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THE PROJECT ON RELATIVE EFFECTIVENESS OF SOCIAL SERVICES IN MINNESOTA - FINDINGS OF THE ~~THIRD~~ 3rd YEAR

B. Allen Benn, et al

Minnesota Department of Public Welfare

Prepared for:

Social and Rehabilitation Service
Unco, Incorporated

1 September 1973

SIGNIFICANT FINDINGS FOR PRACTITIONERS, ADMINISTRATORS, AND POLICYMAKERS

The Goal-Oriented Social Services System (GOSSS), a set of concepts and procedures developed by HEW, was tested as a vehicle for gathering data that could be used in making cost-effectiveness analyses. The tool for calculating cost-effectiveness ratios was the Relative Cost-Effectiveness Model (RCEM), a mathematical model whose usability on social services data has been under scrutiny throughout the project's three years. Utilization has been an important concern, especially during the third year.

The Experience of Using GOSSS

The goal-subgoal structure found in the draft federal material proved to be unusable by the social workers. We replaced this material with a four-dimensional structure (page 3-5 and Table 3.2) which the workers found much more acceptable. The GOSSS list of barriers, found to be too lengthy, was replaced by a shorter, but too general, list (Appendix B, page B-5). The primary client concept, as we understood it, was extremely troublesome (Appendix B, pages B-2 through B-5). See Appendix B generally for places where the GOSSS structure needs improvement.

Measuring Effectiveness of Service

For most social service programs, measuring benefit to the client in absolute terms (e.g., in dollars) is out of the question. Therefore, the technique consists in assigning each case to a category describing its outcome, then using the RCEM to generate the weights that will represent the values of the various outcome categories relative to one another. Correlational analysis was applied to three kinds of outcome categories, in the hope that the first kind would be found adequate for general use: (1) outcome categories derived from the four-dimensional goal structure, and hence applicable to any service (called service-generic outcomes); (2) outcome categories tailored to a specific service, such as child

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A 3-year project to demonstrate the applicability of the mathematical Relative Cost-Effectiveness Model (RCEM) to the social services provided by public welfare departments. Time reports of 1682 welfare cases were used to estimate the cost of services to each case. Various methods of measuring case outcome were tried and compared with one another, using cases in five major service areas. During the third year, the RCEM was applied to the concepts of the Goal-Oriented Social Services System (GOSSS).

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THE PROJECT ON RELATIVE EFFECTIVENESS OF SOCIAL SERVICES IN MINNESOTA:

FINDINGS OF THE THIRD YEAR

September 1, 1973

This report covers the final year of a project supported by a grant from the Social and Rehabilitation Service, Department of Health, Education, and Welfare. The grant, authorized by Title XI, Section 1115 of the Social Security Act, was designated by the number 11-57111/5-03.

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ABSTRACT

PROJECT ON RELATIVE EFFECTIVENESS OF
SOCIAL SERVICES:
THIRD YEAR

September 1, 1973

Section 1115 grant #11-P-57111/5-03
Grantee: Minnesota Department of Public Welfare
Contractor: Unco, Inc., of Washington, D. C.
Principal Authors: B. Allen Benn, PhD (Unco)
Barbara Wickberg (Minnesota)

The objective was to test the applicability of the Relative Cost-Effectiveness Model, a mathematical model developed in another human service area, to public welfare social services. During the third year, the RCEM was applied to the concepts of the Goal-Oriented Social Services System (GOSSS).

Thirty social workers in two county welfare departments reported services given and amount of time spent on each of 1682 cases. These time reports were used to estimate the cost of service to each case. Various methods of measuring case outcome (so that service effectiveness could be assessed) were tried and compared with one another, using cases in five major service areas.

In the area of employment-related services, a generic outcome scale was found to be acceptable, but in the other four areas scrutinized (child protection, unmarried parents services, mental health services, and mental retardation services) it was found necessary to use outcome measures tailored specifically to the service area under study. The cost of worker-provided services per hour of interview time was estimated to be $46, taking into account all appropriate overhead and other factors. Cost-effectiveness of employment-related services and of child protective services was found to be related to the presence of an agreed-upon goal. Problems in the data on purchased services and small sample sizes in groups of closed cases precluded the making of extensive cost-effectiveness analyses.

Index Terms Assigned:

Comparison; cost analysis; criteria; effectiveness measures; evaluate; protective services; social welfare services; social workers; time measures.

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Chapter 1

INTRODUCTION AND SUMMARY

In April of 1970, representatives of the Office of Planning and Evaluation of the Social and Rehabilitation Service approached the Minnesota Department of Public Welfare about the possibility of participating in a project on evaluating the effectiveness of social services. Unco, Inc., a Washington-based consulting firm, had devised a method of making cost-effectiveness comparisons with the kinds of data typically available from human service programs, and had demonstrated the technique in a study of the Job Corps. Now HEW wanted to test its applicability to public welfare social services. SRS proposed to ask several states to participate in the project, hoping thereby to make possible some cost-effectiveness comparisons among various patterns of organization and administration. Minnesota was invited to serve as the "lead" state, the state which would work most closely with Unco on the task of adapting Unco's invention, the Relative Cost-Effectiveness Model (RCEM), to public welfare.

The Minnesota agency, with a long history of interest in evaluating the effectiveness of social services and especially in making such evaluations routinely available to administrators, perceived the proposed project as a means to that long-desired end. The agency agreed to participate, and assigned a senior research analyst from its staff to work full time on the project.

The project was planned at first to last one year. Subsequently, it was continued through a second year which was methodologically similar to the first, and then through a third, which was entirely different in methods and thrust. This report deals with the third and final year of the project,

and only with the Minnesota portion. In the interest of clarity, the report includes brief descriptions of the first two years. These appear below, with references to the detailed reports.

It should be noted that though the earlier reports were by Unco, this report is a joint effort in which the Minnesota agency is the responsible publisher. We believe this is appropriate, in that future development of project findings and materials will be the agency's responsibility.

The First Year

The purpose of the project's first year was to demonstrate the applicability of Unco's Relative Cost-Effectiveness Model (RCEM) to the social services provided by public welfare departments. To provide content to the demonstration, three kinds of services were selected for study: child protective services, employment services provided by welfare departments, and family planning services. These were chosen from the services which were mandatory at that time under Title IV-A of the Social Security Act (AFDC).

The decision to use the three services was made jointly by SRS, Unco, Minnesota, and the other two participating government units: Washington State and the District of Columbia.

During this part of the project, a number of substantive findings came out relative to the specific services. It should be remembered, however, that the project's purpose at this stage was principally to develop and demonstrate a technique, not to study the chosen services per se.

Method. For each of the three services, we developed a set of mutually-exclusive categories to describe all possible objective outcomes that can occur in the case of a client who has been receiving the service. (The relative "goodness" of these various outcome categories, i.e. the "benefit weights" needed to convert the qualitative information into suitable quantitative form, was determined by a process described elsewhere in this report.)

For each service, three Minnesota county welfare departments were selected as data-collection sites. A crew of data collecters experienced in Minnesota's public welfare system extracted factual data from closed case records. This included determining the outcome category best describing what happened to each client. Data were analyzed using both the RCEM and conventional cross-tabulations.

Findings in Minnesota. In child protective services (with a sample of 354 children) the three counties differed in cost-effectiveness but did not differ appreciably in effectiveness independent of costs. When the data from the three counties were combined (not a legitimate procedure, but useful for illustration) the following variables were found to be related to efficiency or cost-effectiveness:

the length of time that a case remained open
the presence or absence of foster care
the amount of medical care provided
the educational level of the child's mother

The first three relationships are easily explainable: the costs of foster care, medical care, and long-term social worker effort increase the denominators of the cost-effectiveness ratios as they increase. The effectiveness or benefit measure had certain inadequacies that allowed it to be overpowered by the increased denominators.

Analysis of data from a 775-case probability sample of employment-services cases (primarily WIN cases) revealed only slight inter-county differences in cost-effectiveness but greater differences in effectiveness independent of costs. When county data were combined, these client attributes seemed to be important: age, education, number of pre-school children, and total number of children. Service was more effective if the client was young, had at least a high-school diploma, and had few children. (Other relationships pertaining to client attributes cannot be described so succinctly.) Clients for whom a moderate amount was spent on training allowances, etc., received more effective service than those for whom little or nothing was spent. But the smaller the expenditures for allowances and incentives, the better the cost-effectiveness ratios.

