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Food Stamp Program Operations Study

Features, Costs, and Perceived Benefits of Advanced Automated Systems

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FEATURES, COSTS, AND PERCEIVED BENEFITS OF ADVANCED AUTOMATED SYSTEMS

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Despite the patient demonstrations and explanations given by staff in the four states we visited, there are no doubt some factual errors and misinterpretations of system functions in our descriptions of how these automated systems operate. The authors acknowledge responsibility for such errors in condensing the complex and unique features of these four systems down to brief summaries.

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EXECUTIVE SUMMARY

This report summarizes the results of an intensive assessment of four automated systems that support Food Stamp Program operations. The study was conducted as part of the final stage of the Food Stamp Program Operations Study, which has been performed by Mathematica Policy Research, Inc., and Abt Associates, Inc., as subcontractor, for the Food and Nutrition Service of the U.S. Department of Agriculture. The intensive assessment examined four systems: the Kansas Automated Eligibility and Child Support Enforcement System (KAECSES) in Kansas, the ACCESS system in South Dakota, the Mississippi Application, Verification, Eligibility, Reporting, and Information Control System (MAVERICS), and the Income Support Division/Integrated Service Delivery System (ISD2) in New Mexico.

The study had three major objectives: to identify specific innovative or advanced user functions; to estimate the overall cost of developing these systems; and to identify the major benefits of these systems as perceived by users. Four-day visits were made to each state. State staff gave thorough system demonstrations to help clarify the innovative features of each system, and interviews were held with program directors, eligibility supervisors, claims and issuance unit staff, fiscal office staff, and systems administrators.

INNOVATIVE USER FUNCTIONS

The four automated systems examined in this study provide comprehensive support for the administration of the Food Stamp Program as well as the AFDC and Medicaid programs, and in some cases other programs such as General Assistance. Integrated automation is now a feature of most state systems. Innovative features of these four systems were identified in six major categories of automated support: certification, monthly reporting, computer matching, issuance, claims collection, and general support for program management and user convenience. These innovative features support agency functions for all assistance programs served by the system.

Certification Functions

Unusual and reportedly helpful system features were identified in four aspects of the certification process: registering an application, entering application data, issuing notices to households, and producing caseload reports for eligibility workers.

- Application Registration. Intake staff "register" an application by recording basic identifying information about the applicant, and checking the existing data base files to determine whether the applicant is known to the agency. Application registration allows agencies to avoid creation of redundant records for households with past periods of program participation. System features can extend the usefulness of the registration process. One outstanding feature noted in our study is the ability in KAECSES to inquire to a household's or individual's previous data base record and move data from previous records directly into a new

application record. A second feature, in ACCESS, allows the system to determine whether an applicant household is qualified for expedited service. KAECSES allows clerks performing registration to schedule appointments for intake interviews through the system, and gives the clerical screening staff a facility to enter narrative text with the appointment information, so intake workers can be alerted to special circumstances that must be considered in the interview.

- Entering Application Data and Determining Eligibility. KAECSES and ACCESS provided examples of five innovative features. One feature is the design of data entry screens to look almost identical to sections of the application form, to minimize confusion in the data entry process.

  An access feature provides staff with a preliminary screen of "yes/no" questions; these determine which detailed data entry screens are needed, and allow the system to present automatically the necessary screens, avoiding the need to page through the full set of application form screens.

  A third feature provides workers with an on-line calculator function, to assist them in performing whatever manipulations of application data are required prior to entry (e.g., calculation of net self-employment income).

  Further support for the eligibility process is provided by features which track the resolution of every requirement for verification of household statements on the application form. This feature ensures that all verification issues are addressed before eligibility is approved.

  Finally, the ACCESS system provides for "background processing" of eligibility--a feature which allows eligibility workers to initiate on-line eligibility processing, but minimizes the processing load on the system by allowing all but "rushed" applications to be processed as system resources become available.

- Notices to Households. Advanced notice capabilities allow the system to identify all situations in which a notice is required, to compose the text of the notice including reasons for actions and calculations of benefits, and combine notices for food stamps and AFDC. Features in the Kansas, Mississippi, and New Mexico systems allow eligibility workers to add text to notices through their terminals before the notices are produced.

- Reports to Eligibility Staff. Many certification systems present on-line reports to eligibility workers listing the cases that require attention (e.g., for correction of data entry edit problems). The ACCESS system allows workers to press a function key and be switched automatically to the screens of the application form which have given rise to the issues requiring attention.

Monthly Reporting Functions

All four systems were capable of generating monthly report forms and pre-printing them with required address information, maintaining status information on which forms had been received, generating warning notices for failure to file, and terminating eligibility at the end of the cycle for households that did not file. Two additional important features were identified. One is a special data entry screen on which information on the receipt of forms can be entered for multiple households, avoiding the need to call up household records one by one. A second feature is to have the system determine logically, after an application has been entered, whether the household is subject to monthly reporting requirements or not.

Computer Matching Features

Four advanced features were identified which help to target and control the computer matching process. KAECSES attaches due dates to all on-line "alerts" relating to computer match discrepancies (as well as outstanding verification items). Due dates are set soonest for types of problems which could involve the greatest benefit errors (e.g., the largest match discrepancies). Reports can then be produced to eligibility workers and their supervisors focusing attention on the most urgent unresolved issues. ACCESS in South Dakota requires worker responses to all match discrepancies, including the outcome of the investigation. In addition, the on-line ACCESS Verification Log is designed to capture worker entry of the time and other costs incurred in the match resolution follow-up, so that estimates can be calculated of the cost of addressing match discrepancies from each external file. Finally, South Dakota has begun collecting application data on earnings by employer, which allows matching application data against employer wage reports by employer. This refinement helps to avoid false discrepancies resulting from lumping together all reported earnings before the match is conducted.

Claims Collection

No outstanding or unusual features of the four systems were identified that support claims collection. Important automation features were found in these states' systems: automatic calculation of overissuance and recoupment amounts, automatic recoupment from ongoing issuance, generation of demand letters, maintenance of collections and recoupment histories, and claims suspension and terminations. However, most of these automated capabilities have been identified in the systems of more than half of the states (or in local agencies of those states).[1] An important feature noted in the site visits, however, was the capability to generate a work agenda for collections unit staff based on the establishment of claims. This feature ensures that a collection plan is defined for all claims.

Issuance

Five innovative features were noted in the site visits relating to issuance. The ISD2 system in New Mexico prints bar-coded issuance envelopes which are read by a scanner which automatically selects the appropriate coupon sets and stuffs them in the envelope. KAECSES,

[1]Other reports prepared for the Food Stamp Program Operations Study have documented the extent of automation of claims collection functions. See Long and Wray (1987) and Wray (1990).

MAVERICS, and ACCESS provide convenient screens for redirecting or reissuing benefits that are reported stolen, lost, or undelivered, and maintain clear on-line histories of the disposition of all benefits issued. KAECSES maintains a history of all addresses for a household, which helps issuance and eligibility staff determine the appropriate action when a report of undelivered benefits is received. Finally, it was noted that one New Mexico county will shortly begin issuing benefits through electronic benefit transfer, using grocery store point-of-sale terminals linked to a central issuance data base.

General Program Management and User Convenience Features

The study visits highlighted the value of general system conveniences that can simplify records maintenance and internal communication. Six specific features were noted in the South Dakota ACCESS system that seemed especially innovative and useful:

- Electronic Mail. The ACCESS system provides a full electronic mail capability. It allows staff to send memos to each other, and notifies staff when they have mail waiting, and when their mail to another person has been examined. This feature allows management to direct memos to groups of staff, by title, location, or unit. An electronic mail capability is also provided in the Kansas KAECSES.

- On-Line Policy Manual and Indexed Reference. The South Dakota system provides on-line access to the state policy manual. Use of simple function keys allows workers to switch to the on-line user manual, going directly to the screens which provide detailed data explanations relevant to each policy text section.

- On-Line Organization Chart. ACCESS maintains an on-line organizational chart of the entire Department of Social Services. This information provides the basis for the electronic mail directory. It is maintained on-line by the personnel unit.

- Workload Allocation Monitoring. ACCESS includes a subsystem which keeps track of the number of times that each screen is accessed and each function is invoked, by case. Using subjectively defined weighting factors set by management for each screen and function, reflecting judgments about how they contribute to case complexity, ACCESS can then compute weighted caseloads for each worker. This information is useful in allocating caseloads and to some extent in evaluating worker performance.

- On-Line Case Narratives. ACCESS allows eligibility staff to maintain case notes on-line, and these notes are linked to the case record in the ACCESS data base. As a result, management staff can examine case notes from the central office; this is particularly useful, for example, when preparations are being made for a hearing.

- On-Line Problem Reporting and Task Management System. ACCESS captures all requests for system enhancements or corrections through an on-line reporting system accessible to all users. The TMS allows creation of "task trees" of related tasks, captures information on staff assignments to all tasks, and maintains information on the status of all problem reports through the resolution and implementation of software changes to address them.

SYSTEM COSTS

The reported costs of developing the four systems were $22.1 million in Kansas, $3.1 million in South Dakota, $10.9 million in Mississippi, and $11.4 million in New Mexico. These costs included labor, other non-equipment costs, and the cost of computer hardware. Only Kansas purchased a new mainframe and related peripherals; when the Kansas cost is adjusted for this difference, the cost of KAECSES is more in line with the costs in the other states ($13.4 million). These development costs, amortized over five years, represented roughly 4.0 - 6.1 percent of total annual administrative costs from the Food Stamp, AFDC, and Medicaid Programs supported by the systems.

The considerable variation in the reported costs of these four systems can be attributed to several factors, although their precise effects cannot be distinguished:

- Whether or not the development began with an adaptation of another state's system (all did, except New Mexico)
- The extent to which the state had to perform custom software design and development to adapt an imported system to meet functional needs (Kansas had the most extensive requirements beyond the capabilities of its imported system)
- The size and complexity of the development team (South Dakota used existing state staff and added a single individual as contractor staff, in contrast to the Kansas, Mississippi, and New Mexico efforts, which involved substantial contractor teams)
- Caseload size and degree of caseload dispersion among local offices (larger caseloads and more numerous offices increase the costs of hardware and communications equipment)

PERCEIVED SYSTEM EFFECTS ON PROGRAM ADMINISTRATION

Agency staff discussed four general effects of their systems: effects on the roles and required numbers of line staff, on methods of staff supervisions, on the accuracy of case actions, and on management control and flexibility.

Four specific effects on line staff were pointed out by agency staff:

- The systems have reportedly increased the use of generic eligibility workers, because of the high degree of cross-program integration in the automated systems

- Job demands placed on eligibility workers and supporting clerical staff have changed. Eligibility workers are relieved of manual calculation tasks, and are expected to have a clear grasp of the data collection and eligibility requirements of all programs, but they must also now be adept at keyboard use and comfortable interacting with the system directly. Clerical staff are relieved of considerable typing and filing work, but are expected to become skilled users of the system for case searches, monthly report entry and tracking, and other tasks.

- The automated systems clearly improve the productivity of eligibility staff, but it is impossible to identify a resulting decline in staff levels, because there have been increases in the number and variety of state medical programs that must be supported, and in some cases because earlier caseloads were excessive and efforts have been made to reduce the number of cases per worker.

- The systems provide important help to eligibility workers in structuring their work, monitoring the status of their cases, and focusing their attention on case-related issues that are of high priority.

Several aspects of these systems were identified which help supervisors and managers. On-line statistical reports tailored to various levels of caseload aggregation can highlight management issues for line supervisors and senior department managers. Features found in the ACCESS system can help managers adjust caseload allocation by estimating caseload complexity, and KAECSES helps managers organize the ongoing supervisory case review process.

Agency staff generally believe that their automated systems help improve case action accuracy. The systems help staff avoid agency errors in eligibility determination and benefit calculation. The availability of on-line computer match inquiries is viewed as deterring applicants from misreporting. Claims unit staff generally believe their systems ensure that action will be taken on established claims.

Advanced systems are widely viewed as providing management with greater assurance that eligibility policy is consistently and accurately applied. At the same time, use of these systems imposes new demands on program operations that managers must respond to, because almost all aspects of program operation are dependent on the computer system. Reassigning or relocating eligibility staff requires preparation of hardware, communications, and user identifications. Training of new eligibility staff must be more formalized, because they all must be proficient system users. Policy formulation must include thorough consideration of how the policy will be implemented through the automated system, and thus requires more careful planning for

implementation. On the whole, both management and line staff see recent system developments as having made their jobs more structured and manageable.

