regular QC were illustrative. They were presented to demonstrate our methodology and to identify the elements that need to be known in order to make cost comparisons under this methodology.

One must know the number of cases to be reviewed and the average cost-per-case of conducting reviews in the two systems. Since the national numbers of State regular QC cases and Federal re-review cases are known, the important questions for making national projections center around the estimated cost-per-case averages of State QC reviews and Federal re-reviews in regular QC and Federal one-tier QC reviews as tested in the pilot project. The likelihood of major errors in the Federal reviews and re-reviews is reduced by the fact that Federal employees have a single pay structure (the Federal GS scale) that applies to all geographic areas. Thus, of the three cost-per-case averages, we focus on the State costs in regular QC.

Average State costs per review can vary widely as shown clearly in Table 11.1 of the 1987 Abt report.<sup>36</sup> Individual State QC programs have a variety of structures; e.g., integrated or nonintegrated sampling, generic or program-specific reviewers, as do the State welfare agencies that make the original eligibility determinations e.g., State-administered versus County-administered. State costs per case thus vary due to differences in average salaries and benefits and differing distributions of costs by object categories.

How representative of nationwide costs per case are Missouri and North Carolina? Recall from Tables 6.1 and 6.2 that labor costs made up 71.9 percent and 67.8 percent of total costs in the two States respectively. Salary data in the 1982 Census of Governments<sup>37</sup> show that average salaries of State public

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<sup>36/</sup> Ibid.

<sup>37/</sup> U.S. Department of Commerce, Bureau of the Census, "1982 Census of Governments, Volume 3-GC82(3)-2," (Washington, D.C.: GPO, 1984), Table 2.

welfare employees (which include QC employees) in Missouri are below the national average, whereas in North Carolina average salaries are very close to the national average. We have made an average salary adjustment and use the adjusted salary estimate to derive our preferred national estimate of the cost of implementing one-tier QC.

The data from the 1982 Census of Governments identifies both State and county workers who are Public Welfare employees. In October 1982 there were 169,931 State public welfare workers nationwide, 5,058 in Missouri and 988 in North Carolina. This classification includes QC workers. The average monthly salaries for these worker groups were \$1,451 nationwide, \$1,132 in Missouri, and \$1,496 in North Carolina. Note there are many more such State workers in Missouri than in North Carolina because Missouri has a State-administered welfare system. The corresponding numbers of county employees in the two States were 362 and 7,393, respectively. Because eligibility workers earn less than the average of all State employees, we have adjusted the Missouri average up to \$1,206 and the national average up to \$1,498 to remove the effects of eligibility worker salaries on the Missouri and national averages. The new average monthly salaries in Missouri and North Carolina (\$1,206 and \$1,496) have the same percentage differential (24 percent) as the 1987 annual average salaries for QC workers in the two States (\$19,100 and \$23,685). After adjustments, the simple average salary of Missouri and North Carolina workers in 1982 was found to be below the national average by 10.8 percent (i.e., a national average of \$1,498 versus a Missouri-North Carolina average of \$1,351).

The 10.8 percentage salary differential was then used to raise average salaries of first tier QC workers in 1987 (leaving other components of first tier QC costs unchanged). This modification yielded an estimated national cost-per-case average of \$559.89 or 7.5 percent above the sample average used in the earlier illustrative calculations.

Using the higher State-level cost per QC case of \$559.89 caused the estimate of total State costs for reviewing 71,000 cases to rise to \$39,752,200 and State plus Federal re-review costs to rise to \$46,924,600. These are our preferred estimates of the total nationwide costs of regular QC. Costs to FNS of the present system are estimated to be \$27,048,500. Using this preferred cost estimate we find that Federal one-tier QC has a cost advantage to FNS of \$2,023,500 (\$25,025,000 versus \$27,048,500) or 7.5 percent less than regular QC. This savings would be the result of two offsetting factors. The reduced caseload would yield a cost saving to FNS of 16.6 percent, but the changeover to the new review system would increase costs by 10.9 percent.<sup>38</sup>

We have also made Federal one-tier versus regular QC cost comparisons using the other two estimates of mature one-tier costs as described in Table 6.6. Under the costs-for-14-months estimator we find the costs to FNS of Federal one-tier QC to be \$24,218,150 (versus \$27,048,500) for a cost advantage of 10.5 percent. Under the twice-April-September-1987-costs estimator, one-tier QC is even less costly (\$21,548,450, or 20.3 percent less than regular QC), but we view this as the least accurate Federal one-tier cost estimator.