Studying family planning services proved to be the least satisfactory portion of the project's first year. All three county agencies that were studied make an effort to reach out into the community to provide birth-control information to community groups, many of whose members are not welfare-agency clients and never will be. The costs of such outreach were inseparable, given the first-year's procedures, from the costs of family-planning counseling and services provided to formally enrolled clients of the local agencies. Unfortunately, the RCEM required definite outcomes information on service-recipients. This was available only for the formally enrolled clients.

Since cost data for services to such clients alone were not available, only the RCEM comparisons of effectiveness are worth mentioning. Client attributes associated with effective service were: AFDC status, education, marital status, and legitimacy status of the youngest child. Receipt of AFDC and possession of less than an eighth grade education were both associated with less effective service. Unmarried women and women whose youngest child was

illegitimate got more effective service than others. There was a slight positive relationship between service effectiveness and the number of pre-school children.

The concept of "effective service" as used in the study implies receptiveness to birth-control information. The study findings point to two sets of clients who are sufficiently interested in birth control to obtain the necessary information and act on it: mothers of several pre-school children and mothers of illegitimate children. These are two target groups that are often the subject of extensive welfare services.

Reports. Unco produced the following reports on the project's first year in the three participating states:

Report on Completion of Phase I	September 21, 1970
Progress Report on Phase II	January 8, 1971
Report on Completion of Phase II	May 15, 1971
Report on Completion of Phase III	September 1, 1971

The Department of Public Welfare (DPW) produced two reports covering Minnesota only:

The Project on Relative Effectiveness of Social Services: Findings of the First Year in Minnesota	December 1, 1971
"The Relative Cost-Effectiveness Model in Minnesota" in Minnesota Welfare, 23 (4): 22-23	Winter 1971-72

In addition to these formal reports, Unco produced two "Briefs", two or three pages in length, highlighting selected findings and suggesting possible implications for administrators. These briefs constituted the beginning of a more systematic concern with utilization of the sorts of findings which the RCEM is capable of producing.

The Second Year

The first year had demonstrated the technical feasibility of applying the RCEM to social service data which include reliable information on case outcomes. It became apparent, however, that feasibility alone was not enough to commend the RCEM to its potential users, the administrators of state and county welfare agencies. The users needed to be convinced of its value in dealing with issues of practical concern. During the projects second year, therefore, increased attention was given to the matter of utilization.

Even though the RCEM had been proved workable, improvements were needed in the instruments and procedures which support its data base. (Improvements in the mathematical structure and computer support of the RCEM itself have been made over the past three years. These were not associated with the main utilization problems, however.) In particular, the original method of estimating the cost of services given by social workers, and the complexity of the sets of outcome categories used during the first year seemed unsatisfactory to the project staff. For this reason, we decided to collect more data in the areas of child protective services and employment services, using simpler sets of outcome categories and more than one approach to the measurement of social worker activity.

Method. In the matter of utilization, three sub-projects were conducted. The first of these (which actually occurred during the first year but is more relevant to second-year concerns) was a survey of the Department of Public Welfare's current practices in monitoring county welfare department output, especially in the area of social services. Unco staff members interviewed key DPW staff persons and offered a series of recommendations

The second utilization sub-project, named the Communication Model for the Utilization of Technical Research (CMUTR) Study, was of a more formal and ambitious nature. (Indeed, SRS was directly involved in its origin and development, and the grant application was amended in mid-year to provide funds to conduct it.) Its purpose was to examine the effects of communication on research utilization by state welfare departments. The states of Minnesota, Colorado, and Washington were involved. In each state welfare department, Unco representatives interviewed key staff members in an effort to identify factors affecting the success of research utilization. Two technical innovations were examined in each state--the RCEM and one other. (In Minnesota the second innovation was CASS, the Case and Administrative Service System.)

The third sub-project bearing upon the matter of utilization was a one-month compilation of information about complaints received by DPW about DPW functions. Though conducted as a free-standing study and perceived by DPW personnel as having a value independent of the RCEM project, this study actually grew out of a determination to make the RCEM project relevant to the concerns of DPW managers and hence to promote RCEM utilization. (Complaints turn the spotlight on problems. RCEM analysis may reveal keys to solutions.)

In addition to these sub-projects, a considerable effort was made to plan the collection and analysis of case data so as to produce findings that would be genuinely interesting to potential users. This effort consisted of extensive interviewing of state and county welfare personnel before the data-collection effort began, the preparation of written statements synthesizing these people's views of the real issues that should be addressed in the analysis, and continuing interaction between Unco's project manager and certain of the interviewees throughout the course of the year.

The collection of data on child protective and employment services followed essentially the same pattern as during the first year. Data were extracted from the records of closed cases by a crew of data collecters, all but one of whom were veterans of the first year.

The protective services cases were drawn from six counties. Employment services cases were studied in four of the six counties. (The other two had too few cases, being small in population and having no WIN programs.)

The sets of outcome categories for the two services were simplified and re-weighted.

In addition to reading case records, the data collectors also interviewed each social worker about each of his sample cases, primarily to get an estimate of time spent on the case but also to get some facts about the worker himself.

Findings and Reports on Utilization Sub-Projects. The monitoring survey produced descriptive information about specific practices being used in DPW at the time, plus a package of alternative recommendations for an improved monitoring system that would require various amounts of agency resource use. The report produced by Unco was entitled:

> Report of a Study of Recommendations and Suggestions for the State of Minnesota Department of Public Welfare.

This report is not available for general distribution. Its value to other agencies would be small, for it was highly specific to the DPW environment.

The CMUTR study developed a descriptive paradigm covering the innovation process and, more importantly, the process of communication relating to the use of a proposed innovation; it also contained a series of recommendations. Since they were quite extensive and do not have a formal connection with the activity of the third year, we will not summarize them here. The interested reader should see Unco's report:

> Communication Model for the Utilization of Technical Research (CMUTR) Study: Utilization within State Departments of Public Welfare Systems of Advanced Management Technology Innovations.
>
> June 30, 1972

The survey of complaints coming to DPW's attention resulted in a set of tables describing the origin, nature, and disposition of complaints received in January 1972 and reported to the project office. Despite considerable effort to publicize the survey, we found that reporting was incomplete. Also, the fact that it took place so late in the fiscal year (contrary to plans) reduced its value as a means of identifying issues of concern to DPW managers that could be built into the case record study. Despite the fact that it turned out to have only limited utility for the project as a whole, it had value to DPW in its own right as a pilot test of a routine for collecting data on complaints. The report of this subproject, too specific to be of value outside of DPW, was distributed to selected staff members under the title

> A Study of Complaints Received by the Minnesota Department of Public Welfare During January, 1972 March, 1972

Findings Based on Case Data. Through interviews with knowledgeable program people, Unco's project manager identified problems about the provision of effective, efficient child protective services and employment services. These problems are cited and possible solutions suggested in the

final report of the project's second year. (From some of these suggestions one could devise experiments, in which the RCEM would be used for drawing statistical conclusions, to test whether solving the cited problems would in fact increase the effectiveness and efficiency with which the services are provided.)