I. INTRODUCTION

This report presents an analysis of innovative features in the advanced automated systems of four State Food Stamp Agencies, and of the costs and perceived benefits of these systems. It is the outcome of an intensive assessment, including site visits, as part of the third and final stage of the Food Stamp Program Operations Study (FSPOS), funded by the Food and Nutrition Service of the U.S. Department of Agriculture.

It is particularly appropriate to examine the features, costs, and benefits of advanced automated systems for Food Stamp Program administration because of the substantial changes that have occurred in state computer systems, and the role that the federal government has played in encouraging the development of such systems. Since 1980, the U.S. Department of Agriculture (USDA) has provided "enhanced federal funding"--paying 75 percent rather than the normal 50 percent federal share of program administrative costs--for the planning, design, development, acquisition, or installation of automated systems which meet specified requirements. In 1987 the Food and Nutrition Service (FNS) of USDA developed a model plan whose requirements must be met by states' system designs in order to qualify for this enhanced funding. FNS's model plan allows states considerable flexibility to tailor their automated systems features to their needs, but also provides a basis for identifying automation approaches which can be used to address program management problems. The federal government has thus taken an active role in encouraging the development of automated systems and in promoting ambitious efforts to provide state agency staff with the benefits of automated support.

Federal encouragement as well as state administrators' perceptions of the need for and potential advantages of improved automated systems have together led to major changes in systems used by State Food Stamp Agencies. Substantial change, and plans for further systems development, were noted in the first stage of the Food Stamp Program Operations Study (Hershey, 1987). Twenty-four states and several major county agencies in three other states

reported having implemented new computer systems between 1980 and 1986. Major changes in automated certification systems were planned in 45 of the 58 agencies surveyed (48 state systems and 10 local agency systems).

Plans for major system changes anticipated by Food Stamp Agencies in 1986 implied seven major shifts, as noted in the earlier FSPOS report:

- Eleven states planned to implement completely new automated certification systems, including five that had decided to import and adapt advanced systems recently developed in other states
- States consistently emphasized automating the eligibility determination and benefit calculation process; 18 agencies planned either to upgrade this capability in their existing systems or achieve this improvement with totally new systems
- Improving the capacity to generate notices to clients and reports to staff was an element in the systems development plans of 11 agencies
- Introducing or expanding on-line access to system functions for eligibility workers was a focus of development plans in 16 agencies
- Four agencies specifically reported plans to upgrade their systems' capacity for computer matching and tracking of verifications of household-provided information (and these functions were to be enhanced with the implementation of several of the completely new certification systems)
- Fourteen agencies anticipated major improvements in their systems' ability to store detailed household data and household histories
- Systems changes were anticipated in 11 agencies which would increase the level of integrated automated support for the Food Stamp and AFDC programs

The plans for major systems changes have largely been translated by State Agencies into action. By May 1989, the Food and Nutrition Service had approved plans for automated systems conforming to the model plan requirements in all of the states (GAO, 1990).

The purpose of this study is to enhance FNS's understanding of the features of advanced automated systems, and to assess the costs and benefits of advanced systems. Our interest is in

system features that support the work of system users in the broad sense: eligibility workers and their support staff, issuance and claims staff, and program managers.[2] These features in some cases are designed to provide information to users, to facilitate their entry of information to the system, to help them arrive at case-specific decisions or carry out case actions, to help them organize their work, or even to communicate with each other. In this report, the term "user functions" is used to refer to the broad set of features of this sort. These features help staff perform their jobs with regard not only to the Food Stamp Program, but other assistance programs as well.

Attention was focused on user functions in five major areas of program operations: certification, monthly reporting, issuance, claims collection, and computer matching. The study

Four state systems were selected for detailed study in this assessment:

- The Comprehensive Automated Eligibility and Child Support Enforcement System (KAECSES) in Kansas[3]
- The ACCESS system in South Dakota
- The Mississippi Application, Verification, Eligibility, Reporting, and Information Control System (MAVERICS)
- The Income Support Division/Integrated Service Delivery System (ISD2) in New Mexico

These systems were selected in two steps. First, the results of the 1986 census of all state systems were reviewed, and FNS reports of recent systems upgrades were examined, to identify states whose systems appeared to offer a high level of automated support in most or all of the five functional areas of interest. In this review, states were considered for inclusion in the study only if they had recently implemented new systems as the result of a major, short-term development effort. States whose systems had evolved to their current form in a series of major enhancement phases were not considered, because of the likely difficulty of collecting clear data on systems development cost or on staff perceptions of the differences between the current and previous systems. Sixteen states were selected as a result of this review.[4]

Following this review, telephone discussions were held with the program administrators in the 16 selected states. These discussions clarified the extent of innovative or advanced user features, and provided a basis for narrowing the list of candidate systems. The list of candidate systems was reduced by dropping several which lacked key features of advanced systems

[3]The Kansas system was originally called CAECSES (Comprehensive Automated Eligibility and Child Support Enforcement System); the name was changed in September 1989.

[4]The states selected for further exploration were Arizona, Mississippi, North Dakota, South Dakota, Vermont, Connecticut, Delaware, Florida, Idaho, Kansas, Minnesota, New Mexico, Rhode Island, Utah, Wyoming, and Virginia.

(interactive processing available to eligibility staff, or integrated support of AFDC and Food Stamps). Seven of the remaining eight systems were found to be versions of systems originally developed in Alaska and Vermont. Since only four states could be visited for this study, a selection was made to represent these two major system types but not include all of the states that have adopted versions of them. Kansas and Mississippi were included as examples of implementations of the original Alaska system (as later revised in North Dakota and Arizona). South Dakota is an example of adaptation of a system originally developed in Vermont. The New Mexico system was developed specifically for that state.

Four-day visits were made to the four selected states. During these visits, State staff gave thorough system demonstrations to help clarify the innovative features of each system. Interviews were held with program directors, eligibility supervisors, claims and issuance unit staff, fiscal office staff, and systems administrators.

The three remaining chapters of this report present the major findings of these site visits. Chapter II provides brief profiles of the functional features of each of the four systems. Chapter III describes specific user functions identified in the site visits that are particularly innovative and unusual. Chapter IV presents information on the costs that the four states incurred to implement their systems, and a qualitative description of the system users' perceptions of the benefits of their agencies' implementation of their current system.[5]

[5]Although the original conception of this study called for attempting to measure the costs and benefits of particular system functions, it was quickly determined that none of the states could account for system development costs by function. A more global approach was therefore taken to estimating development costs.

II. PROFILES OF FOUR STATE SYSTEMS

The four advanced automated eligibility systems included in this study share many functional characteristics. They all process information communicated from local assistance offices and transmit information back to the county. Each system has automated a variety of certification-related and administrative tasks previously performed manually. Although they do not eliminate paper records, these systems have dramatically reduced the reliance of State Agencies on paper-based information storage and communication. In all four states, the automated systems have greatly facilitated the flow of information between local assistance offices and the central Food Stamp Program office.

The four automated systems examined in this study are also similar in that their designs allow integrated support of the full range of state assistance programs--Food Stamps, AFDC, Medicaid, and in varying degrees other programs such as General Assistance. The integrated, consistent procedures these systems provide for collecting data, determining eligibility, and issuing benefits are in themselves a major advance over earlier periods when many states operated separate computer systems for Food Stamps and AFDC. Integrated support for assistance programs is now a common feature in other states' systems as well.

Despite these similarities, there are substantial differences in design and functional scope in the automated certification systems of Kansas, Mississippi, South Dakota, and New Mexico. As background to the description of outstanding examples of functional utility in Chapter III, this chapter briefly describes each system, focusing on the five broad systems functions examined in this study: certification, monthly reporting, issuance, claims collection, and computer matching. These descriptions also serve to illustrate the role each system plays in the operations and administration of the respective State Agencies.

A. THE KANSAS SYSTEM: KAECSES

The Kansas Comprehensive Automated Eligibility and Child Support Enforcement System (KAECSES) has been operating since June 1989. CAECSES links 107 Kansas county offices with a central processor located at the state government data processing center in Topeka. The system provides integrated support for the Food Stamp Program, AFDC, Child Support Enforcement, and a broad range of medical assistance programs.

Kansas operated separate systems for food stamps and AFDC prior to implementing KAECSES. The food stamp system maintained little data on participating households, and was used primarily to compute financial eligibility and benefits and to issue automatic notices to food stamp households. Household information was recorded on a one-page turnaround document from which data were entered and processed in batch mode.

Development of KAECSES began in 1984 when the state became interested in integrating the various public assistance programs into one system. In 1985 Kansas conducted a procurement which specifically invited bidders to propose the transfer and adaptation of an automated eligibility system from another state. A contract was awarded to Systemhouse, Inc., in 1986, which proposed to adapt the newly designed, but still unimplemented, Arizona AZTECS system (which was itself adapted from the Systemhouse design of the Alaska eligibility system). Formal design of KAECSES began in December 1986 and lasted nine months. The subsequent system development phase was completed in March 1988, and a two-month pilot implementation was conducted in one Kansas county office in June and July 1988. Problems were discovered during the pilot, due in large part to the fact that Kansas was adapting a system which had not yet begun operations. Following resolution of these problems, conversion of existing cases and general system operations began in September 1988. Caseload conversion was completed in June 1989.

1. Certification

Upon receiving an application for food stamps (or any combination of assistance programs), a county office receptionist or clerk registers the application on KAECSES by entering key information (e.g., name, social security number) for all members of the applicant household.[6] Following registration, the clerk determines if any household members have previously received program benefits in Kansas by searching à database of previous participation records. Searching can be performed based on the name, partial name, or social security number of each household member. If a match is found, the clerk copies the historical computer record for the individual into the record established for the reopening case. A special "interview" screen also allows the clerk to record an appointment for an interview with the eligibility worker assigned to the household.

The assigned eligibility worker reviews the application during the applicant interview and adds codes to the raw data. The eligibility worker then enters the application data on-line into KAECSES, using a terminal located on the worker's desk. When all data have been entered, KAECSES determines the client's eligibility, and calculates benefits and the worker reviews and authorizes the results. If the application data are incomplete (e.g., missing verifications), the system will "hard-pend" the application, preventing the issuance of benefits until all required data are entered. A "soft-pend" condition is created when the eligibility worker sets a future date by which missing material should be received, but the information is not essential to determining eligibility.

[6]The terms "household" and "case" are sometimes used interchangeably in this report, to refer to the set of people about whom information is maintained in the system files and for whom eligibility is determined. This usage reflects the fact that the systems described here perform integrated functions for the Food Stamp and AFDC programs. Program staff and policy makers concerned with these two programs use these two different terms to describe the sets of people who apply for and receive program benefits.

KAECSES generates both automatic and worker-initiated notices. The system generates automatic notices to inform households of key events related to their program participation or eligibility. Automatic notices are generated for only a few circumstances, however: denial because the client failed to keep an interview appointment; warning because a monthly report was not received; and case closure due to non-receipt of a monthly report. For other major case events (application approval, denial based on eligibility determination, closure based on recertification information, missing verifications) the system alerts workers that a "notice situation" exists. Eligibility workers must fill in required information on-line to trigger issuance of the notice. They can do so by adding text information, or by pulling information from KAECSES records into the notice.

2. Monthly Reporting

KAECSES organizes the entire monthly reporting process. The eligibility worker, having determined that a household falls into a group that is required to file monthly reports, enters an indicator in the case record and enters the first date by which a monthly report form must be completed. KAECSES automatically generates monthly report forms and maintains and summarizes the entire monthly reporting history of the case on a special system screen. This screen documents the dates monthly reporting forms were mailed, the dates when the forms were received, whether they were complete when received, and if not, the dates they were finally completed.

When a monthly report form is received at the county office, a clerical staff member records the date of receipt on the case record as well as whether the form was properly completed. If the monthly report is incomplete, a notice is created in the system, on which the eligibility worker must enter text through the system terminal to indicate what information is missing. When a report form is received complete, this fact is entered on the monthly report

screen. The eligibility worker reviews the monthly report form and enters any household changes in the case record. KAECSES redetermines eligibility and recalculates benefit allotments for all cases with forms indicating changes in household circumstances.