Our next cost comparisons involve equal nationwide numbers of QC cases (55,000) and our preferred cost measure for Federal one-tier QC, i.e., efficiency-adjusted costs. We estimate the total costs of regular QC and Federal one-tier QC to be \$35,818,000 and \$25,025,000 respectively, when each system reviews 55,000 cases. Federal costs for the two systems are estimated to be \$21,495,200 and \$25,025,000 for a Federal one-tier cost disadvantage of 16.4 percent. Finally, if costs were the primary concern to FNS, a 16.6

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<sup>38/</sup> These two percentages (-16.6 and +10.9) do not add to -7.5 percent because of nonlinearity when the two underlying cost ratios are multiplied together.

percent cost reduction could be realized under regular QC by limiting 50 percent Federal cost reimbursement to 1200 QC cases per State. This limitation in the reimbursable sample size would reduce Federal costs from \$27,048,500 to \$22,569,400. The \$22,569,400 is \$2,455,600 less than the estimated nationwide costs of Federal one-tier QC.

It seems prudent to end this section on national cost comparisons on two cautionary notes. First, to make national cost estimates of one-tier QC we make inferences from the two pilot project states to the nation. The cost estimates for the pilot project in the two states had a margin of uncertainty.<sup>39</sup> To project the costs of regular QC from the two states to the nation we made an adjustment for average salary levels of State QC workers which seemed reasonable but whose accuracy could not be verified. No other elements of State costs were modified.

Second, adopting a one-tier QC system with a limit on State samples of 1200 cases would reduce both the efficiency of estimating error rates and the usefulness of the QC results for management purposes in those States that now have larger samples.

#### SUMMARY

While several alternative methods of estimating costs were presented in the section, our preferred estimate is the efficiency-adjusted measure. Using that measure, FNS costs of the one-tier QC pilot project were about 23 percent less in Missouri (due to the smaller sample size) and 12 percent more in North Carolina than their two-tier QC counterparts. If a Federal one-tier QC system with maximum samples of 1200 per state were implemented nationwide, our best

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<sup>39/</sup> The sources of uncertainty were noted earlier at the conclusion of the discussion of pilot project costs.

estimate is that the cost to FNS would be about \$2 million—or 7.5 percent—less than the cost to FNS of the current QC system with its larger sample sizes.

## 7. QUALITY AND QUANTITY OF WORK AND STAFFING

The most important measure of review quality is the error rates, which were analyzed in Section 5. Two other measures could supplement that analysis, namely, the number of disagreements between the States and Regional Offices over the one-tier pilot findings and their resolution, and the proportion of incomplete cases by the pilot project. These are addressed below, followed by an assessment of whether the pilot project was sufficiently staffed.

### Disagreements and Their Resolution

Missouri State QC workers re-reviewed a subsample of 400 pilot cases and all other cases found in error by the pilot reviewers. In North Carolina, only the pilot error cases were re-reviewed. One measure of the quality of the pilot reviews is the number of case findings that the States disagreed with and the resolution of those disagreements—either through informal negotiation or formal arbitration.

No firm conclusions can be drawn about the quality of pilot reviews from an analysis of disagreements (see Appendix W). In the subsample of 400 pilot cases re-reviewed by Missouri State QC workers, 12.1 percent of the one-tier reviews turned out to be incorrect (i.e., were either accepted as incorrect by the RO or were judged to be incorrect through arbitration). This falls within the range of cases determined to be incorrect by the Federal re-review process in the regular QC system—18.8 percent in North Carolina and 4.0 percent in the Missouri.

In the pilot error cases re-reviewed by the State in Missouri (including those in the 400 case subsample), the proportion of findings found to be

incorrect by the State (and also accepted as incorrect by the Regional Office or judged to be incorrect through arbitration) was quite high—19.5 percent. However, the proportion of incorrect findings by the North Carolina pilot was only 2.1 percent. This compares to 4.4 percent of error cases within the 400 Federal validation sample that were found to be incorrect through the Federal re-review process in the regular QC system in Missouri and 9.7 percent in North Carolina.