Of the 413 children receiving child protective services included in this study, about one-fourth came from families that had received this service before. Complaints about the care of the children came to the agency from a variety of sources--indeed, more than one complaint source triggered the protective service in 20 percent of the cases, and more than one type of parental misbehavior was identified in half of the cases. The principal social worker spent an average of 12 hours per case, at a cost (including fringe benefits and overhead) of about $160. Supervisors and other staff members contributed an additional hour to the average time required for serving the case. The cost of work done by staff members on these cases, plus vendor payments for foster care, medical care, etc., produced a total cost per case that ranged from $250 in one county to slightly over $1000 in another. (There was a wide variance around each of the averages just cited, however. The interested reader is urged to consult the final report of the second year, rather than to rely upon these necessarily brief statements.) It appeared from the case records that improvements occurred during the course of the case in the child's school performance, physical health, and mental well-being. The outcome of 45 percent of the cases was said to be the elimination of the child-neglect problem as a result of agency intervention. The problem persisted in one-fifth of the cases but service was

discontinued because further work was deemed likely to be ineffective. One-sixth of the children moved out of the county, making them no longer accessible. When the RCEM was applied to the data on child protective services, no significant results pertaining to effectiveness were found. Cost-effectiveness was inversely related to the number of staff hours invested in the case--a finding that is not surprising, in view of the fact that the number of staff hours is an important component of the cost-estimation procedure. (If the expenditure of a great amount of staff time could be shown to be conspicuously more effective than the expenditure of lesser amounts of time, this greater effectiveness might have over-ridden the increase in cost to an extent sufficient to produce a better cost-effectiveness ratio for cases that received more service.)

In employment services, second-year figures are not comparable to those compiled for the first year, since we excluded during the second year those clients who were immediately known by their social workers to be inappropriate for referral to employment or a training program. (Changes in program regulations during the project are another important source of non-comparability of data for the two years.) Having made this initial exclusion, we found that nearly all of the 282 clients in the sample were deemed appropriate for training or in a few instances for immediate employment. Two-thirds were referred to WIN during the course of the study year, 22 percent to MDTA, and most of the remainder to various other employment programs. However, only 64 percent actually enrolled in a training program. Two-thirds of the remainder (25 percent of the total sample) did not accept their referrals (since not all clients were required to enroll in those days), and the remaining 12 percent were rejected by the training program. Only 47 of the

clients whose receipt of employment services ended during the stud, period completed a training program. However, the number who found jobs was larger than this, because some clients dropped out of training programs to accept employment. The jobs that they accepted, whether on their own or as a result of agency effort, tended to be low-paying, low-skill jobs. Of all clients whose cases terminated during the study period, 10 percent terminated because they were employed as a result of the agency's effort and 20 percent obtained employment in some other way. A total of fourteen hours of service was provided to the average case, of which eleven and one-half hours were social worker time. When total staff hours were examined in relation to case outcome, it appeared that spending more than twenty hours on a case did not result in a significant improvement in outcome. In fact, after ten hours there appeared to be a dramatic drop in cost-effectiveness, when only the cost of staff time is considered. RCEM analyses revealed that services to male clients are both more effective and more cost-effective than services to females. Also, it was shown that services to Caucasians are more cost-effective than services to Indians, which in turn are more cost-effective than services to Black clients.

Reports. Those reports that covered the three sub-projects have already been listed. On the case-data aspect, and related matters, Unco produced the following final report of the project's second year:

Measuring the Relative Costs and Effectiveness of Selected Social Services Included under Title IV, Part A of the Social Security Act — August 18, 1972

On the subject of our progress toward accomplishing the tasks included in

the study proposal, DPW submitted two reports:

Progress Report: Project on Relative Effectiveness of Social services — March 18, 1972, and (updated) May 19, 1972

Objectives of the Third Year

One third-year objective was to test the applicability of the Relative Cost-Effectiveness Model, a mathematical model developed for the Job Corps, to public welfare social services. During the third year, the RCEM was applied to the concepts of the Goal-Oriented Social Services System (GOSSS).

Unlike many demonstration projects, which focus upon an innovative method of service delivery, this has been essentially a methodological project. It shows a method of making cost-effectiveness comparisons. This method can be applied to cases receiving a specified service, being used to compare any appropriate aspects of the service delivery system. This is the application that we demonstrated during the first two years, during which time we used outcome categories that were tailored to the specific service being studied. But it seemed reasonable to think that inter-service comparisons would be feasible also, assuming that we limit such comparisons to cases for which they are appropriate, i.e., cases having the same general goal. (It is conceivable that cost-benefit ratios could be calculated and compared for any pair of services whatsoever, provided that the benefit of each possible outcome could be satisfactorily stated in terms of dollars. But if the benefits can be fully described in dollars, we do not need the RCEM. The need for such a tool as the RCEM arises when the most satisfactory--perhaps the only--way to describe the

impact of a service upon a client is in qualitative terms. Under those circumstances, we need to have a set of qualitative outcome categories that "make sense" for the cases being compared. The terms in which case outcomes are described should bear a logical relationship to the purposes for which the service programs exist. That is the justification for the limiting statement that cases to be compared should have the same general goal.)

The foregoing explanation implies the need for a set of general outcome categories to supplement or replace the service-specific sets of categories developed during the first two years. A ready-made set--more than one, in fact--appeared toward the end of the project's second year. It was a part of GOSSS, the Goal-Oriented Social Services System. GOSSS was a system of concepts, procedures, and forms devised by SRS with the expectation that every state would be required to use them in program budgeting, performance monitoring, and various forms of accountability within the social services covered by the public assistance titles. (By the time the project ended, GOSSS, which had never been officially mandated, appeared to have been abandoned by SRS. It was very much alive, however, throughout the calendar year 1972, not only while the project's third year was being planned but also during the first few months of field work.) When we saw the draft material describing GOSSS and discovered within it some generic goals to which the RCEM could be applied, and when we perceived the magnitude of the undertaking that would be required of Minnesota in order to implement GOSSS, our best course of action for the project's third year was obvious: to design and field-test our own version of the SSIS (the Social Services Information Subsystem, one part of the GOSSS package), and

to apply the RCEM to the data thus collected.

Which parts of the GOSSS structure constituted the generic outcome categories? There were two possibilities: "condition of life" and "barrier status." Basic to GOSSS were the ideas that (1) each social services client can be assigned one of four goals: self-support, self-care, community-based care, or institutionalization; and (2) that the function of social services is to help the client attain the chosen goal by removing or controlling various barriers which stand in his way. Attainment of one of the goals may be a matter of degree, e.g., a client may be only partially self-supporting. For that reason, the GOSSS materials contained a sort of scale attached to each of the broad goals, thus making it possible to report the degree to which a client had attained one of the goals. Since his current status, as well as his hoped-for future status, could be reported in this fashion, the term goal was largely abandoned in favor of the more general term condition of life. For project purposes, then, the various possible conditions of life that clients might attain as a (presumed) consequence of social services--i.e., the degrees or steps just described--constituted a set of outcome categories to which the RCEM might be applied. Also, the GOSSS material listed thirty barriers (a list which we subsequently shortened) and provided a set of codes for indicating from time to time what had happened to each barrier that the client faced. These codes appeared likely at first to offer another set of outcome categories for RCEM analysis.

Data collection and analysis is to no avail unless planners and administrators act on the results. Therefore, utilization was another important concern in the third year. The objective was: To develop and demonstrate

a utilization strategy, i.e. a strategy for enabling program managers to act upon the results of cost-effectiveness analyses.

Summary of the Third Year

Data Collection Activities. Data were collected for two general purposes: (1) to try out the project forms, the GOSSS concepts, and the RCEM on some "real, live" cases; and (2) to identify the difficulties arising in the process of completing the forms and using the concepts.

Thirty social workers in the Hennepin and Ramsey County Welfare Departments recorded services given and case outcomes for a variety of types of cases during a six-month period, putting this information on an updated list prepared monthly by computer. Factual and judgment information (e.g. the service plan) was recorded on a pair of one-time forms. GOSSS concepts had been built into all the forms.

Near the conclusion of field work, the social workers were interviewed about each case that had closed, chiefly for the purpose of getting these additional measures of case outcome: the worker's subjective judgment of the benefit which accrued to the client; and, if the client had received one of the five most-frequently given services (child protective services, employment services, services related to unmarried parenthood, mental health services, or mental retardation services), the service-specific outcome category best describing the case.

Payments for purchased services were extracted from local agency accounting records on a case-by-case basis, thus assuring maximum flexibility for data analysis. Data on workers' salaries, together with the amount of interview time spent on each case (recorded as a part of the service-recording process), were used to compute the cost of worker-provided service, case by case. An overhead estimate, representing local agency administration and state agency supervision, was calculated for each county from available fiscal reports and was then used as a multiplier to effect an appropriate increase in the estimate of the cost of the effort which the worker expended on each case.