As monthly report forms are generated, KAECSES "rolls forward" data for each participating case from the previous month into records for the new month, which allows routine continuation of the previous eligibility status and benefit amount if no change is entered. However, if certain case circumstances exist (e.g. earnings in the previous month), KAECSES places a "deauthorized" indicator in the new monthly record, which will prevent benefits from being issued in the new month until the eligibility worker enters information that triggers a redetermination of eligibility and authorizes the issuance. Monthly reporting cases that are not automatically deauthorized and for which no household changes have occurred, are authorized for benefit issuance by entry of the "complete form received" indicator by the clerical staff.

3. Issuance

Food stamp benefits in Kansas are primarily issued by direct mailing of coupons. Benefits are mailed on a staggered schedule during the month. An automated coupon preparation machine selects the appropriate coupon books, and stuffs and addresses the envelope for each issuance case. Two county offices issue Authorizations to Participate (ATPs) on an emergency basis.

KAECSES provides program staff with convenient facilities to redirect benefits and record the disposition of benefits. On a special issuance screen, staff can enter information on reports of undelivered, stolen, or returned benefit documents, and trigger the remailing of replacement benefits. The system establishes a record that links the document numbers of original and replacement issuances, and staff can examine an on-line display showing the entire issuance

history. This facility has reportedly reduced mail loss substantially, and reduced the use of local office ATP issuance in the two offices where such issuance has been practiced.

4. Claims Collection

Following the establishment of an overissuance claim by an eligibility worker, KAECSES is used to recompute benefits for past periods, to determine the amount of the claim. Eligibility workers have the power to override the claim amount established by KAECSES. Although supervisors are supposed to review such actions, the system does not require supervisory approval. When benefits are recalculated for a past period, the new household information (e.g. revised earnings) overwrites the previous values used in the original benefit determination. However, a separate issuance history screen retains the key factors of eligibility and benefits used in the original benefit calculation.

Once the amount of the claim is determined, the eligibility worker selects the method of recovery (i.e., recoupment or repayment). In underissuance cases, the worker can authorize issuance of additional benefits. Recoupments are taken by KAECSES automatically, according to preset policy, as a percentage of the monthly issuance amount).

5. Computer Matching

Kansas performs all Income Eligibility Verification System (IEVS) matches including matches with Social Security Data Exchange (SDX) for Social Security benefit information, the Internal Revenue Service for income and asset information, and the Beneficiary Earnings Exchanges System (BEERS) for SSA wage information. Batch matches are done monthly and discrepancies exceeding preset thresholds are reported to the appropriate eligibility worker in the form of on-line alert messages directed to the worker's screen. When an eligibility worker is alerted to a discrepancy, the worker can inquire on-line and review the discrepancy. KAECSES

does not require information on how match discrepancies are resolved. An eligibility worker is able to delete discrepancy alerts when the worker is satisfied that the discrepancy is resolved.

In addition to the batch matches identified above, Kansas has established (for selected border counties) on-line access to neighboring Missouri's AFDC, food stamps, and unemployment insurance participation files. Currently, eligibility workers must exit KAECSES and log on to a different system to access these data, but soon KAECSES will be modified to allow direct access within the system. Access to other states' files will also be expanded to a 9-state group.

B. THE SOUTH DAKOTA ACCESS SYSTEM

South Dakota has been processing program information through the ACCESS system since June 1986. A communications network ties computer terminals in South Dakota county offices into the ACCESS system's central mainframe computer located at the State data processing center in Pierre. ACCESS supports all assistance programs including food stamps, AFDC, general assistance, refugee assistance, child support enforcement, and various medical programs.

Prior to implementing the ACCESS system, South Dakota relied on a batch system with on-line entry of turnaround documents. The pre-ACCESS issuance process is still used now, with the exception that ACCESS now provides the input to that process.

South Dakota's ACCESS system is a modified and adapted version of the Vermont ACCESS system. Development of South Dakota's system began in 1984, when state program administrators looked at available systems and decided to adapt the Vermont system. Adaptation of the Vermont software began in January 1985, leading up to a one-month pilot implementation of the system in November 1985. Conversion of existing cases began in January 1986 and lasted four months. Financial Assistance Management Information System (FAMIS) certification for the AFDC program was received in September 1986, and the system was reviewed and approved by FNS in February 1987.

1. Certification

As with Kansas' KAECSES system, clerical staff register application information on ACCESS and search for previous and current program participation by applicant household members. ACCESS automatically determines if a case warrants expedited service.[7] If expedited service is appropriate, ACCESS records a warning notice on a report that is produced daily for the eligibility worker, to ensure that prompt attention is given to completing and entering the application information and triggering the necessary system functions to determine eligibility and approve issuance.

Following an interview with the applicant, full application data is entered into the system by an eligibility worker at the worker's own terminal. ACCESS then performs individual person tests to determine which people in the household comprise the relevant unit for each assistance program, case eligibility tests for each program, and benefit computations.

In contrast to the Kansas KAECSES system, ACCESS generates all notices of eligibility results automatically (e.g., eligibility approval and denial, benefit reductions and increases). Notices are composed entirely by the system and tailored with information appropriate to the decision being communicated to the client.

2. Monthly Reporting

ACCESS also automates the entire monthly reporting process. ACCESS determines which cases are subject to monthly reporting requirements, and produces the monthly report forms for mailing. Returned forms are directed to the assigned eligibility worker, who uses a special system

[7]Food stamp programs regulations require that the application of a household be given expedited service--be processed within five calendar days of receipt--if all household members are homeless, the household has liquid resources of $100 or less and has monthly gross income of less than $150, the household is composed of migrant or seasonal farmworkers who are destitute, or the household has combined monthly gross income and liquid resources totalling less than the households monthly rent or mortgage, and utilities.

screen to indicate the receipt and status of the monthly report forms. If no changes are indicated on a form, the eligibility worker can enter a code which triggers an "auto-approval" of the next month's benefits.

3. Issuance

About sixty percent of South Dakota food stamp issuance is through mailed authorization to participate (ATP) documents. The remaining allotments are issued through direct mailing of coupons from the county offices. Clients choose their preferred issuance method.

ACCESS generates a monthly issuance file for ongoing cases and a daily issuance file for new approvals or other special issuances. These files generate ATP documents and mailing labels.

ACCESS provides eligibility workers with comprehensive issuance history data at the case level. The system is also used to prepare federally required issuance reports.

4. Claims Collection

The ACCESS claims collection subsystem is less sophisticated, and less user-friendly, than other parts of the system, primarily because ACCESS still interfaces with an earlier claims collection system that predated ACCESS.

Eligibility workers manually compute over- and underissuances for past periods, and enter information to ACCESS to establish a claims record. ACCESS then generates an electronic mail message to the eligibility supervisor, who must enter an approval of the claim record. When this approval is entered, ACCESS generates a record on the collection file. Collections staff must then enter necessary information to set up the collection method (which is almost always recoupment). ACCESS automatically deducts recoupments as part of the issuance process, and eligibility workers can inquire to a screen that displays the complete collection record.

5. Computer Matching

ACCESS conducts monthly batch matches with a variety of data sources. In addition to SDX, IRS, and BEERS matches, ACCESS matches with the State's Department of Labor files for wage and unemployment insurance benefits information, Department of Motor Vehicles data for asset information, and BENDEX (Benefit Data Exchange) files for information on participation in federal benefit programs. Each match is designed with its own specific tolerance range, so cases are reported to eligibility workers only if ACCESS file information and external data differ by more than a preestablished amount.

ACCESS also provides on-line access to State Department of Labor and Department of Motor Vehicle data for front-end matches at the time of application. Eligibility staff can inquire to these files, but matches are not automatically invoked when the application is registered.

ACCESS structures the monitoring and tracking of computer match discrepancy resolution, and integrates this process with other verifications that must be completed by the worker. The system provides workers with an on-line "outstanding verifications" report, which lists match discrepancies and other required verifications not yet resolved. It also provides an on-line "verification log" which displays the status of unresolved matches and verifications, and requires workers to make entries to indicate the resolution of each one. If a match discrepancy yields evidence of an earlier overissuance, the worker enters the start and end dates to this log and the amount of the overissuance, and ACCESS automatically generates a claim number and establishes a claim record. Entries are also made to this log to indicate the time spent and other costs incurred to investigate each discrepancy, for subsequent cost-benefit analysis (see Chapter III for further detail).

C. THE MISSISSIPPI MAVERICS SYSTEM

The Mississippi Application Verification Eligibility Reporting and Information Control System (MAVERICS) connects 93 county offices with the central processing facility in Jackson. MAVERICS bears many similarities to Kansas' KAECSES system because both were adapted from systems that were based on the Systems House design for the State of Alaska.

Mississippi began implementing the MAVERICS system in stages in 1986 and has been operating the system statewide since July 1988. Federal certification for AFDC was also received in July 1988. Federal food stamp certification was granted in February 1989 for all system functions except those dealing with claims processing; these are still under discussion between FNS and the State of Mississippi.

1. Certification

As with KAECSES and ACCESS, MAVERICS is used to register applications, and to search a statewide database for previous program participation for all members of the applicant case. Searching is initiated by clerical staff and keyed on full and partial name, date of birth, sex, race, social security number, or client identification number (for previous participants). When a record is found for a household member, information can be pulled from the earlier record into the new application.

The remaining application data is entered by an eligibility worker during the client interview. MAVERICS then performs all the required eligibility and benefit calculations. However, due to high error rates in the past, Mississippi now requires county office supervisors to authorize benefits for all newly applying and re-applying cases. Previously, supervisors were required to review but not authorize all new cases.

As with the other systems, MAVERICS automatically generates notices which inform clients of key events affecting their participation (e.g., benefit authorization, recertification).

2. Monthly Reporting

MAVERICS is not programmed to assign monthly report status to cases, although this feature will soon be added to the system. When that modification is implemented, MAVERICS will use a combination of criteria from error-prone profiles and program policy to make a monthly reporting determination.

Monthly report forms are system-generated. When the completed forms are returned by clients, information indicating that they have been received is entered to the system by clerical staff. Eligibility workers then review the forms and, if changes are noted, enter the changed data

For mail issuance and itinerant issuance, issuance staff complete a form indicating the amount issued and the period for which issuance is made. This form is entered to MAVERICS to update the case issuance history.

4. Claims Collection

Mississippi has a Central Claims Unit (CCU) to investigate suspected overissuances that are reported by eligibility and fraud unit workers. CCU staff establish the claim on MAVERICS, which triggers an on-line alert to the eligibility worker. The eligibility worker is responsible for selecting the collection plan (through recoupment, payment schedule or other means). MAVERICS also generates a hard-copy notice of the claim, and routes a copy to the eligibility worker and to the client. The system tracks all alerts, and reports on which established claims have not had collection plans established. MAVERICS automatically makes recomponents, and monitors collections carried out by this method.

5. Computer Matching

MAVERICS matches applicant data (prior to application approval) against state-wide AFDC and food stamp participation files and the food stamp national disqualification file (DRIPS). When the full application is entered into MAVERICS, the participation file is updated for use in subsequent matches.

Periodically (usually every 15 to 30 days) program participants are matched in a batch process against IEVS files (e.g., SDX, BEERS). Eligibility workers are alerted on-line to all match discrepancies and must respond to all alerts. MAVERICS tracks all outstanding alerts and reports their status to supervisors. Currently, MAVERICS does not rank the seriousness of match discrepancies but Mississippi is considering implementing a scoring process for this purpose.

D. NEW MEXICO'S ISD2 SYSTEM

Since March 1986, the New Mexico Human Services Department has been using the Income Support Division, Integrated Service Delivery System (ISD2) system to administer food stamp, AFDC and Medicaid benefits. Currently, the on-line system services about 45,000 food stamp households and about 500 eligibility workers in New Mexico's county offices.

Unlike the other three systems described in this chapter, ISD2 was independently developed rather than adapted from an existing system. Development began in 1983 and was performed by Consultec, a private systems design contractor. System implementation was phased in beginning in March 1986, although hardware problems delayed case conversion for seven months. Case conversion was completed in March 1987.