### Incomplete Cases

Another potential measure of the quality of reviews of the pilot project is the number of incomplete cases. Cases can be determined to be incomplete if the household refuses to be interviewed, or misses interview appointments, or cannot be located; the judgment of whether a case can be completed is left to the reviewer. The proportion of incomplete cases was five times higher in the Missouri pilot than in the regular QC system (4.95% vs. 0.98%) and three times higher in the North Carolina pilot (9.48% vs. 3.03%).<sup>40</sup>

This higher proportion of incomplete cases in the pilot project may have been because of the lag in time before the reviews were conducted due to the backlog; more households would not be receiving food stamps at the time of the review and, therefore, might be less likely to cooperate. Alternatively, it may have been because the pilot reviewers felt they could not invest the time necessary to complete difficult reviews because of the pressure of the backlog of cases, and/or because of the rush to end the project.

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<sup>40/</sup> The proportion of cases not subject to review was also slightly higher in the pilot project than in the regular QC system, but these are generally outside the judgment of the reviewer; they are not subject to review because the case is under fraud investigation or the recipient died or moved out of state.

While the first reason may have been the dominant one, there is some evidence in support of the second and third hypotheses; namely that 5 of the 17 cases in the 400-case subsample Missouri declared incomplete by the pilot project were completed by the State in the re-review. Also, in the North Carolina pilot the number of incomplete cases was highest for the February-June sample months when the backlog was high, giving support to the second hypothesis. However, many of these cases were not turned in until near the end of the project—nearly 40 percent of all incomplete cases were submitted in the last three months of the project, December 1987-February 1988. This may simply indicate that reviewers held incomplete cases longer with the hope of completing them, or it may suggest that perhaps some cases were not vigilantly pursued in the rush to end the project. In the Missouri pilot the number of incomplete cases was quite high in two of the last three sample months, also lending some support to the rush-to-finish hypothesis.

Taken together, the data suggest—but do not conclusively prove—that the higher proportion of incomplete cases in the pilot project reflect a lower quality of review of these difficult cases. If so, this was probably due to pressure felt by staff to complete the large backlog of cases by the end of the project.

#### Size of Staff

In using the results of the pilot project to determine how a one-tier QC system should be staffed and what it would cost if implemented nationwide, it is important to address the question of whether the pilot project was sufficiently staffed. One indicator of an insufficient staff size would be if the pilot never reached the stage where, over a substantial period of time, cases were being completed as quickly as they were being assigned (i.e., a

month's work was being completed in a month's time). Because of the late start-up and initial lower productivity of the inexperienced reviewers, both pilot sites had a large and growing backlog of cases over the first several months. Thus one proxy for when—or whether—the pilot sites reached this fully-productive stage is whether their backlog finally stabilized.

In the Missouri pilot the backlog of cases grew until the end of May 1987, reaching a high of 457 (Appendix Table W.1). Between then and the end of September the backlog declined slightly (to 393) and then fell off rapidly because no new cases were assigned after September. Based on the proxy measure of the backlog, then, it appears the Missouri pilot reached the fully productive stage for the four-month period of June through September, completing more than 110 cases per month.

This conclusion is tentative, however, because some of the cases completed during this time had been partially completed much earlier when the backlog was building: the average number of days between reading the case record (the first step) and completing the case rose steadily, peaking at 52 days in July, and remained at about this level through September. Thus the higher number of cases completed during the fully productive stage reflects both ongoing work and work that had been conducted in the past. (Taken at the extreme, if no cases had been completed until June 1 but most had been partially completed, then a large number of cases could be completed in the next four months with a corresponding large reduction in the backlog.)

The same tentative conclusion cannot be drawn for the North Carolina pilot, however. Even though its sample averaged seven cases per month less than the Missouri pilot's, it appears that the North Carolina pilot never achieved a fully productive stage. For the months prior to October 1987 the number of cases completed never reached 100 except during July, when 158 cases

were completed (Appendix Table W.2). Consequently the backlog rose steadily through June, when it reached a high of 559, fell to 501 at the end of July, and then rose each month until the end of September, after which no new cases were assigned.