To find out whether workers were completing the one-time forms correctly and whether they were comprehending the GOSSS concepts well enough to apply them to their cases, a project staff member read a sample of case records. Results of this review were encouraging. Also, each worker was interviewed early in the field-work period to find out his opinion of the GOSSS concepts and his experience in recording the services that he was providing. This information was merged with other kinds of feedback to improve the data system.

Highlights of Results of Data Analysis. Of the 1682 social services cases in the project, six out of seven were recipients of public assistance at the time when service plans were being prepared for them, and 40 percent were thought to be unemployable. At least 70 percent were living at home and were considered able to do so, but many had extensive need for services. The barrier most frequently cited by the social worker was family problems, with about 40 percent of the planned services being intended to deal with those problems.

In preparing service plans, the workers selected a great variety of services that they intended to offer to the clients, the most frequently mentioned being marital, family, and child-rearing counseling; mental

health services, mental retardation services, child protective services, and employment and rehabilitative services. The possibility of purchasing these services from an outside agency was mentioned only 9 percent of the time. In nearly all of the cases, the worker expected to achieve the goal of his service plan within one year or less.

In the preceding paragraph we have named, in order of frequency, the services that the social workers were most often planning to give. What actually happened was somewhat different from what the plans showed. No attempt was made to compare plans with performance on a case-by-case basis, but the social workers' reports showed the most frequently given services to be (in this order): child protection (broadly defined); mental health services; employment and rehabilitative services; family-planning, guardianship, and health needs services; various non-counseling services to strengthen individual and family life; mental retardation services; and services to unmarried parents.

In 80 percent of the cases, the social worker talked with the client or a collateral person at least once during the course of the project. (The remaining 20 percent may have gotten services that were not reflected in the social workers' reports of activity, since these reports covered only time spent in contacts or in travel.) In their reports, the workers indicated that they spent 55 percent of their reportable time in the field (including travel time), 38 percent on the telephone, and only 9 percent in office interviews.

The "time units" reported by the workers, which represent only contact time and travel time, totalled 10,263 hours and accounted for 36 percent

of their total "payroll time." This total "payroll time" was estimated to have a dollar value of $472,800 for the six months. That estimate includes not only the salaries of the social workers but also the appropriate shares of clerical and supervisory salaries, of the salaries of the local agency's administrative staff, of the local agency's non-salary overhead, and of the cost of social service supervision provided by DPW. Based on this method of estimation, each 15-minute time unit of contact time (together with the time that the social worker spent in paperwork, conferences, etc., which we consider to be peripheral activity) was given a value of $11.52.

Various ways of measuring case outcome were tried and compared with one another. The "service-specific" outcome categories (e.g., categories describing the various outcomes of child protective services) seem to be usable for at least gross analysis. The "service-generic" outcome scales proved to be inadequate, except for employment service cases.

The Relative Cost-Effectiveness Model was applied to a few comparisons, despite the difficulties caused by cost-measurement problems and by the smallness of the subgroups among the closed cases. The presence of prior agreement upon a goal between the worker and the client apparently was associated with more effective service, both in employment services and in child protection, but especially in the former.

Chapter 2

The Relative Cost Effectiveness Model (RCEM)

It is difficult, if not impossible, to attach a meaningful absolute benefit to each possible client outcome of a social service. The preferred outcome of employment services, obtaining a job, can be expressed as a monetary gain to the client or as a tax saving because of the reduced need for public assistance, yet there are a number of alternative beneficial outcomes that can hardly be expressed in monetary terms. Without benefits ascribed in absolute terms and without the willingness to assign a value of zero to outcomes having no obvious consequences in monetary terms, it is not possible to produce an absolute cost-benefit ratio (such as, "the service yielded $3.50 worth of benefit for each dollar spent.")

But there is a way of making comparisons of the cost-effectiveness (or just the effectiveness) of two or more methods of service delivery, combinations of service elements, organizational arrangements, etc. To do this, we convert the set of outcome categories into a measurement scale requiring less stringent assumptions than that of a dollar scale. The measurement can be on an ordinal scale, interval scale, scale at the order-metric level (i.e., in which the distances between scale points can be expressed relatively but not in absolute terms), or even a hybrid scale from these various types. The RCEM can handle any of these with input being any set of mathematical rules or constraints which describe the relationships, or "effectiveness weights," among the various outcomes.

In the controversial field of public welfare, complete consensus is lacking for some of these relative effectiveness weights. Since this project has always been oriented toward developing a tool that the wel-

fare system could use to study its own performance, we have incorporated the range of opinions held by program managers of welfare agencies. Obviously this approach is biased toward the social service managers and other personnel rather than the clients. The outcome categories also reflect this same point of view.

Program personnel were used as the judges for establishing the relationships among the various outcome categories. The criterion used in establishing these relationships (that is, in ranking or rating categories) was the probable effectiveness which would accrue to the client by virtue of having exited from the service area at that outcome. Experience has shown that social workers, supervisors, and even clients do not disagree radically when asked to rank order a set of outcome categories. Furthermore, during the first year of the project we found that the experimental introduction of various kinds of effectiveness scales, which had the effect of introducing a wider range of divergent opinions, did not make a substantial difference in the results of selected cost-effectiveness comparisons in protective services. In employment services (and in family planning services, an area not specifically studied after the project's first year), introducing other kinds of scales had more noticeable consequences on the cost-effectiveness findings.

How RCEM Functions. The Model is a computer simulator that views effectiveness measures as the product of two input factors: categorical outcome measures and effectiveness weights. RCEM's sophisticated analytic procedures for such simple input are justified in order to make allowances for the uncertainties which invariably accompany decision-making in social

programs. In this case, the uncertainties have to do with giving proper interpretations to outcome categories. Sophisticated procedures are also necessary to adequately reflect statistical fluctuation in order to eliminate spurious results due solely to chance.

RCEM input. Input to the model consists of both hard and soft data. Hard data for each client group to be compared consist of (1) the number of clients falling within each outcome category used for measurement purposes and (2) the average cost per client in the group.* Soft data include statements about the effectiveness weights for each outcome category.

Within a client group, such as all Child Protection Cases of a local office, the number of clients falling into each outcome category for the period of time under consideration are aggregated to form a *frequency distribution*. But frequency distributions are only one-half of the measure of effectiveness for a project. The other half is the set of corresponding effectiveness weights. A key feature of RCEM is its ability to cope with effectiveness weights expressed in a form that managers and planners deem satisfactory. Statements expressing preference among outcome categories, or any other type of relationship, are called *weighting scales*.

An example of calculating service effectiveness with an interval

* A thorough examination of procedures for establishing both outcome categories and cost estimates is the subject of Chapter 3.

weighting scale. To appreciate the variety in the types of weighting scales that can be used, first consider a hypothetical employment services activity where each client who terminates in Category 1 is known to have improved his life-time earnings by $20/week; clients in Category 2 by $10/week; and Category 3 by $0/week. This kind of weighting scale is known as an *interval scale*. Suppose, upon examining client groupings A and B, we discovered that for each 100 terminees in each group, the following results were obtained:

	Group A	Group B
Category 1	50 terminees	90 terminees
Category 2	30 terminees	10 terminees
Category 3	20 terminees	0 terminees

Clearly, we would be inclined to say Group B is more effective -- indeed, much more effective -- than Group A. In fact, we would probably be inclined to calculate an "effectiveness ratio:"

$$B{:}A = \frac{90 \times \$20 + 10 \times \$10 + 0 \times \$0}{50 \times \$20 + 30 \times \$10 + 20 \times \$0} = \frac{\$1,900}{\$1,300} = 1.46,$$

or we might say group B is 46 percent more effective than group A.

Calculating service effectiveness with an ordinal scale. The simplicity of the above analysis derives from the absolutely precise specification of effectiveness weights provided by an interval scale. As indicated previously, the effectiveness of social programs, even employment services, is too subtle to permit representation by an interval scale. The most definitive statements about employment services that would be generally acceptable are the forms of expression such as

"Category 1 is *better* than Category 2." Sometimes for isolated categories, a stronger statement might be ventured, such as "Category 1 is *at least twice as good* as Category 2." But even in this case, they are not likely to venture anything stronger than "better" or "worse" when comparing categories.