Data processing operations and application software maintenance for the ISD2 system were originally the responsibility of the New Mexico General Services (GS) Department, which provides data processing service for all state agencies. GS support for the system was less effective than was hoped by the Department of Social Services, largely because GS staff had not participated with the contractor in the development process. Eventually the New Mexico Department of Social Services decided that GS support for the system was inadequate, and in August 1988 contracted with a private firm, BDM International, to maintain and operate the ISD2 system.

BDM currently operates the system out of its own processing facility. BDM staff perform data processing operations, telecommunications support, and applications maintenance. Since taking over the ISD2 system BDM has improved response time, reduced system down-time, provided more reliable production and delivery of system outputs, and created more systematic and responsive procedures for identifying system problems and resolving them.[8] Despite these

[8]The New Mexico Department of Human Services still has its own staff to develop and maintain application software to support the IV-D (Child Support Enforcement) and IV-A social

operational improvements, ISD2 is still less user-friendly and functionally comprehensive than the other three systems reviewed.

1. Certification

As in the other systems described above, clerical workers register program applications on the ISD2 system. The system performs a SOUNDEX search of DHS files based on name, sex, race, and date of birth to determine if any individuals are currently participating in DHS programs, or were previously.

Following the client interview, the eligibility worker enters all remaining application data into ISD2. This process requires that eligibility staff page through screens for every individual (e.g. for income and resources), entering either relevant data or a text comment on each screen indicating that there is no relevant information to enter. This process is considerably less streamlined than the data entry processes in the other three states, which allow workers to make rapid entries at the outset indicating which application screens will be relevant; the systems then present the relevant screens automatically in sequence.

Following completion of data entry, ISD2 automatically determines program eligibility and automatically generates and issues notices informing clients of key events affecting their case.

2. Monthly Reporting

Like the systems described earlier in this section, ISD2 automates major portions of the monthly report process. ISD2 determines who should be required to report monthly by comparing the household's circumstances with program policy. The system automatically sends out monthly report forms, and issues notices to households who have not filed before an initial

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services programs.

deadline. ISD2 closes the cases of those recipients that do not report by a final deadline and issues the final closure notices.

When monthly report forms are received at the county office, eligibility workers enter the identification numbers of cases whose forms have been received. Additional data entry is required for forms indicating household changes. If a form is incomplete, the worker must manually prepare a notice and send it to the client.

3. Issuance

New Mexico issues all of its monthly food stamp benefits by direct mail from the central state office. ISD2 automatically generates an envelope-sized form on which a client's name and address are recorded. This form is used by a sorting machine which stuffs the form and the appropriate coupons into each envelope as well as applying a mailing label and postage to the envelope.

4. Claims Collection

New Mexico has a claims and collection system separate from ISD2. When an eligibility worker discovers an overissuance situation, the worker corrects the information in ISD2 for the relevant past period or periods and instructs the system to recompute a corrected benefit allotment amount. This computation is used to determine the amount of the overissuance. The worker then enters additional information to support the claim (e.g. cause of overpayment, whether fraud is suspected), and the information is automatically transferred from ISD2 to the claims system. The major shortcoming of this process, according to New Mexico staff, is that ISD2 only maintains historical data in the active on-line files for seven months, so the automated determination of overissuance amount can only be conveniently performed if the overissuance is discovered within that period.

Data are exchanged daily between ISD2 and the claims system. In this exchange, new claims records are passed to the claims system and information on specific recovery methods is communicated back to ISD2. ISD2 automatically adjusts issuance amounts for recoupment or other client payment. For recoupment cases, benefits recouped are passed from ISD2 to the claims system.

5. Computer Matching

ISD2 matches applicant information with a broad range of data files: SDX, BENDEX, Employment Service, Motor Vehicles, DRIPS, and food stamp history files. These matches are conducted at routine intervals in batch mode. Periodic batch matches are also performed against IRS and social security data. Discrepancies from these matches generate individual hard copy printouts that are delivered to the client's eligibility worker. There is no system tracking of match resolutions. Tracking must be done manually by staff in the local offices.

In addition to the hard copy notifications of match discrepancies, the computer match process generates additions to a cumulative "Q-File" of alert messages to the eligibility worker. This file also contains messages created in a variety of other circumstances: when an interview is scheduled, a redetermination is due, an application is pending, a case is transferred to or from another worker, etc. Although this file is intended to remind workers of outstanding tasks, its usefulness is limited by several factors. Most importantly, messages must be manually deleted from the screen; the message file is not automatically purged of items that are no longer relevant or that have been resolved. If workers are not diligent in monitoring this list, it can become very long, and loses its value in highlighting urgent work.

III. INNOVATIVE USER FUNCTIONS

The previous chapter provided a brief introduction of the Kansas, Mississippi, South Dakota and New Mexico automated systems which support the Food Stamp Program and other assistance programs. In this chapter, we focus on the major purpose of this report: identifying particularly innovative design features or functions which provide support to eligibility staff or other units of the Food Stamp Agency.

Innovative or particularly valuable functional features noted in the site visits are discussed in this chapter in six categories. The first five correspond to the five functional areas that formed the agenda for the site visit interviews: certification, monthly reporting, computer matching, issuance, and claims collection. In addition, we discovered more general program management features that support the work of eligibility staff, other program staff, and technical systems staff; these are discussed in the last section of this chapter.

It should be noted that some of the most important and helpful features of automated systems for food stamp administration are commonly found not only in the four systems reviewed in this study, but in many other states' systems. These less unusual processing features are not discussed in any detail here, because they are widely used. For example, on-line data edits help limit data entry errors, but are typical of most eligibility systems developed in the last ten years.

A. CERTIFICATION

Automated systems perform a central role in the certification process--that is, the sequence of events from receipt of an application or recertification form through eligibility determination. All four of the systems examined have automated nearly the entire certification process. More specifically, these systems are used to register program applications, store application data,

determine program eligibility, and issue notices to clients informing them of key events related to their cases.

In addition to supporting the certification process, data entered from a program application are used in other related system processes. For example, key data items are extracted from client records and matched with outside data files as part of the computer matching process. Household data are supplied to the monthly reporting process to generate report forms, to track the receipt (or non-receipt) of the forms, and to update client records so they reflect changes indicated in the monthly report forms. Similarly, data collected during certification and benefit calculation are extracted to construct a benefit issuance file, which is used to allot and reconcile issued benefits. Finally, the certification process exchanges data with the automated claims and collection function.

Particularly innovative features--and ones which user staff noted as providing valuable support--were noted in four aspects of the certification process: registering an application, entering application data, issuing notices to Food Stamp households, and producing caseload reports.

1. Registering an Application

In all four of the systems examined for this study, applications are "registered" in the system as soon as they are received. Entering key application data establishes the case on the system (which assigns a case number) and initiates the thirty-day standard of promptness for completing an application. Following applicant registration, the case is assigned (automatically on some systems) to an eligibility worker, who is then able to reference the case by an already established case number. Registering applications also allows a search on the current state-wide participation file. This process prevents multiple participation in either the same or different jurisdictions and

prevents disqualified individuals from receiving program benefits before their disqualification penalty expires.

Entering application registration data as a distinct first step in application processing is especially useful for case reopenings--that is, when a case re-applies after the household has not participated for a period of time. All four systems reviewed maintain access on their data bases to historical state-wide records of program participation, and social security numbers of all applicant household members are matched against this data base during application registration. If a match indicates previous participation, the previous case identification number can be reassigned to the current case, and information from the historical record can be used in the current application record.

Four particularly useful features of application registration were noted in the site visits: (a) direct retrieval of on-file data, (b) automated determination of expedited service status, (c) interview scheduling, and (d) capacity for clerical staff entry of narrative comments.

a. Direct Retrieval of Previous On-File Data

For applicants who have previously participated in any assistance program, the Kansas KAECSES system provides clerical staff with access to identifying information for all individuals in the re-applying case. In registering an application, Kansas clerical staff are searching a data base of historical participation records. When records are found that correspond to a person in the current application, the clerk can enter an "include this record" command, rather than having to enter all of the identifying information.

If the case was active in the last four months, KAECSES allows a short cut in registration--it does not require a search for records on all individuals in the applying household. The system allows the clerk to save the entire list of household members as part of the

application, after searching only for previous records of the head of household. Kansas county office supervisors believe these features of KAECSES save clerical staff time and effort.

b. Automatic Determination of Expedited Service Status

South Dakota's ACCESS system uses application data to automatically determine whether an applicant qualifies for expedited service. If expedited service is warranted, ACCESS places a message on the daily report to ensure prompt attention to processing the applicant's program eligibility. In cases of extreme need, ACCESS can issue benefits on the same day the application is submitted.

One presumed advantage of automatically determining expedited service is that it minimizes the chance of error. Although the frequency of mistakes by eligibility workers when determining expedited needs is unknown, the urgency of need by these cases is viewed by South Dakota staff as sufficient reason to minimize the risk of error by automating the process.

c. Free-Format Narratives used by Registration Staff

Clerical staff in Kansas are also able to record special or unusual applicant circumstances in special freely-formatted fields on the KAECSES screens used to set up the interview appointment. These fields alert eligibility intake workers of special factors related to the applicant household. This feature is particularly useful when clerical staff believe the client may be a potential security risk or otherwise disruptive to county office staff. Eligibility workers can be informed of the circumstances and are able to alert security staff when the applicant returns to be interviewed.

2. Entering Application Data and Determining Eligibility

All four of the systems covered in this report provide a facility for on-line entry of application data, and on-line determination of eligibility and benefits. Eligibility workers directly

enter data from application forms to the system; there is no need for hard copy work sheets or manual calculations. The systems perform on-line edit checks to alert workers concerning missing or contradictory information. In all four states, the definition of application data that must be completed includes "verification status" fields which are used to confirm the receipt of required accompanying documentation of applicant statements. Automated eligibility functions in all four systems relieve workers of the need to perform eligibility or benefit calculations. The systems retain on their files not only the outcome of the eligibility process, but information on the detailed household circumstances that provides the basis for the eligibility and benefit determinations. All four systems use the detailed information and the eligibility outcomes as a basis for generating notices to households, either automatically or with input from the eligibility worker.

Five important design features relating to data entry of applications and eligibility processing were noted in the site visits: (a) data entry screens that emulate the format and sequence of the hard copy application form, (b) system-controlled presentation of appropriate data entry screens, (c) on-line "calculator" screens, (d) system enforcement of verification requirements, and (e) the use of background eligibility processing.

a. Making Data Entry Screens Correspond to the Application Form

Following the intake interview, the eligibility worker assigned to the case enters application data to the system. Given the large amount of information that is collected on application forms, it is important that the data entry process be efficient. One way to promote efficient data entry by eligibility workers is to minimize the extent to which they must reformat, reorder, or recalculate information as they move it from the hard copy application to the data entry screens. This overall goal can be promoted by designing data entry screens to look, as much as possible, like the pages or "panels" of the application form. The visual design of the screen layout, the

sequence of questions, and the positioning of question text and answer blanks can be made to emulate the appearance of the hard copy form. This design feature was noted in the Kansas system; KAECSES data entry screens are formatted to replicate the page or sections of the application form from which the data are to be extracted. Kansas county office supervisors feel this feature reduces data-entry errors and saves time as workers transfer data from the form.

b. System-Controlled Presentation of Appropriate Data Entry Screens

Although application forms ask for a great deal of information, most completed application forms contain substantial blank space. Most households do not have all types of income or resources, so a simple yes/no question obviates the need for using a detailed data entry screen for that type of financial information. Similarly, information collected by individual (such as earnings) may be relevant to one household member, but not others. An efficient data entry process permits entry of basic information indicating the types of screens needed, which then serves as a basis for automated selection and sequenced presentation of the relevant screens.

The South Dakota ACCESS system provides a good example of such an efficient data entry process. ACCESS presents a screen at the beginning of application entry that poses relevant yes/no questions about each panel topic. For example, ACCESS asks the eligibility worker if the household has any job income, self-employment income, other sources of income, and various types of assets. The system then queues up the detailed data entry screens that request entry of further information relevant to the questions answered affirmatively. Screens related to questions answered in the negative are skipped entirely.

A variation on this capability is available in Kansas and Mississippi. Eligibility workers in that State can enter a four-letter mnemonic command that accesses the next screen which is needed and bypasses all intermediary screens.