Other evidence also points to a conclusion that a national one-tier QC system would have to have more staff than the pilot project. First, no negative cases were reviewed in the pilot project, but they would be in a national system. Based on calculations in Section 6, this would add from 5 to 8 percent to the workload. Second, most of the reviewers were temporary employees and had less leave time than would permanent employees in a national system. Third, as discussed above, the proportion of incomplete cases was relatively high in both pilot sites. Since incomplete cases in the pilot project took about half the time of complete cases (see Section 4), staffing under a national system would have to be increased somewhat under the assumption that the percentage of incomplete cases would be more like that experienced in the regular QC system.

#### Summary

An analysis of disagreements over the determinations of re-reviewed cases provides no firm evidence that the quality of reviews differed between the two QC systems. The higher number of incomplete cases in the pilot project could be indicative of lower quality reviews; but it could simply reflect the fact that the cases were "older" and more difficult to complete.

An analysis of backlogs of cases and case completions per month indicates that the North Carolina pilot never reached a sustained period when the number of cases completed equalled the number of cases assigned, suggesting that that pilot site was insufficiently staffed. Moreover, when other peculiarities of

the pilot project (no review of negative cases, unusually high numbers of incomplete cases, less paid leave) are taken into account, it appears that a national Federal one-tier QC system would require more staff than the pilot project.

## 8. SUMMARY AND CONCLUSIONS

The pilot project proved that it is feasible to operate a Federal one-tier QC system. The system was developed and implemented and a full year's QC sample was reviewed in both States.

However, the early implementation of the pilot project was neither smooth nor timely. For a number of reasons—the primary one being a late decision on which funding sources would be used to fund which staff, causing a delay in hiring—the pilot project began late. For the most part, the staff had no experience in conducting QC reviews. In hindsight the initial training was inadequate for such inexperienced staff—it was not long enough and did not include practice reviews. The inexperienced reviewers felt they were not fully productive for four to five months. This long learning period is supported by review time on job tickets, which declined substantially over the first three sample months (reflecting work over the first four to six months).

In addition, the ratio of senior reviewers to staff and the duties assigned the senior reviewers above the normal supervisory duties were based on a mature system. Launching any new project places an extra burden on supervisors. In the case of the pilot project, this burden was increased because of the inadequate training of those staff inexperienced in QC reviews. Consequently, much of the needed training was conducted one-on-one on a case-by-case basis. This undoubtedly reduced productivity in the early weeks of the project and consumed much of the time of the senior reviewers (and project managers).

The late start up, insufficient initial training, and long learning period of the inexperienced reviewers all contributed to a substantial and increasing backlog of cases over the first seven to eight months of the project.

One of the primary objectives of the one-tier pilot project was to reduce review time per case—and thus increase the average caseload per reviewer—as compared to the two-tier QC system. The increase in the average caseload was accomplished, but review time per case appears not to have been reduced proportionately. First, even after adjusting for lower productivity over the first six months, the pilot project took the equivalent of about 14 months to complete the annual sample, compared to the equivalent of 12 months for the regular QC system. Second, the time recorded on the job tickets by the pilot project reviewers during the "steady-state" period of the project was only about 5 percent less than that recorded by the State reviewers in the two-tier system, whereas the pilot's caseload per reviewer was about a third more. However, since much of the reviewers' total time in both QC systems was not recorded on the job tickets, it is not clear what this means. It could mean that the pilot reviewers worked more hours per week, or it could mean that the State reviewers recorded less of their direct review time relative to the pilot reviewers.

The one-tier pilot project had three time-saving special features. One was the structured worksheet, which was reported by the reviewers to save time in the case write-up (this claim is also supported by a comparison of write-up time recorded on the job tickets between the one-tier and the two-tier reviewers). This suggests that such a worksheet would also increase efficiency in the regular QC system, and—perhaps not coincidentally—both Missouri and North Carolina two-tier QC systems recently instituted structured worksheets.

Another feature of the pilot project was use of a verification specialist to conduct the computer matches. This feature was implemented in both sites, but it may not have increased the efficiency of the reviews much, if at all. Substantial knowledge of the QC review process is required in order to know

which computer matches to conduct. Based on the two-tier operations in the two States, it may be preferable to have one person conduct the matches if one of the clerical or administrative staff has this knowledge; otherwise it is probably more efficient to have the reviewers do their own computer matches. In any event, it is a very small proportion of the time required for a case review.