The set of statements ranking the various categories in this manner is known as an *ordinal scale*. When we include statements like "at least twice as good," we are moving toward a *ratio scale* which includes statements like "Category 1 is (precisely) twice as good as Category 2."

Given an ordinal weighting scale associated with a set of outcome categories, we still do not know the actual effectiveness weight associated with each category. We merely know some "constraints" about the actual weights. RCEM generates a set of weights which satisfies the constraints and then compares the various client groups using these weights. Of course, the fact that the generated weights satisfy the constraints does not guarantee that they are the most appropriate ones to associate with the outcome categories. Consequently, several hundred sets of weights are generated (within the constraints) for comparing the client groups. If one group always proves more effective than another, we can say with 100% confidence that the first group is more effective than the second. On the other hand, if one group is not always more superior than the other, the statement of relative effectiveness is made with less confidence (expressed in probability terms).

This technique is known as "simulation." The results of RCEM

simulation are presented in the form of four numbers for each pair of participant groups:

- the average relative *effectiveness* of the service to the one group as compared to the other
- the probability that one is more (or less) effective than the other
- the average relative *cost-effectiveness* of the service to the one group as compared to the other
- the probability that one is more cost-effective than the other

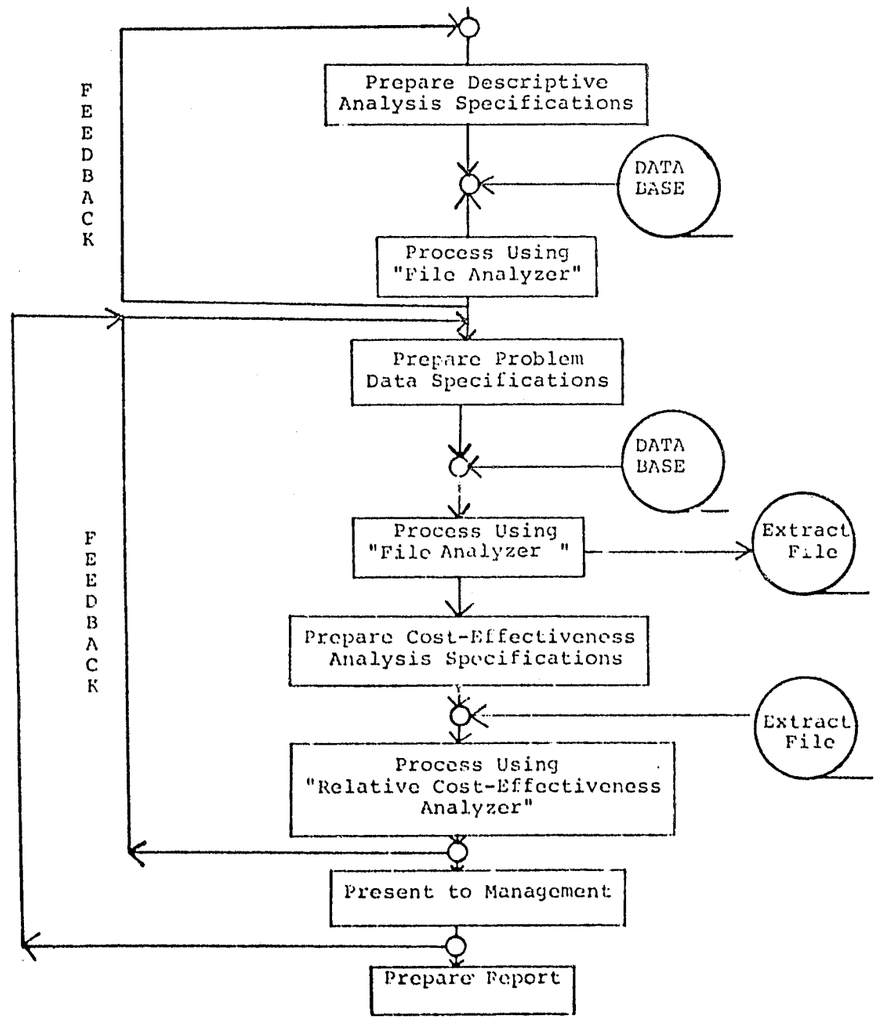
RCEM Computer/Analytic Components. Figure 2.1 displays a system flow of the typical response to a problem statement. The computer programs required to achieve RCEM analysis are generically referred to in the figure as:

- "File Analyzer"
- "Relative Cost-Effectiveness Analyzer"

In the course of performing these calculations during the project, Unco's Generalized File Analyzer and Relative Cost Effectiveness Model, respectively, were used for these purposes.

File Analyzer. The File Analyzer produces any number of multi-dimensional tabulations of data items. For example, the program may provide a report on the number of clients by service area, local office, age, and outcome category. The computer program can also calculate an average value of another item within each cell formed by crossing a number of dimensions. For example, one may wish to derive average length of Stay or average cost within each cell exemplified above.

FIGURE 2.1 SYSTEMS FLOW CHART FOR APPLYING RCEM



The File Analyzer is also capable of classing item codes into more encompassing codes. For example, age-at-entry may be classed into 16 years or less, 17 years, and 18 years or older. With this capability multi-dimensional tabulations can be obtained without excessively depleting the sample sizes within cells.

A final and most important property of the file analyzer is its ability to aggregate information by each client of interest for input to RCEM. This information consists of frequency distributions across outcome categories and average group costs.

"Relative cost-effectiveness analyzer." This computer program has the capability to obtain relative cost-effectiveness measures between groups by combining performance data (in terms of frequencies across categories), costs, and statements about effectiveness weights. The Relative Cost Effectiveness Model (RCEM) is probably the most generalized existing example of this program.

Mathematics of RCEM

Definitions. Given costs and the percentage distribution of clients across designated outcome categories, and a set of effectiveness weights, the cost effectiveness ratio (r_A) of a particular client grouping, Program A, is defined in Formula 1:

$$r_A = \sum_{i=1}^{k} \frac{p_i^A e_i}{c_A}, \quad \text{where} \qquad (1)$$

p_i^A = probability of client in Program A achieving outcome i

e_i = effectiveness weight associated with outcome i

c_A = average cost for each client in Program A

Similarly, the cost effectiveness ratio (r_B) of an alternate Program B is denoted according to the same formula, with the same components:

$$r_B = \sum_{i=1}^{k} \frac{p_i^A \; e_i}{c_B}$$

After an appropriate allowance has been made for lack of certainty about the values for each of the two programs being compared -- p_i^A and p_i^B, e_i, and c_A and c_B -- two measures of each ratio, r_A and r_B, are sought. The first measure is the probability that Program A is more cost effective than Program B. The second measure is the expected ratio of r_A to r_B, which is defined to be the relative cost effectiveness of Program A to Program B. It is important to note that by setting both unit costs to unity, these measures of relative cost effectiveness become simply measures of relative effectiveness.

The production of measures. The two measures just described are denoted respectively:

probability = $P\left(r_A > r_B \mid \lambda\right)$, and

relative cost effectiveness = $E\left(\frac{r_A}{r_B} \mid \lambda\right)$, where

λ = state of knowledge about effectiveness weights.

Each of these expressions can be approached through the use of the conditional probabilities in Formula 2:

$$P\left(r_A > r_B \mid \lambda\right) = \int_{\underline{e}} \cdots \int P\left(r_A > r_B \mid \underline{e}\right) P\left(\underline{e} \mid \lambda\right) d\underline{e}, \text{ and} \qquad (2)$$

$$E\left(\frac{r_A}{r_B} \mid \lambda\right) = \int_{\underline{e}} \cdots \int E\left(\frac{r_A}{r_B} \mid \underline{e}\right) P\left(\underline{e} \mid \lambda\right) d\underline{e}, \text{ where}$$

$\underline{e}$ = effectiveness weight vector.