Both of these features presumably reduce data entry time. The absence of such a feature contributes significantly to lengthy data entry time in New Mexico. The ISD2 system in that State requires eligibility workers to page through all screens, entering a "no" in a comment text field to indicate that they have fully considered whether there is any relevant information to be entered in that screen. This system does not possess an efficient way to access only the screens requiring data to be entered.

c. On-Line Calculator Functions

The Kansas KAECSES system provides eligibility workers with a supporting "work screen" to help them calculate computed data that are needed for eligibility processing. Although most information can be directly transferred from the application form to a data entry screen, some information must first be manipulated. For example, KAECSES requires input of countable monthly self-employment income, which requires computing total income and netting out expenses. Rather than manually calculating net countable monthly self-employment income, KAECSES provides a formatted work screen into which the income and expense components are entered. When the worksheet is processed, the net result is carried forward and inserted into the proper field of the income screen. The system then advises the worker to print the work screen to retain a hard copy of the detailed data, since the detailed input data are not stored in the system case record.

d. Tracking of Verification Resolution

All of the systems examined require workers to indicate that verification requirements have been satisfied before system eligibility tests can be passed. The Kansas system provides two levels of enforcement; one prevents eligibility approval if crucial verifications are missing, and a second level allows approval but will remind the eligibility worker at a later date that requested information has not been received. Verification codes that are missing but required to determine

eligibility result in a "hard pend" condition--that is, benefits are withheld until a code is entered indicating that the data has been satisfactorily verified. A "soft pend" condition also exists for verifications which are not essential to eligibility, but which must be verified by a set future date. The KAECSES system uses an on-line screen alert message to inform eligibility workers of the need to verify data. The alerts are not cancelled until the appropriate verification codes are entered.

This safeguard prevents benefits from accidently being issued before eligibility processing is completed. In part because of the verification requirements, Kansas county office supervisors believe that KAECSES reduces the chance of processing error and improves the quality of eligibility determination.

e. Background Eligibility Processing

Because periods of peak demand for system resources may delay system processing, the ACCESS system in South Dakota is designed to queue requests for eligibility processing. This feature, called "background" processing, allows eligibility workers to enter all the data required for eligibility determination, initiate processing, and go on to work on other cases. The time required for background eligibility processing depends on the volume of online processing. Eligibility workers have the option, however, to "rush" the transaction, keeping it out of the background queue and giving it top priority for immediate processing. Background processing provides eligibility results rapidly enough in most situations, and the use of background processing, by reducing peak interactive demand for processing resources, virtually eliminates response time problems for standard interactive functions (entry, editing, screen navigation).

One corollary feature of background processing can be viewed as something of a disadvantage. In the ACCESS system, edits are conducted in two stages. Immediate on-line editing is conducted as application information is entered, and these problems can be corrected

immediately. More complex edits that require reference to case data already on file, however, are conducted as part of background processing. As a result, when background processing is completed, eligibility workers may get back additional edit problems rather than eligibility results.

3. Notices to Households

Automated eligibility systems can organize and expedite the process of issuing notices to food stamp households and recipients of other assistance. All four of the systems we examined generate notices to households. At a minimum, they identify situations warranting a notice. They vary, however, in the extent to which worker involvement in the composition of the notice is required or allowed.

Worker involvement in preparing notices may on the one hand impose a task that could be avoided. For example, in the Kansas KAECSES system, eligibility workers must enter information on the reason for action when benefits are approved, denied, or changed. The ACCESS system has been designed to avoid requiring input from the worker; the system is programmed to analyze the difference between the latest and the previous case status, and to present text indicating the circumstantial changes which led to the action (e.g., benefit decrease, increase).

Giving workers the option to enter additional text to certain notices can be a useful feature, however. The Kansas, Mississippi, and New Mexico systems allow this option. In Kansas, workers can also select pre-formatted "general purpose notices"--essentially letters with blank spaces to be filled before the system prints and mails them. Workers use these letters for

4. Reports

The Kansas, South Dakota, Mississippi, and New Mexico systems all have the inherent capability to generate useful reports to eligibility staff that will help them in their work. Each of the systems provides eligibility workers with some kind of report or listing that identifies outstanding work needing attention. Items--often called "alerts"--on these reports are generally created by a variety of system functions: edit create edit messages, computer matches create discrepancy alerts, eligibility processing creates a message calling for worker approval (in South Dakota), etc.

One particularly valuable feature of system reports to eligibility workers was noted in the South Dakota ACCESS system: the capability to move directly from examining a report covering many cases to examining the relevant data for a specific case listed on the report. For example, in the ACCESS Daily Report, an eligibility worker may see that a particular case is listed as requiring attention due to outstanding edit problems on the application form. The eligibility worker can position the cursor next to the case number on the on-line report display, press a specific function key on the keyboard, and thus retrieve the specific screens of the application form containing the data that created the edit problem. The worker can make a necessary data correction, and switch directly back to the Daily Report. This feature allows workers to address outstanding tasks systematically without laborious steps to access and exit from different system functions through a series of menus. Furthermore, it allows workers to avoid using a printed copy of the Daily Report.

B. MONTHLY REPORTING

Automated eligibility systems are an important underpinning for the monthly reporting process. The increased volume of mailings, forms received, and eligibility processes to complete associated with monthly reporting virtually demands the support of automated systems. Many

program staff in the four states we visited viewed support for monthly reporting as the most beneficial function of their system.

Perhaps because automated support for monthly reporting is so important, we found considerable uniformity in the scope of system functions relating to monthly reporting. Moreover, the system functions supporting monthly reporting in these four states are similar to those found in most states' automated systems. These widely available functions include:

- Identifying each month the households that should be sent a monthly report form, based on a monthly reporting status code
- Printing relevant identifying information and addresses on the forms in preparation for mailing
- Maintaining status information indicating whether the form has been received or not, and if so whether it was complete, based on entries by clerical staff
- Generating warning notices and formal termination notices to households that do not file the monthly report form by preset deadlines
- Terminating eligibility if the form is not received or corrected by the final deadline

Aside from these commonly available functions, two features were noted in the site visits which are probably less commonly found in other states, and which can reduce the burden on eligibility and clerical staff still further: "quick entry" screens for recording monthly report form receipt, and system determination of monthly reporting status.

When monthly reports are returned by participants, clerical staff enter the date of receipt and, in some cases, indicate if the form was completed properly. In all four systems, monthly report receipt is entered on special screens which list the identifiers of households who were sent forms and accept entry of the form's receipt date, completeness of the form, and whether or not there were any changes in circumstances from the previous month. This approach is far faster

than a process which might require staff to call up each household record individually to enter its receipt status.

Assigning a case to monthly report status can be done automatically by comparing the circumstances of the case with the criteria established by the State Agency. Determining monthly report status implicitly saves eligibility workers time and effort. It also helps ensure that these decisions will be conducted uniformly, consistently, and accurately. Finally, automating this process provides policymakers with the potential ability to revise the criteria used to determine monthly report status, without then requiring a complete manual review of all household records to identify households that should begin to report monthly.

C. COMPUTER MATCHING

By matching the data collected from program participants and recorded in the automated eligibility files with data from other sources, Food Stamp Agencies can check the accuracy and veracity of reported information. Computer matches are conducted against a wide variety of files, in some instances as periodic comparisons with tapes from other systems, and in some instances as on-line inquiries against the data bases of other state agencies. Computer matches generate "hits" when the information on file does not match the information for the same household reported from the external data base. Investigation by the eligibility worker is then required to determine which data source is more accurate, and if necessary, when the discrepancy is resolved, to redetermine benefits for the period in question and possibly establish a claim for collection of an overissuance.

A common feature of computer matching is to screen discrepancies and to eliminate from consideration those that fall below a certain tolerance level. This discrepancy screening is widely viewed as appropriate because correcting small discrepancies may not be worth the staff time and other costs involved. Furthermore, differences in accounting periods and data definitions may

lead to some discrepancies between eligibility files and external systems which do not arise from any substantive misreporting of household information. Discrepancy screening thus serves to focus investigative attention on issues whose correction is more likely to lead to correction of eligibility or benefit errors.

Three innovative aspects of the computer match process were identified in the site visits. One set of features is designed to organize and control the tracking and resolution of match discrepancies. A second is designed to allow analysis of the cost of resolving match discrepancies, as part of an ongoing process of refining match priorities. A third feature refines the matching of earnings information against employer wage files.

1. Organizing Discrepancy Tracking and Resolution

The KAECSES system in Kansas and ACCESS in South Dakota include advanced features to focus the investigative efforts of eligibility staff and to ensure that match discrepancies are addressed.

a. Setting Differential Investigation Priorities

In addition to screening discrepancies and reporting only those that exceed predefined tolerance levels, KAECSES places differential priorities on the discrepancies found in some matches. KAECSES establishes on-line alert messages for all reported discrepancies, and attaches a "due date" to each message to indicate its urgency. These due dates are based on which match generated the discrepancy. This approach promotes eligibility staff attention to investigating discrepancies from matches generally expected to have the greatest impact on erroneous benefits issuance, and the greatest potential for savings through error correction. Messages with due dates already past can be used as a basis for exception reports to supervisors.

b. Requiring Entry of Discrepancy Resolution Results

Food stamp systems commonly provide eligibility staff with printed or on-line listings of match discrepancies that require investigation, but there is considerable variation in the extent to which systems monitor whether discrepancies have been addressed. The South Dakota ACCESS system is an example of relatively advanced tracking of match resolution.

The ACCESS match monitoring process includes two basic tools: a Verifications Outstanding report, and a Verifications Log. Both of these tools organize and monitor work arising from requirements to verify household-supplied statements on applications, as well as requirements arising from discrepancies between household-supplied information and data from external computer match files. The report lists all verifications requiring attention, the identification number of the relevant person within the household, the item requiring resolution, and the number of days until the resolution is due (or the number of days it is overdue).

The Verifications Log in ACCESS is the on-line screen to which the eligibility worker enters information about the resolution of verifications and match discrepancies. Items will continue to appear on the verifications outstanding report until resolution entries are made on the log. Resolution information entered to the log includes the specific outcome of the investigation, and if necessary information needed to establish a claim. Workers cannot simply delete discrepancy items.

2. Tracking the Cost of Discrepancy Resolution

South Dakota's automated system is designed to simplify compliance with federal regulations that require States to measure the costs and benefits of computer matching activity. This cost tracking capability was integrated into the system's computer matching subsystem. South Dakota eligibility workers enter to the Verification Log the number of minutes they spend addressing each discrepancy, as well as any direct costs associated with the task (e.g., telephone

charges, postage). The system maintains cumulative totals for time and cost, and can apply salary rates of eligibility workers to compute total cost. The Verifications Log provides a data base which can also be used to analyze the outcomes and investigations costs associated with different computer matches.

3. Wage Matches at the Employer Level

One of the difficulties in conducting useful matches of eligibility file earnings information and employer wage reporting files is that the two sources collect data in different ways, so that comparisons of earnings information are likely to produce "false discrepancies"--the appearance of divergences in the two sources' information, due not to misreporting in either source but to differences in data definition. For example, food stamp eligibility files typically contain total earnings for an individual by month, and must be compared to earnings per quarter recorded in employer wage reporting files. Wage reporting files distinguish individual earnings by specific employer, but eligibility files of most systems do not.

South Dakota is now beginning to eliminate one source of definitional discrepancies between eligibility files and employer wage files by conducting wage matches by employer. The ACCESS system screens now capture the employer ID for each source of earnings reported by a food stamp household member. This step makes it possible to match eligibility file earnings against the external file of employer-reported wages by employer. Doing so is expected to reduce the number of false discrepancies resulting from the match.

D. CLAIMS COLLECTION

The four systems examined for this study have created links between their automated eligibility systems and an automated claims system. The claims functions vary in sophistication, largely because some of the states (Kansas, Mississippi) have designed new claims subsystems within the framework of their overall automated support system, whereas others (South Dakota,

New Mexico) have linked preexisting claims systems to their new eligibility systems. In all cases, the claims functions appear adequate, although they vary in the degree of convenience they provide to users. We did not identify any features relating to establishing claims or making collections which are particularly innovative in comparison to systems used in other states. However, agency users emphasized the value and importance of automated support for their administrative functions. System users note that automated systems greatly simplify the calculation, tracking, and resolution of overpayment situations. In systems such as KAECSES, when an eligibility worker uncovers a payment error, the worker simply corrects the information on the system for the relevant month or months, and has the system recalculate the corrected benefit allotment amount.