The final time-saving feature of the pilot project was to have quarterly instead of monthly deadlines so cases in outlying counties could be "clustered" across months to reduce travel time. This feature of the pilot was not given a rigorous test because it was never fully implemented. In theory, it seems that clustering would reduce review time. It may be that it was not fully implemented because it took so long for the pilot to adjust to the late start-up and large backlog of cases, rather than because it was not a good idea.

Three measures were used to assess the quality of reviews in the pilot project compared to the two-tier system: error rates resulting from the reviews, the number of disagreements and their resolution, and the number of incomplete cases.

The analysis of error rates does not yield any convincing evidence of a difference in error rates between the two QC systems. The North Carolina pilot error rates tended to be higher than the regular QC error rates before adjustment for the Federal re-review and lower after adjustment. In Missouri the pilot error rates were generally the same or higher for overpayments and lower for underpayments, both before and after adjustment for the Federal re-review. However, few of the differences between the two systems were statistically significant.<sup>41</sup>

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<sup>41</sup>/ The use of error rates as a proxy for the quality of the reviews rests on the assumption that lower quality reviews will be reflected in lower error rates because fewer errors will be discovered.

The analysis of disagreements also yields no clear indication of the superiority of one system over the other in the quality of reviews. This measure might have been better than error rates as a proxy for review quality, but the probable variation in the standards for re-review, both between QC systems and between States within systems, introduces a bias in this measure that cannot be controlled for. Thus the number of disagreements that are upheld varies widely between QC systems and States, and no inference can be drawn about the quality of reviews between the two QC systems.

The proportion of incomplete cases was much higher in the pilot project than in the regular QC system, indicating a lower quality of review in the pilot project. The data suggest that this was probably due to pressure felt by staff to reduce the large backlog of cases and complete the project. However, there is also some question of whether the pilot project was adequately staffed. The North Carolina pilot never reached the stage where it was consistently completing a quarter's sample in the equivalent of three month's time, and there is also some question whether the Missouri pilot achieved this level of productivity. Consequently, the proportion of incomplete cases should be less in an adequately-staffed, ongoing one-tier system.

The final evaluation criterion comparing the two systems is their cost. If the present two-tier QC system was replaced nationwide by a Federal one-tier system as tested in the pilot project, and the QC sample sizes were limited to 1,200 per state, it is estimated that the costs to the Federal government would decline by \$2 million, or 7.5 percent. This savings is solely due to a reduction in the total number of cases that would be reviewed under the two systems—71,000 under the current system and 55,000 under the Federal one-tier system. The reduced caseload would yield savings to the

Federal government of almost 17 percent, but the changeover to the one-tier system would increase Federal costs by 11 percent.

Under a comparison of equal sample sizes (55,000 under both QC systems), a Federal one-tier QC system would cost the Federal government \$3.5 million—or 16 percent—more than the two-tier QC system. However, total costs to both Federal and State governments of a one-tier system under this comparison would decline by over \$10 million. All of the savings would accrue to the States.

However, reducing the current national QC sample size from 71,000 to 55,000 under a one-tier system will reduce both the efficiency of estimating error rates and the usefulness of the QC results for management purposes in those States that now have samples larger than 1,200 cases. Also, the estimated costs of a national one-tier system do not include certain State functions that would likely be performed, the most important of which is the re-review of cases found in error by the one-tier system.

Our summary assessment, then, is that (1) it is feasible to operate a Federal one-tier QC system, (2) there is no convincing evidence that the quality of reviews would be any different under a one-tier than a two-tier system, and (3) a one-tier system without State re-reviews and with a national sample of 55,000 cases would be less costly to the Federal government than the current two-tier system with its larger sample (but there would be some loss in efficiency of estimating error rates in some states), and it would be more costly than the current two-tier system if the sample sizes were equal.

#### Possible Lessons From The Pilot For The Two-Tier QC System

Evaluation of the pilot project and its two-tier counterpart in the two States provides some information on ways the two-tier QC system might be improved if it is to be retained.

First, the adoption of a structured worksheet like that used in the pilot would probably reduce review time.<sup>42</sup> Second, reducing the number of second-party reviews by the States to one for non-error cases—and perhaps doing those on only a random sample of cases of experienced reviewers—would reduce costs and probably have little or no effect on the error rate.

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<sup>42/</sup> Copies of the structured worksheet can be obtained from FNS.