Notice that the probability $r_A > r_B$, given $\underline{e}$, is either 1 or 0 (or .5) whenever the client percentage distributions p_i^A and p_i^B, i = 1 . . . . ,k, and unit costs, c_A and c_B, are known with certainty as assumed in Formula 1. By the Law of Large Numbers, these equations become the following:

$$P\left(r_A > r_B \mid \lambda\right) = \lim_{v \to \infty} \frac{1}{v} \sum_{j=1}^{v} P\left(r_A > r_B \mid \underline{e}^j\right), \text{ and} \qquad (3)$$

$$E\left(\frac{r_A}{r_B} \mid \lambda\right) = \lim_{v \to \infty} \frac{1}{v} \sum_{j=1}^{v} E\left(\frac{r_A}{r_B} \mid \underline{e}^j\right), \text{ where}$$

$\underline{e}^j$ = a known realization from the universe of feasible effectiveness weights accomplished by computer simulation.

These limits are approximated by using a large number (v = 200) of random

effectiveness weight vectors ($\underline{e}^j$). The simulated sample is selected in accordance with the distribution function, $P(\underline{e}|\lambda)$. Knowledge, λ, is translated into constraints in the computer, and these constraints set limits for establishing the feasibility of randomized effectiveness weights.

The Laplace criterion* for decision making under uncertainty is the theoretical basis for this technique of associating probabilities with the occurrence of any possible set of effectiveness weights. By means of the Law of Large Numbers, simulation is used to allow for assessing probabilities, for arbitrary statements concerni , effectiveness weights. Otherwise one might be forced to rely on closed-form mathematics to per'orm there calculations, which might be difficult, if not impossible. At the very least, a specialized mathematical development would be required for each type of statement which might be included in the scheme.

From studying Formula 3, it is evident that

$P\left(r_A > r_B \mid \underline{e}\right)$ and $E\left(\frac{r_A}{r_B} \mid \underline{e}\right)$ should be further examined. It has just been concluded, however, that $P\left(r_A > r_B \mid \underline{e}\right)$ is either 0 or 1 and easily calculated.

*David W. Miller and Martin K. Starr, Executive Decisions and Operations Research (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1960), pp. 90-94. The Laplace criterion is also called the criterion of rationality, ". . . [The] Laplace criterion is the only one that expresses no attitude except the desire to be rational. That is, if we say we don't know the probabilities then we must act as if we don't know the probabilities [p.94]."

$E\left(\frac{r_A}{r_B} \mid \underline{e}\right)$ is just as easily calculated, since, once $\underline{e}$ is given, the formulas for calculating the relationship of r_A to r_B can be applied by using Formula 1.

Thus, if the effectiveness for each possible outcome is known, and the outcome distribution for clients along with unit costs are known, the computation of the desired probability and expected-ratio can be accomplished easily. When our level of knowledge about effectiveness weights is less than complete, simulation principles can be applied by a computer to converge to the desired measures for decision making.

Statistical fluctuations in client distributions. A number of extensions to the RCEM are necessary to maintain flexibility and to relax certain restrictive assumptions. Seldom can client distributions or costs be known deterministically (that is, exactly). Typically, these inputs arise from a sample of the client population and hence are subject to chance fluctuations; the decision statistics

$P\left(r_A > r_B \mid \lambda\right)$ and $E\left(\frac{r_A}{r_B} \mid \lambda\right)$ should reflect these uncertainties.

Thus, one usually deals with a sample n clients from a program with a total of N clients. Outcome 1 is achieved by n_1, Outcome 2 by n_2, and so on. Were this experiment repeated with another sample (even from the same program), the frequencies, n_i, would probably change. The extent of such fluctuation is governed by the multinominal distribution, as can be seen in the following calculation. More important, however, is the impact of these changes on program effectiveness, r_A or r_B.

Since r_A or r_B is a sum of parts, the Central Limit Theorem demonstrates a tendency for it to be normally distributed. This implies that all fluctuations in r_A or r_B can be adequately studied in terms of the variance, denoted as $\sigma^2_{r_A}$ or $\sigma^2_{r_B}$.

To calculate an expectation or r_A or r_B based upon frequency data, p_i is replaced by $\frac{n_i}{n}$ in Formula 1.

To simplify the presentation of the concept, costs will be considered later, and therefore $c_i = 1$:

$$\bar{r} = \sum_{i=1}^{k} \frac{n_i e_i}{n}, \text{ where}$$

$$n = \sum_{i=1}^{k} n_i .$$

To estimate the sample variance in $\bar{r}$, the multinominal distribution is used:

$$P\left(n_1, \ldots, n_k | n, P_1, \ldots, P_k\right) = \frac{n!}{n_1! \ldots n_k!} P_1^{n_1} \ldots P_k^{n_k}, \text{ where}$$

$P_1, \ldots, P_k$ = true probabilities of occurrences $n_1, \ldots, n_k$

Therefore, the moment-generating function (MGF)* for $U = \sum_{i=1}^{k} n_i e_i = n\bar{r}$ is as follows:

$$\text{MGF}(t) = E(e^{tU})$$

$$= E(e^{t\Sigma n_i e_i})$$

$$= \sum_{(n_1, \ldots n_k)} \frac{n!}{n_1! \ldots n_k!} P_1^{n_1} \ldots P_k^{n_k} \left(e^{te_1}\right)^{n_1} \ldots \left(e^{te_k}\right)^{n_k},$$

where

$$\sum_{i=1}^{k} n_i = n$$

$$= \sum_{(n_1, \ldots, n_k)} \frac{n!}{n_1! \ldots n_k!} \left(P_1 e^{te_1}\right)^{n_1} \ldots \left(P_k e^{te_k}\right)^{n_k},$$

where

$$\sum_{i=1}^{k} n_i = n$$

$$= \left(P_1 e^{e_1 t} + \ldots + P_k e^{e_k t}\right)^n .$$

*Emanuel Parzen, Stochastic Processes (San Francisco: Holden-Day, Inc., 1962), p. 11.

Upon differentiating $E(e^{tU})$ twice and observing that:

$$\frac{d^2}{dt^2} E(e^{tU}) \Big|_{t=0} = E\left(U^2 e^{tU}\right) | t=0$$

$$= E(U^2)$$

$$= n\left(e_1^2 P_1 + \ldots + e_k^2 P_k\right) + n(n-1)\left(e_1 P_1 + \ldots + e_k P_k\right)^2$$

then:

$\sigma_U^2 = n\left(e_1^2 P_1 + \ldots + e_k^2 P_k\right) - n\left(e_1 P_1 + \ldots + e_k P_k\right)^2$ which is estimated by $S_U^2 = \Sigma n_i e_i^2 - \frac{1}{n}(\Sigma n_i e_i)^2$.

Variance of cost estimates. In most situations, costs are considered to be constants for each client group being compared, and require reasonably simple variance calculation. However, on some occasions costs are provided together with estimates of variances. To deal with this situation, consider

$r = \frac{X}{c}$ so that $X = rc$, where X represents effectiveness.

From this, the variance can be calculated:*

$V_X^2 = V_r^2 + V_c^2 + 2\rho_{rc} V_r V_c$, where

V = relative variance.

*Leo A. Goodman, "The Variance of the Product of K Random Variables," Journal of the American Statistical Association, 57 (1962), pp. 54-60.

By assuming that r and c are uncorrelated,* this reduces to

$V_X^2 = V_r^2 + V_c^2$, or

$V_r^2 = V_X^2 - V_c^2$.

Impact of the extensions of the RCEM. The expected ratio statistic remains unchanged with statistical fluctuations. However the probability that $r_A > r_B$ will change as a function of sample size.

A more appropriate calculation for $P(r_A > r_B | \underline{e})$ must now be developed from Formula 2 and Formula 3. Instead of being limited to only the values 0 or 1, P can now assume any value between 0 and 1. By assuming normality for reasons given previously, and by denoting the actual means of r_A and r_B as μ_{r_B}, with the respective variances $\sigma_{r_A}^2$ and $\sigma_{r_B}^2$, then:

$$P(r_A \geq r_B | \underline{e}) = P\left(r_A \geq r_B | \mu_{r_A}, \mu_{r_B}, \sigma_{r_A}^2, \sigma_{r_B}^2\right)$$

*This implies that cost effectiveness is not dependent upon cost alone--in fact, it does not even correlate with cost. An alternative assumption which can be used is that $\rho_{Xc} = 0$. This should not usually be the case, however, because as costs increase, so should effectiveness.