Automated systems can also calculate the appropriate monthly recoupment amount (if recoupment is the chosen method of recovery), and subtract that amount from the recipient's monthly benefit issuance. If repayment is chosen, the system tracks the recipient's payments and maintains an accurate accounting of the outstanding balance. Finally, the system generates and readies for mailing a notice informing the client of the overpayment. In underpayment situations, a similar process takes place, although in these cases payment is made to the client and the client's benefits are increased.

Agency staff believe that providing these automated support features increases the likelihood of establishing claims and making collections. We noted one feature that appears particularly important, although perhaps not very unusual among state claims systems: structured reports or alerts to ensure that collection plans are defined for every claim that is established. In the ACCESS system, for example, when a claim is established and supervisory approval of the claim is entered, a collection record is automatically created. This process in effect creates a collection record with "missing data": the choice of collection method (recoupment, repayment).

The collection file can thus be used to generate a work agenda for collections unit staff, to ensure action on all established claims.

E. ISSUANCE

Program personnel believe that automated systems have reduced the labor required to issue food stamp benefits, whether benefits are mailed in the form of coupons or ATPs, or issued over the counter. In all cases, the benefits of automated systems are based on the creation of an issuance file containing the names, addresses, and issuance amounts for each participating household. This file can then used to generate mailing labels or as input to mailing machines which physically stuff the ATP documents or the appropriate combination of coupon booklets into envelopes. Household records are updated to indicate the generation of benefits. Alternatively, issuance files can be used as interactive data bases that can be updated through the course of a month as households present identification to receive coupons in over-the-counter transactions, or even as they make purchases in grocery stores and trigger debits against electronically-maintained balances.

Using an advanced automated system in this manner has undoubtably made States more efficient and more responsive to changes in household circumstances. Prior to the development of automated systems in the Food Stamp Program, States were typically limited to one issuance day per month. With an automated system States can issue benefits daily through a routine automated process rather than a special manual process, and are thus less strained to accommodate the expedited service cases. Declines in mail loss rates have also accompanied development of advanced automated system because eligibility workers are allowed to update client addresses up to the night before the issuance file is created. Kansas program officials believe that this capability contributed substantially to a reduction in that State's mail loss rate of sixty percent.

Finally, automated systems appear to have simplified issuance conducted on-site in county offices. Through an on-line reference to the client's participation record, an issuance clerk can determine if the client's benefits have already been issued. The issuance clerk also has access to the client's full issuance history.

Five important and relatively unusual system features were noted in the site visits which provide valuable "extra" enhancements to the issuance process: use of bar-coded issuance documents, facilities for redirecting benefits, maintenance of address histories, zip code address completion, and links to electronic benefit transfer systems.

1. Bar-Code Issuance Documents

The ISD2 system in New Mexico provides particularly convenient support for the issuance mailing process. The issuance file is used to generate envelope-sized issuance cards on which are printed a client's name, address, and a bar-code representation of the client's issuance amount. The bar-code is read by a mailing machine which selects the proper combination of coupon booklets, stuffs the card and coupon booklets into a window envelope, and posts and readies the envelope for mailing.

Food stamp coupons are thus issued with little manual effort. Once the issuance file is created, the issuance process is nearly fully automated. Moreover, after the bar-coded card is generated, an acknowledgement of the issuance is created and is transmitted back to the household record.

2. Redirecting Benefits

The KAECSES, MAVERICS, and ACCESS systems provide particularly convenient tools for responding to reports of lost, stolen, or undelivered benefits. These tools allow issuance office staff or eligibility staff to record the disposition of the originally issued benefits, and trigger the reissuance of replacement benefits in the next daily issuance process. A consolidated display

of all issuances is available, which shows each issuance and its disposition, including reasons for reissuance.

3. Maintaining Address History

The Kansas KAECSES system maintains a history of all household addresses, and the date spans for which they were applicable. This address history is an important aide to eligibility and issuance staff in determining how to respond to reports of lost, stolen, or undelivered mailed benefits. Agency staff can determine with certainty to which address a particular issuance was mailed. This information may suggest that the household should simply wait another day for the benefits to arrive, or may indicate a need for an immediate remailing and cancelling of the previous issuance when it is returned. In some circumstances, repeated mail delivery problems at a particular address may suggest the need for household pickup of benefits or mailing to an alternative address.

4. Zip Code Address Completion Package

The South Dakota ACCESS system has incorporated a commercially available software product known as FINALIST, which is used to fill in zip codes on household addresses that are input to the system without them. The package includes a zip code directory, and determines the zip code (or checks an input zip code) using the input address information. This package requires that address fields be defined carefully, so that street names, street numbers, and town names are distinct, and can be analyzed. Agency staff in South Dakota point out that having accurate and complete zip codes is one part of their strategy for limiting mailing costs; taking advantage of reduced postal rates requires zip code pre-sorting.

5. Links to EBT Systems

In New Mexico's Bernalillo County (Albuquerque), the ISD2 issuance file will soon be linked, in a demonstration project, to an electronic benefit transfer (EBT) system. Food stamp recipients participating in this demonstration will be issued magnetic-striped benefit cards that will activate terminals located at store checkout counters. The store terminals will communicate with a central computer, where recipient food stamp balances will be maintained. To process a food stamp transaction, a clerk will ring up a food stamp sale, pass the recipient's card through a store terminal, and enter the sale amount on the terminal. The terminal transmits the total to the central computer where it is compared to the recipient's available balance. The sale is authorized if the client's food stamp balance exceeds the purchase amount. The recipient's account is debited for the purchase amount and an electronic account for the retailer is credited for the purchase amount.

F. GENERAL PROGRAM MANAGEMENT AND USER CONVENIENCE FEATURES

The features of advanced automated systems that were described above each support specific Food Stamp Program functions: certification, monthly reporting, computer matching, claims collection, and issuance. In addition to those features, the ACCESS system in particular included unusual features which are likely to contribute to overall administrative efficiency and staff productivity. Six such features are explained in this section: electronic mail, on-line policy manuals, on-line organization charts, system support for analysis of caseload allocation, on-line case narratives, and on-line problem reporting and development task management.

1. Electronic Mail

The ACCESS system in South Dakota includes an electronic mail subsystem that can be used to communicate messages or memoranda among all levels of program staff.[9] This feature can be used to send individual notes (such as from one staff member to another) or to send memos to broader classes of staff (e.g., all eligibility workers in an office or district). Some mail functions allow staff to designate primary recipients of mail, as well as others who should receive copies. If staff are going to be absent from their office, they can guarantee that their mail is examined by "forwarding" it to another worker.

The South Dakota system's mail function notifies the sender when outgoing mail has been received by its recipient. This system lists a memo as "outgoing mail" until the recipient displays the memo on his or her screen. The sender can thus confirm that the mail was displayed. When a person has received mail but not yet displayed it, a "mail waiting" message appears on the menu screen.

South Dakota program administrators note that an electronic mail function is particularly useful for disseminating changes in program policy. Policymakers can announce policy changes to the program staff statewide by simply "mailing" a notice through the automated system.

2. On-Line Policy Manual and Indexed Reference

South Dakota ACCESS also contains an electronic version of the State policy manual which can be accessed on-line from any terminal in the system. Users can use the on-line policy manual as a "help" function; they can refer directly to a relevant portion of the policy text by entering a "go to policy" command with the cursor positioned at a data field relevant to the policy question. For example, if the eligibility worker references the policy manual from the motor vehicle screen, the system references the policy section most relevant to motor vehicles. The on-

[9]Kansas staff also have access to an electronic mail function from their terminals.

line policy manual text includes references to the ACCESS user manual and its specific sections that describe the data elements relevant to a particular policy segment. The user can switch to these sections by moving the cursor to the desired policy citation line or to the line of a desired keyword, and pressing the enter key.

As with the electronic mail capacity, South Dakota program administrators believe that an on-line policy manual is very helpful for implementing changes in program policy. Rather than distributing addenda or errata which may be misplaced or ignored, policymakers can notify staff of the changes through the electronic mail function and revise the relevant sections of the on-line manual. This ensures that when staff refer to the policy manual, they are always using the latest version of the manual.

3. On-Line Organization Chart

Included in the ACCESS report function in South Dakota is an on-line facility to maintain and display an organizational chart of the entire Department of Social Services. This organizational chart identifies all staff and their roles or titles, and is updated as necessary by the Department's Personnel Office. The information serves as a basis for other system functions. For example, it is used by the Electronic Mail function when memoranda are addressed to staff in selected titles or selected office locations.

4. Workload Allocation Monitoring

South Dakota's ACCESS system contains a subsystem that helps program managers evaluate how caseloads are allocated among eligibility workers and work units. Each system screen or function that can be accessed by workers is assigned a weight (determined somewhat subjectively) which is supposed to reflect the extent to which the presence of data on this screen contributes to case complexity (e.g., job income might complicate the case more than unemployment insurance benefits). The system records the number of times each particular

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of interactions with the client, and is intended to preserve the integrity of the narrative record as a basis for fair hearing preparations or internal case review.

Caseworkers and supervisors in South Dakota find the on-line narrative capability of the automated system very useful. It allows supervisors or program managers to examine, at their own terminals, not only structured household and financial data, but also the history of dealings with the household. This information is most often used by supervisory or management staff in cases of agency-client dispute.

6. On-Line Problem Reporting and Task Management System

Complex systems typically are in a state of continuous development and refinement. In early stages of operation, users identify software bugs, design flaws, and functional inconsistencies or gaps. Later, as users become more experienced and aware of the system's potential capabilities, they often suggest ways in which functions can be revised or extended to provide additional operational support. An important management concern, therefore, is to provide an efficient channel for the communication of problem reports and enhancement suggestions, and a systematic process for tracking the status of all such items through review, priority setting, functional design, software specification, programming, testing, and implementation.

Systems staff in South Dakota have developed a sophisticated problem reporting and task tracking system to address this need. When a system problem is identified, a user presses a function key that calls up a special screen on which the user enters text describing the problem. At the same time, the system assigns a task number to the problem, captures a record of the screen and the data that were displayed when the user noticed the problem, and saves other key data from the case record. This package of information is then available for on-line review by systems staff who are assigned to analyze and resolve the problem.

Each problem report or enhancement suggestion becomes a task in the ACCESS task management system (TMS). Tasks may be grouped and organized in "task trees" to ensure that relationships among problems are recorded and considered as work is assigned and completed. The TMS is also used to record who was assigned to each stage of work on a task (analysis, programming, testing, training, and implementation certification), and when they were completed. This data base can thus be used to generate regular reports on outstanding work, and the workload assigned to each systems analyst and programmer.

The TMS also organizes the process by which new software--corrections to system problems as well as system enhancements--are implemented. New versions of software modules must go through a formal certification process, with final review and sign-off by program or policy staff rather than technical staff. The TMS ensures that software changes are made only when they have gone through this process.

IV. SYSTEM COSTS AND PERCEIVED BENEFITS

The previous chapter identified some of the specific user features that make the ACCESS, KAECSES, MAVERICS, and ISD2 systems examples of advanced automation for Food Stamp Program administration. Emphasis was placed in that chapter on describing these functions and pointing out how they support the work of eligibility workers and other staff. Chapter III thus provides some answers to one of the broad questions posed in this study: In what ways are advanced systems particularly innovative? There remains, of course, the question whether systems innovation is cost-effective.

Only limited information about system costs and benefits can be provided in this study. Rigorous analysis of the relative costs and benefits of advanced automated systems for food stamp administration is beyond the scope of this limited investigation. Moreover, given the inherent difficulties in measuring the impact of innovation and even in measuring development costs consistently and accurately, it is not clear that rigorous analysis is possible.[10] It is possible, however, to provide some general information about systems development costs and their variation across states, and at least to identify the nature of system benefits perceived by system users in the four states we studied. Section A of this chapter reviews available data on the costs the four states incurred to develop and implement their present systems, and offers some explanations of the variations in reported costs.[11] Section B summarizes user perceptions of system effects on their agencies.

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[10]The difficulties of measuring benefits and costs of automation were noted recently in U.S. General Accounting Office, "Food Stamp Automation: Some Benefits Achieved; Federal incentive Funding No Longer Needed," January 1990.

[11]Costs discussed in this chapter are for the total development effort, and thus include costs charged not only to the Food Stamp Program but to other assistance programs supported by these highly integrated systems.

A. SYSTEM DEVELOPMENT COST

System development costs include a considerable range of resources over the complete development cycle from initial design through final testing and training. Costs are incurred for labor, including in-house agency staff as well as outside contractors, for computer equipment and data processing charges, and for a variety of other non-labor costs such as travel, materials, and supplies. All of these costs over the full period of development should be considered in an attempt to estimate the magnitude of systems costs.

Although all four of the states studied here maintained and made available quite extensive and documented information on development costs, there remain inevitable constraints on the precision with which systems development costs can be estimated and compared. Most importantly, reported costs are likely to depend heavily on the status of systems use and hardware facilities before the development of the system began, so reported development costs present inconsistent measures of the total cost of achieving a current level of automated support. The availability of major state data processing facilities with adequate capacity to support the new system, for example, might obviate the need for major hardware purchases dedicated to the new system, and result in lower reported costs than in states where major hardware purchases were a key part of the system development plan. There are also differences in how states account for and report system development costs which make it difficult to compare costs across states, particularly with regard to components of cost. For example, training costs may be identified as a specific item by some states, but lumped in with development labor costs in other states. The time spent by regular ongoing staff such as field operations supervisors on helping to design, test, and implement new systems may be systematically charged to the systems development effort in some states but not others. It is also clear that the four systems have important functional differences and to varying degrees incorporate previously existing software. Adjusting cost estimates to account for systems' functional scope is impossible, because no state breaks down

its development costs by system component. This limited study had to be based on readily available (and previously reported) cost information, rather than imposing on the participating states a request for retrieval of detailed accounting records.

The intent of this section is therefore not to develop precise or detailed measures of the cost of overall systems development or of particular systems features or functions. Instead, the analysis presented in this chapter attempts to estimate at a more general level the approximate magnitude of resources that were required to develop the four systems, and to identify factors that could explain the observed variation in reported costs.

The estimated total cost of designing, developing, and implementing the automated eligibility systems examined in this report averaged about $11.9 million, and ranged from about $3 million for South Dakota's ACCESS system to $22 million for the KAECSES system in Kansas. The costs of the ISD2 and MAVERICS systems in New Mexico and Mississippi, respectively, were about $11 million each. These cost estimates refer to the total development cost that would be allocated to the various assistance programs served by the system. Given the integrated manner in which these systems support the various assistance programs, separate estimates of development cost by assistance program are of less interest. These estimates of total system development cost, and a breakdown of total costs into major components, are summarized in Table IV.1.

Non-equipment components--primarily composed of salaries, contractor costs, and data processing--account for most of overall system cost development cost in all four sites, although there is a rather broad range in how dominant these costs are. At one extreme, in New Mexico over 90 percent of development cost was incurred for non-equipment costs, and less than ten percent for hardware. In Mississippi and South Dakota, non-equipment costs accounted for 68 and 72 percent of total cost. In Kansas, very high equipment costs were reported, so non-equipment items accounted for only 51 percent of total cost. However, Kansas was the only one

TABLE IV.1

SYSTEM DEVELOPMENT COST

	Kansas	South Dakota	Mississippi	New Mexico
Average Number of Food Stamp Households (FY 1989)	49,226	16,958	171,501	49,368
Number of Counties	105	46	84	33
Number of County Offices	107	45	93	25
System Development Costs				
Non-Equipment Components				
Salaries & Wages	$3,802,545	$833,921	$1,199,606	$3,023,593
Data Processing[a]	$2,700,853	$946,337	$2,290,157	$2,467,092
Training	$860,844	$100,000	$327,165	d
Other[b]	$607,921	$225,000	$763,485	$598,498
Subtotal	$7,972,163	$2,105,258	$4,580,313	$6,089,183
Contractor Cost	$3,249,664	$122,743	$2,835,433	$4,302,691
Non-Equipment Subtotal	$11,221,827	$2,228,001	$7,415,746	$10,391,864
Equipment	$10,854,224	$859,189	$3,489,764	$1,036,383
TOTAL DEVELOPMENT COSTS	$22,076,051	$3,087,190	$10,905,510	$11,428,247

SOURCE: Cost data provided by State Agency Staff.

[a]Includes CPU, printing, communications, etc.
[b]Includes travel and supplies.
[c]Includes all hardward purchases.
[d]Included in salaries and wages.

of the four states which purchased a new mainframe computer and peripherals and attributed the entire cost of this investment to its new system. If the cost of KAECSES equipment is adjusted for this major purchase--which accounted for $8.7 million of its total equipment costs--Kansas equipment costs then come within the range experienced in the other three states ($2.1 million for Kansas equipment, compared to an average of $1.8 million for the other three states).

Although there is substantial variance in the development costs for these four systems, several factors can be identified which explain the large differences shown in Table IV.1: the system's functional scope and the degree to which an adapted system provided the basis for the full system, the size of the design and development team, and the scale and dispersion of program operations. It is impossible to determine exactly how much each of these factors affected development costs, but they do provide some plausible reasons for the pattern of relative costs.

1. System Scope and Extent of Required Development

Differences in functional scope, and the extent to which local resources were used to develop system functions, provide some explanation for the observed patterns of development costs. The relatively high cost of KAECSES, even when its hardware cost is adjusted, may be explained by the degree to which Kansas staff had to adapt the system they imported, and have expanded its functional scope. Kansas adopted the Arizona AZTECS system before it had been implemented and any "shakedown" of it had occurred; the result was a need for fairly intensive design scrutiny as well as an intense period of debugging. Kansas staff reported that there were over 600 problem reports submitted and not yet resolved by the time the pilot implementation was begun (although not all required system changes). Furthermore, systems staff in Kansas had to add major functions which were not included in the imported Arizona system. Eligibility determination, necessary data collection and editing, and the links to issuance functions had to be developed for Medicaid and state-funded medical assistance programs, which were not

included in AZTECS. In addition, Kansas developed and incorporated into KAECSES a full child support enforcement system. The effects of the major adaptations that Kansas had to undertake can be seen in the resulting development schedule; design review, external design, software development and testing leading up to pilot implementation extended over 22 months.

South Dakota, in contrast, adopted its ACCESS system from Vermont at a time when ACCESS had already been operating for several years. Although South Dakota has substantially adapted ACCESS to meet its needs and added important design enhancements, it began with a system that was considerably closer to meeting at least its immediate needs than was true in Kansas. South Dakota proceeded from design to pilot implementation in only 11 months.

New Mexico developed its ISD2 system without benefit of an externally developed adaptable system. Although the ISD2 system is not as functionally comprehensive and does not provide as many user tools as the systems in the other states, New Mexico's effort clearly did not have the cost-saving advantages gained in the other states from adopting other states' systems.

Mississippi's system is based on the same original model as the Kansas system, but Mississippi acquired an implemented and tested version of the software from a state that had more experience with the system. This factor probably helped Mississippi avoid some of the problems Kansas encountered, although other factors tended to increase costs, as pointed out below.

2. Size and Complexity of Development Team

The four states involved in this study illustrate four different relationships between the responsible state agency and outside contractors assisting with system development, and the nature of these relationships probably affected the ultimate cost of their systems. At one extreme, South Dakota engaged as a contractor a single person who had worked as a lead technical systems analyst in the ACCESS development effort in Vermont. With this single

individual providing technical and applications guidance, the State agency staff acted as the primary development team. In Kansas, a team of analysts and programmers from the firm that had designed and developed the Arizona system led the development effort, but worked in close cooperation with Kansas state staff. Kansas made a concerted effort to create an in-house core design team made up of reassigned field staff, to ensure that the extensive design and redesign work met user needs; although this approach seems to have paid off in terms of user satisfaction, it probably also contributed to the relatively high development cost. A contractor team also worked with state agency staff in Mississippi, but the contractor was not the firm which had developed the base system; this may have added to the complexity of Mississippi's design and development process.

In New Mexico, development costs may have been affected by the relationship between the State Agency and the outside contractor who developed ISD2. The original development was performed entirely by contractor staff, with very little involvement of staff from the New Mexico General Services agency that had formal responsibility for taking over system maintenance and operations. The initial development effort thus did not benefit from participation of state staff (who in most states have lower salary levels than contractor staff). The lack of involvement of state staff probably also impeded enhancement of the system after its initial implementation.

3. Scale and Dispersion of Program Operations

System development costs are also likely to be affected by the scale and physical dispersion of the agency that will use the system and of the caseload it serves. Several effects are possible. On the one hand, larger agencies serving larger caseloads might be expected to incur higher development costs, other things being equal. A higher equipment component of total cost might be expected, for functionally comparable systems, simply because of the need for more terminals, communications equipment, and processing capacity. Larger agencies are also usually

organizationally more complex, which may increase development costs by complicating the processes of reaching consensus on design features and involving users in testing.

If development costs are standardized for caseload size, however, the relative cost of development in larger agencies might be expected to be lower than in smaller agencies. For functionally comparable systems, the extent of much of the design and development work is insensitive to the number of households whose eligibility will be determined or benefits issued. Cost per household might thus be expected to be lower in larger agencies.

Finally, the dispersion of the caseload across agency locations could be expected to affect development costs. For a given total caseload size, equipments costs could be expected to be higher if the caseload is thinly dispersed over a large number of office locations than if it is concentrated in few offices, because of the fixed costs for communications equipment, installation, and user training in each location.

Although precise estimates of the significance of these factors in the four states we have studied are not possible, there is some indication that they may help to explain the pattern of development costs, as shown in Table IV.2. Mississippi, with its significantly larger food stamp caseload, can be viewed as having invested the least per household in its new system. Kansas and South Dakota have more widely dispersed caseloads, as measured by their average caseload per office, than either Mississippi or New Mexico; it is thus not surprising that Kansas and South Dakota equipment costs per household are more than twice what they are in the other two states.[12] The cost of developing the systems described in this report can also be considered in the context of the overall cost of administering the programs these systems support. Total FY 1988 administrative costs for the major programs supported by these eligibility systems--Food

[12]For this comparison,equipment costs for Kansas do not include the purchase of the central mainframe, and thus reflect more closely the kinds of equipment costs recognized in the other states.

TABLE IV.2

COMPARISON OF DEVELOPMENT COSTS TO SCALE OF OPERATIONS

Measure	Kansas (KAECSES)	South Dakota (ACCESS)	Mississippi (MAVERICS)	New Mexico (ISD2)
Approximate Number Statewide Food Stamp Households (1989)	49,226	16,958	171,501	49,368
Number of County Offices	107	45	93	30
Average Caseload per Office (Households)	460	376	1,844	1,645
DEVELOPMENT COSTS				
Non-Equipment				
Per Household	$227.97	$131.38	$43.24	$210.50
Per Office	$104,877	$49,511	$79,739	$346,396
Equipment				
Per Household	$220.50 ($43.76)[a]	$50.67	$20.35	$20.99
Per Office	$101,441 ($20,133)[a]	$19,093	$37,524	$34,546
Total				
Per Household	$448.47 ($271.73)[a]	$182.05	$63.59	$231.49
Per Office	$206,318 ($125,010)[a]	$68,604	$117,263	$380,942

SOURCE: Cost and caseload data supplied by State Food Stamp Agencies.

[a]Reflects subtraction of Kansas mainframe purchase.

Stamps, AFDC, and Medicaid--were approximately $43 million in Kansas, $15 million in South Dakota, $55 million in Mississippi, and $41 million in New Mexico.[13] If total development costs are amortized over five years, the annual development cost constitutes about 6.1 percent of annual administrative costs in Kansas, 4.2 percent in South Dakota, 4.0 percent in Mississippi, and 5.6 percent in New Mexico.[14]

B. PERCEIVED SYSTEM EFFECTS ON PROGRAM ADMINISTRATION

In the four states visited for this study, staff interviewed at all agency levels agree that the automated systems now in use are a clear improvement over their agencies' mode of operation using earlier-generation systems. Our interest in this study, however, was to identify the particular ways in which these more advanced systems have affected agency functions from the staff perspective. The discussions with local and central office staff revealed a variety of perspectives concerning system effects on program operations. This section discusses staff perceptions of system effects on the roles and required number of line staff, methods of staff supervision, the accuracy of case-related actions, and management control and flexibility. Although some perceptions of system effects were expressed in quantitative estimates, for the most part the study was only able to obtain qualitative descriptions of the type and direction of the effects that the new systems have had.