This can be estimated by:

$$P\left(\bar{r}_A \geq \bar{r}_B \mid \bar{\bar{r}}_A, \bar{\bar{r}}_B, s^2_{\bar{r}_A}, s^2_{\bar{r}_B}\right) = P\left(r_A - r_B \geq 0 \mid \bar{\bar{r}}_A, \bar{\bar{r}}_B, s^2_{\bar{r}_A}, s^2_{\bar{r}_B}\right),$$

$$= P\left(\bar{d} \geq 0 \mid \bar{d} = \bar{\bar{r}}_A - \bar{\bar{r}}_B, s^2_{\bar{d}} = s^2_{\bar{r}_A} + s^2_{\bar{r}_B}\right),$$

$$= P\left(Z \geq \frac{\bar{d}}{s_{\bar{d}}}\right), \text{ where}$$

Z = standard normal variate.

Notice that $\dfrac{\bar{d}}{s_{\bar{d}}} = \dfrac{\left(\bar{\bar{r}}_A - \bar{\bar{r}}_B\right)}{\sqrt{\left(s^2_{\bar{r}_A} + s^2_{\bar{r}_B}\right)}}$ is

the statistic that is used in the t-test, and can be interpreted according to the standard normal distribution for large samples. Thus, if e is given deterministically, then the probability calculated by the RCEM is equivalent to the large sample statistic used in deciding upon significance of differences between the average effectiveness of two programs. In general, however, no traditional statistic is equivalent to the measures produced by the RCEM.

Summary of the RCEM formulation. There are four logical steps in the application of simulation, with the Laplace criterion for modeling decision processes, to the development of the RCEM.

First, the objective is to estimate both the probability that Program A is more effective than Program B and also their expected ratio of effectiveness.

Second, calculations are based on the Laplace criterion to justify the association of probability statements with uncertainty about effectiveness weights.

Third, computer simulation is then used, according to the Law of Large Numbers, to obtain probability statements from generic constraints. This permits formulas to be constructed under the assumption of known effectiveness weights.

Fourth, with known effectiveness weights, conditional probability can be calculated using standard techniques and the results can be averaged. Therefore, the caluclations can be made as complex as required to reflect reality, including sample fluctuations.

Chapter 3

MEASURES AS INPUT TO RCEM

Introduction

Regardless of the underlying logic of RCEM or its appropriateness to management, it like any other analytical technique, is limited by the quality of input information provided. Of particular importance, therefore, are the two types ofhard data which must be obtained as input to the model. Recall form Chapter 2 that these "hard" inputs consist of outcome categories and costs.

During the first year of the project, extremely detailed outcomes were established for Child Protective Services, Employment Services and Family Planning Services. In contrast, the second year effort was partly given to simplifying those outcome categories (Family Planning Services was eliminated from the second year study) while maintaining a commensurate level of measurement sensitivity. But even with simplified outcomes, a practical limitation to full implementation of RCEM was the necessity for having a distinct set of outcomes defined for each and every service area. Experience inidcated that caseworkers would rightfully balk if called upon to routinely supply information at this level of specificity.

An attractive alternative is to measure client achievements without specific reference to a given service area, using generic categories applicable to all social services. An example of such a set of generic outcomes was the original four goal states, and subgoals, which were developed by the Community Services Administrative as a part of GOSS, (see Chapter 1 for

reference). Thus, both because of the timing of the National Services Reform movement and because of the structural appropriateness of service-generic goal categories, in the third year of the project we elected to test the validity of particular goal categories defined within the context of GOSS. Unlike efforts during the first two years of the project, this type of information would have to be collected while each case is still active, calling for a much more elaborate approach to data collection.

All cases which closed while collecting active case information were further reviewed by project staff and the assigned caseworker to establish a service-specific outcome, generated from definitions of the first two years of the project. As a result, questions concerned with the amount of sensitivity lost by going to a service-generic set of outcomes can be directly examined. Moreover, direct caseworker assessment of the client benefits felt to be achieved for each closed case was also sought. In our opinion, this information we collected is the only attempt to date to scientifically validate GOSS-type goal states. Given the fact that all State Departments will be required shortly to develop a similar means of measuring social services, the data results presented in the following section have national import.

Because of the need for on-going systemmatic procedures for collecting outcome information, the decision was made to simultaneously enhance past efforts at cost analysis. With client-based information systems, case outcomes automatically can be made to reflect virtually any aspect of the delivery system to be investigated. This is accomplished by grouping cases according to various treatments received and studying differences

among the groups. In order to have the same capability for examining comparative costs, expenditure information must be disaggregated to the individual client level. The basis of prorating caseworker costs to this level must be some sort of case activity indicator. Obvious contendors are: length of time the case is open, number of contacts, time spent on the case, and number of service units provided.

Length of case was used as the primary basis for cost proration during the first two years of the project in which only information on closed cases was collected. Number of contacts and number of time units were collected in the third year, providing not only more detailed information for purposes of cost proration, but also sufficient information to study each method comparatively. What is the extent of the likely error in estimating costs using length of service, or number of contacts, compared to knowing the actual caseworker effort expended? These kinds of questions can now be answered unequivically using data collected in the third year. No attempt was given to developing service unit activity standards to serve as a basis of cost proration. Rather, we felt the direct recording of time unit provides a superior indication of resources expended. In fact, were standards to be used they would be developed from the data obtained from this project.

Included also in a subsequent section on cost analysis is a discussion about how we applied existing accounting information to appropriately inflate caseworker salaries so as to account for the total cost of providing services. There is also included a discussion of how we attempted to account for purchased services, which are simply added to each case's cost. The art of

accomplishing the latter is more demanding than it appears and will also be explained in the cost analysis section.

Defining Client Outcomes

As discussed in the introduction, client outcomes were obtained in all cases that closed during the course of the project, in three completely separate ways. First and foremost, GOSS-type goal definitions were tried, refined and tried again, resulting in "condition of life" statements both at assessment and at case closing. Condition of life is simply the status of the individual along each of the goal dimensions at a point in time. Outcome categories are defined algorithmically by comparing latest conditions of life to conditions of life at assessment. Our method for doing this is to compute movement along the goal dimensions.

Second, each closed case was reviewed with the assigned caseworker in order to determine the appropriate outcome category from a separate list for each of five service areas: Employment Services (non-WIN), Child Protective Services, Unmarried Parents Services, Mental Health Services and Mental Retardation Services. These are the so-called service-specific outcome categories.

Third, caseworkers were asked to assess the extent of actual benefits they felt were dervied by client. The assessment scale ranged from 0 = "no benefit" to 4 = "exceptional benefits." Negative or unknown benefits were also recorded as needed, but virtually all clients were felt to have received some benefit from the provision of services, or at worst simply no benefit at all.

Each of these three methods for obtaining outcome categories are

discussed in more depth below. Following that the different methods are compared quantitatively.

Service-Generic Outcome. Our first attempt failed at measuring client condition of life, using generic goal-state definitions from draft COSS material. Caseworkers simply could not cope with the variety of interactions that typically exist between goals of self-support, say, and other goals, such as self-care. For those readers unacquainted with the original goal states defined by CSA, Table 3.1 lists all the categories.

As a consequence of their experiences, through the change meetings that we discuss in Chapter 4, goal categories were altered both in form and content. Rather than attempt to enumerate all possible categories, we elected to register each goal dimension independently of others. Of course each dimension is subdivided into a set of categories specific to that dimension of concern. By combining what resulted to be four dimensions, a fuller picture of an individual's current or desired condition of life was achieveable. (Subsequently we learned that CSA reverted to the identical strategy and, indeed, the goal dimensions and categories they derived are similar to ours.)

Table 3.2 contains the categorical definitions for each of the four goal dimensions: income maintenance, employment, level of functioning, and living arrangement.

With the condition of life assessed at the beginning of each case and with reassessment at later times, particularly at case closing, there is a minimum of eight digits to be reduced to meaningful categories for analysis.