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[13]Total administrative costs are estimated from the most recent available data. AFDC FY 1988 Total Administrative Costs are as reported in U.S. House of Representatives (1989). Total FY 1988 Medicaid Administrative Costs are based on HCFA (1989). Food Stamp Administrative Costs are as provided by the Food and Nutrition Service.

[14]This computation for Kansas reflects the deletion of the cost of the new mainframe computer, as described earlier in the text.

1. Roles and Required Numbers of Line Staff

Agency staff identified four areas in which their automated systems have affected line staff: greater incentives to use generic staff; changes in the demands placed on eligibility workers and supporting clerical staff; effects on staff productivity and required staffing levels; and effects on line staff's ability to monitor their caseloads.

a. Increased Emphasis on Generic Eligibility Workers

Most State Agency staff interviewed on these issues perceive their advanced systems as promoting the use of generic eligibility workers--staff who are responsible for data collection and eligibility determination for all assistance programs. Before these advanced systems were implemented, several of these states had separate computer systems for the AFDC and Food Stamp Programs, and either separate systems (or no automated support) for determining eligibility in state medical programs. In this context, some agencies found it advantageous to have some eligibility workers handle cases that participated only in food stamps, other workers (usually more experienced) to handle combination food stamp/AFDC cases, and sometimes another group of workers to handle state medical assistance programs.

The KAECSES, ACCESS, MAVERICS, and ISD2 systems, however, shift incentives in favor of making all eligibility worker positions generic. These systems provide integrated data collection and eligibility processing for food stamps and AFDC, so the process of taking applications and initiating automated eligibility processing is less distinct for food stamp only and combined households. For households participating in food stamps and state medical programs, if the latter programs are integrated in the system as well (as is true in Kansas and will be soon in South Dakota) there is a further incentive to have generic staff handle both programs.

The shift to greater use of generic workers, however, is also subject to counterpressures described by state staff. During the same period that these systems were being developed and

implemented, new categories of federally- and state-funded medical assistance eligibility were created, which placed a premium on having at least some eligibility workers who thoroughly understood the subtleties of the various sets of eligibility requirements, particularly if they were not yet incorporated into the system with the same degree of automated eligibility determination as for food stamps and AFDC. South Dakota state staff particularly described the resulting pressures to maintain specialized eligibility staff for these programs, the difficulty of doing so particularly in small local offices where small caseloads cannot justify such specialization, and the resulting importance of pushing ahead to provide the same level of automated eligibility support for these newer programs as for food stamps and AFDC.

The net effect of the advanced systems, it appears, will be to promote use of generic workers, and most staff viewed this as beneficial. Generic workers are particularly useful in small offices without a large enough caseload to support several specialized workers. They provide better client service by their ability to respond more directly to client needs and questions about all programs. Use of generic workers provides county office supervisors with added flexibility to respond to changes in caseload participation patterns or cycles. Although specialization can be viewed as promoting more acute understanding of each program, or alternatively of allowing less experienced staff to be assigned to narrower program responsibilities, some respondents felt that access to an automated eligibility system reduces the importance of these factors.

b. Demands on Eligibility Workers and Clerical Staff

Introduction of the advanced systems has altered the content of both eligibility worker and clerical positions, and has changed the pressures on staff in both positions. Eligibility workers' jobs have changed in two respects noted by agency staff. On the one hand, they have been largely relieved of the burden of performing manual calculations to determine eligibility and benefits; their tasks with relation to each case now focus more on ensuring the collection of

accurate household information. On the other hand, respondents pointed out that it is now important that eligibility workers be comfortable using computer terminals, and have adequate keyboard entry skills. Their jobs could thus be described as having been "stretched": workers now work with a powerful tool that allows them to "manage" the eligibility process rather than performing all of its detailed steps, but at the same time they must have some skills which in the past were widely viewed as appropriate in clerical positions.

Not surprisingly, this two-part change in the eligibility worker role evoked diverging perceptions of the net effect of these systems on eligibility workers' services to clients. One State Agency administrator, for example, feels that the advanced system has improved client service by relieving workers of time-consuming detailed tasks such as benefit computation and notice issuance, and allowing them to focus on their interactions with the client. Conversely, a county office supervisor felt client services had worsened, and that automated systems push eligibility workers into technician roles and away from client support. This supervisor went on to note that the demands of the system had forced her to hire workers with good typing skills instead of good people skills.

The roles of clerical staff have also changed with the introduction of the advanced automated systems. Respondents in all four states noted that the focus of clerical staff jobs has shifted away from filing, typing, and other secretarial duties to tasks involving data entry and retrieval. Clerical staff, for example, use the systems to screen applicants at intake, conduct applicant match searches, set up appointments, and maintain data on receipt of monthly report forms. Most respondents regard these changes as positive because the clerical staff contribute more to the substantive intake and ongoing certification processes. Some respondents viewed the introduction of their systems as blurring the distinction between clerical and eligibility worker activities, as clerical workers have had to develop some of the same system user skills as eligibility

workers, although the latter must still develop an understanding of program rules which the clerical staff need not master.

Respondents also noted that use of the advanced automated systems increases certain pressures on both eligibility workers and clerical staff. One county supervisor described an older eligibility worker who could not adjust to the required computer skills and left the agency. Other respondents noted that the new systems create an inexorable agenda of case actions that cannot be deferred; the systems constantly call to their attention--and to the attention of their supervisors--outstanding actions that must be taken to clear edit problems, resolve verification issues or computer matches discrepancies, approve eligibility results, etc. Under the older systems, a worker might simply delay an action if overwhelmed with work, but the newer systems impose tighter pressures that can less easily be sidestepped. Similar pressures are exerted on clerical staff; monthly report forms, for example, must be entered to the system as they are received. For the most part, respondents viewed these pressures as inherent in creating a more reliable process, and felt that staff welcome the clearer responsibilities.

c. Staff Productivity and Staffing Levels

Respondents most commonly felt that although advanced automated systems have improved worker productivity, it is not necessarily possible to chart the effect as a clear decline in overall staffing levels. One state office administrator, for example, noted that the new system allowed an increase in average caseloads per eligibility worker of 10-20 percent, but that other factors prevented actual reductions in staff. Efficiency gains were largely offset by increased caseloads and the expanded number of medical programs. Other administrators reached similar conclusions, adding that their automated system eased excessive caseworker workloads brought on by pre-existing staff shortages.

Some respondents noted ways in which advanced systems can increase demand for line staff either by expanding tasks they must perform, or even by reducing productivity. For example, one county office supervisor noted that expansion of computer match capability, and system features which require investigation of every discrepancy and entry of results, increase the time that eligibility workers must spend on computer match tasks. A county office supervisor in another state pointed out that because workers rely heavily on the system for all their work, and the system is available for their on-line functions only during weekday work hours, county office staff no longer work during weekends and evenings as before when workload is heavy. As a result, less work gets done during the typical week.

d. Caseload Monitoring

The four systems we examined provide eligibility staff with on-line or hardcopy reports that help them organize their work. Workers receive reports that list specific cases requiring specific types of attention (e.g., outstanding verifications, outstanding edits, eligibility results needing approval). Listings are produced of upcoming work: cases soon due for recertification and intake appointments, for example. County office staff generally view the information reporting features of automated systems as beneficial to eligibility workers. Worker time is better organized, workers are better prepared for events affecting their cases, and client service is generally improved. None of the respondents had any negative comments about the effect of automated systems on caseload monitoring.

2. Methods of Staff Supervision and Management

Automated systems offer enormous potential as a management device, which program supervisors are only beginning to use. Several specific features of the four systems covered in this report are examples of ways in which data from system files can help managers and supervisors monitor the performance of their staffs and the dynamics of their caseloads. The *ACCESS*

system in South Dakota can determine caseload complexity by assigning weights to various system functions, and can help managers distribute caseloads among eligibility workers. The KAECSES system in Kansas is used to select cases with the characteristics identified in an error-prone profile for supervisory review. ACCESS provides on-line statistical reports that can be displayed by supervisory and management staff at any level of aggregation from an individual worker's caseload to the whole state.

Program staff feel that these features provide them with valuable management tools. County office supervisors indicated they regularly monitor reports on eligibility worker activity and assist eligibility workers who are falling behind.

3. Accuracy of Case Actions

State and county office staff offered their views on three specific aspects of the accuracy of case actions: effects on client error rates, agency error rates, and the rate of claims collection.

a. System Effects on Client Error Rates

Although this study could produce no clear measures of the effects of automated systems on client error, several respondents expressed the view that client errors are prevented by some system features. Several South Dakota staff, for example, believe that the capability of intake workers to inquire directly to employer wage files or motor vehicle files during an intake interview discourages applicant misreporting. The evidence such system capabilities give of eligibility staff's ability to tap data from other sources, they believe, gives applicants the impression that misstatements on their part will be discovered. The ability to inquire directly to historical files of AFDC and food stamp participation, as well as outside computer match files, helps eligibility staff resolve questions about applications before the applicant leaves the interview, which avoids errors and reduces the time required to complete the eligibility process.

b. System Effects on Agency Error Rates

Although respondents generally believe that automated eligibility determination helps to avoid worker errors, there is no clear or simple evidence that would demonstrate declines in error rates following implementation of advanced automated systems. Agency error rates in South Dakota have increased since its system was implemented, although program administrators attribute the rise to other factors (e.g., policy changes requiring more types of data to be verified). Kansas program administrators note a long-term decline in that State's agency errors but are unsure what effect their system has had on the trend. Mississippi's food stamp error rate has decreased (due in part to greater use of generic workers, according to administrators) while at the same time their AFDC error rate has increased. New Mexico's agency error rate has increased since introduction of the ISD2 system, although the effect of the system on the measure is unknown.

c. System Effects on Claims Collections

It is difficult to estimate the effects of automated systems on claims collections. Respondents generally believe that their automated systems increase the amount of collections, but by an indeterminate amount. Because claims are established on an automated system at the county office, and are then directly accessible by central claims unit staff, communications are simplified and the initiation of collections action is more systematic, which claims staff believe should improve collections rates.

The automatic recoupment feature of these automated systems is also regarded as potentially increasing the amount of collections. Claims unit respondents note that this feature improves the accuracy of collections, and reduces the effort required to account for and report the claim.

Finally, the automated systems are believed to have increased the value of collected claims by increasing the number of overissuance errors that are identified through computer matching activities, and can be corrected through the claims process (or simply prevented from continuing). There is no data readily available on the number of claims established as a result of computer matching, but claims unit staffs expressed the view that this is a positive contribution of their systems.

4. Management Control and Flexibility

Although advanced automated systems provide powerful tools, they also bind line, supervisory, and management staff to the use of these tools, which in turn imposes some degree of inflexibility in the deployment of resources and policy development and implementation. This recognition of some of the costs of advanced automation was most clearly described in South Dakota, where the ACCESS system has provided experience with some of the most advanced features discovered in this study.

One example of a kind of inflexibility associated with advanced systems is the increased difficulty of reassigning staff. Since all eligibility workers need constant access to a computer terminal, preparations for adjustments in local office staff must always include attention to ordering necessary hardware, including in some instances expanding communications port capacities on the mainframe computer, and allowing adequate advance time for hardware installations.

The deployment of line staff also requires more preparation now because of the very specialized training that eligibility staff must go through to learn the use of the automated system. In earlier times, eligibility staff might be trained formally in a standardized state training program if resources were available, but they could also if necessary begin work in a local office and receive on-the-job training and coaching from local office supervisors. Learning the use of an

advanced system such as ACCESS (or others), however, requires an intensive, structured training program, and thus increases the up-front cost and delay in getting new eligibility staff into a local office.

Finally, South Dakota state staff noted that developing and implementing new policy has become more complex because of the ACCESS system, and the same can certainly be said of other systems that automate subtle details of eligibility and benefit determination. The agency must develop among its program staff the expertise to anticipate how new eligibility rules will be incorporated into the automated system. The schedule for developing and promulgating eligibility rules changes must allow adequate time for specification, programming, and testing of systems changes. State staff pointed out that before the advent of highly automated eligibility processing, new policy could be more rapidly promulgated--although often with less confidence than is possible today that case actions would promptly and accurately reflect the new policy.

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