Table 3.1

CSA Goal States

Self Support

1100 Economic independence as a result of full or part-time employment, service independence. No longer needs public income maintenance or publicly-financed services.
1200 Full-time employment, continued dependence on income maintenance but with no need for services.
1300 Partial employment with continued dependence on income maintenance but with no need for services.
1400 Full-time or part-time employment, with no dependence on income maintenance, but continued need for services.
1500 Full-time employment with continued dependence on income maintenance and social services.
1600 Partial employment with continued dependence on income maintenance and social services.
1700 Completion of training resulting in job readiness (goal only)
1800 Undergoing employment training. (Intake or current only)

Self Care

2100 Individual has no income from employment and may be dependent on support from public income maintenance; is able to manage his daily life within his own family setting or own home with or without benefit of social services; all identified barriers must be removed or controlled though continued services may be required. Children who, as a result of services, are able to function at a level appropriate to their ages, physical and mental conditions, should be coded 2100.
2200 Improved capacity for independent living in self-care setting as a result of the removal or control of at least two or more but not all barriers; continued services needed. (Children and adults).
2300 Improved capacity for independent living in self-care setting as a result of the removal or control of at least one barrier; continued services needed. (Children and adults)
2400 Entrance level into self-care or family care; or planned movement to self-care or family care from institutional care, community-based care or self-support conditions of living; barriers to the goal remain; need for continued services.

Community Based Care

31 Individual is living in a community-based care setting and all identified barriers to his well-being have been removed or controlled even though continued services may be required. This includes children in foster care settings who require only supervisory services.
32 Improved level of functioning for the individual in the community-based care situation as a result of removal or control of two or more but not all barriers. Continued services needed. (Children and Adults).

33 Improved level of functioning for the individual in the community-based care situation as a result of removal or control of at least one barrier. Continued services needed. (Children and adults)
34 Entrance level into community-based care; or planned movement to the setting of community-based care from institutional care, self-care or family care, or self-support conditions of living; barriers to the goal remain. Need for continued services.

01 Half-way house
02 Maternity home
03 Foster home for children, youth, adults
04 Group home for children, youth, adults
05 Home for emotionally disturbed children or adults
06 Skilled nursing home
07 Home for the aged
08 Intermediate care facility
09 Residential foster care institution for children
10 Residential vocational rehabilitation center
11 Residential school for blind or deaf
12 Detention home for children and youth

Institutional Care

41 Individual is placed in an appropriate institution (Child or adult).

01 Institution for the severely mentally retarded
02 Medical hospital for the chronically ill
03 Mental hospital

Table 3.2 Goal Dimensions

$ Scale 1: Income Maintenance

0=No financial assistance
1=Assistance is 1-25% of total income
2=Assistance is 26-50% of total income
3=Assistance is 51-75% of total income
4=Assistance is 76-99% of total income
5=Assistance is 100% of total income

EMP Scale 2: Employment/Job Readiness

1=Works full time for pay
2=Works part time for pay
3=Works in public service type employment, etc.
4=Unemployed but trained and job-ready
5=Unemployed and in job-training
6=Unemployable but able to work
7=Unemployable

LEV Scale 3: Level of Functioning

1=Needs intensive immediate services to prevent serious neglect or abuse
2=Needs services to maintain current style
3=Needs services intermittently
4=Client requires no services

LIV Scale 4: Living Situation

1=Can function independently in own home
2=Needs some care to be able to live at home
3=Totally dependent on others if living at home
4=Leaves community-based care facility regularly, unsupervised. } plus codes A - M
5=Leaves community-based care facility occasionally, supervised. } plus codes A - M
6=Completely dependent on staff supervision in community-based care facility
7=Stable institutional care
8=Institutional situation becoming stabilized } plus code N,P,R
9=Unstable institutional arrangement } plus code N,P,R

Certainly there is no single way to accomplish this reduction, although clearly some will be superior to others. We decided to test two different methods, both based on the concept of "movement." First, for Child Protective Services each positive advancement from one category at assessment of Level of Functioning, or Living Arrangement, to another category at closing was aggregated for each client. This forms a number, which is not always positive, but one that is supposed to indicate improvement for non-employment services. Also, a similar movement indicator was constructed for Employment Services using only the first two goal dimensions.

Both of the above movement outcomes are defined from generic goal dimensions but reflect, after the fact, consideration given to specific services. As a final alternative, our second method for defining movement outcomes is entirely service generic. This can be accomplished simply by summing each of the two movements defined with the first method.

Table 3.3 illustrates all of these movement definitions with a number of examples taken from our files.

Service-Specific Outcomes. At the outset of the data collection phase of the third year activity, the cases to be included in the project were not selected according to predefined notions of service areas of particular interest. Rather, a careful analysis of the kinds of cases which were closing indicated that five service areas covered virtually all 351 closed cases. Child Protection Services accounted for the most of any single service area. Employment Services was the next most involved service area. The remaining three services areas were: Unmarried Parents Services,

TABLE 3.3

Movement Outcome Definitions

Condition of Life at Assessment				Condition of Life at Closing				Specialized CPS Movement	Specialized ES Movement	Generic Movement
Income	Employment	Functioning	Living Arrangement	Income	Employment	Functioning	Living Arrangement			
3	4	1	3	4	6	3	1	4	-3	1
3	7	3	1	5	7	4	1	1	-2	-1
5	6	2	1	5	6	4	1	2	0	2
2	1	2	1	5	7	4	2	1	-9	-8
5	7	3	4	5	7	4	1	4	0	4
3	4	1	4	5	4	4	1	0	0	0
3	7	2	4	5	7	4	1	5	-2	3
5	7	3	1	5	7	4	1	1	0	1

Note: Positive movement for some goal dimensions is associated with positive differences, and for others, negative differences.

Mental Health Services, and Mental Retardation Services.

Thus, five lists of outcome categories were developed, one for each of these service areas, to be used for one of the assessments of case outcome. The assessments were made through interview sessions with each caseworker, in which his/her completed caseload of closed cases were reviewed in depth.

A discussion of outcome development efforts for each of the five service areas follows.

Child protective services. The eight-category set of child protective services outcomes used during the third year appears on the next page. This is the third version. In the first year we used a set of 22 categories. Since we found it difficult to explain the findings when such a lengthy list was used, we shortened it to ten in the second year. This was further shortened in the third year. In each of the first two years, we obtained the opinions of a large and varied group of judges. The instructions given to them allowed considerable flexibility in the way that they were permitted to expressed their judgments: they could rate the categories as high/medium/low; they could place the categories in rank order (with ties, if necessary); or they could improve upon their rank-order arrangement by pointing out anything they knew about certain categories or the relative sizes of the spaces between certain pairs of categories. (Since so much effort had been invested in the judging process during the first two years, we did not repeat the exercise during the third year, we simply modified the second-year judgments to fit the slightly altered category list.)

CHILD PROTECTIVE SERVICES OUTCOMES

(Includes 211, Protective Services for child or youth
202, Foster Care for child or youth,
174, Child-rearing counseling,
172, Marital and family counseling)

1. Cause of problem eliminated by child protective agency's intervention so that child remains at home.
2. Child has been placed in a foster home, but has not been committed to guardianship. (Usually, this outcome refers to long-term placement cases -- likely to be a more or less permanent arrangement.)
3. Child placed for adoption.
4. Child placed in appropriate institution.
5. Child remains in home but under legal custody.
6. Child placed with relative. (Not a state ward).
7. Child has been placed for adoption after being committed to state guardianship.
8. Other _____

Getting the judgments of individuals, as we did in the first and second years, was the first of the two steps in producing a scale. The second step was to combine the individuals' judgments by determining, for each outcome category, the percentage of judges who assigned that category to rank #1 (best possible outcome), to rank #2, etc. The decimal values thus obtained, which show the majority opinion while preserving the opinions of dissenters, constitute the constraints to be used as input to the Relative Cost-Effectiveness Model.

Employment services. On the next page, the seven outcome categories used in the third year are shown. This, too, is the third version. The original list of 21 categories was highly specific to the goals and procedures of the WIN program. When we made a determined effort in the second year to make the case sample representative of those welfare clients who had received any sort of employment services from the welfare department, rather than just those who had received WIN-related services, it was clearly necessary to produce a new outcome category list. The ten-category list developed as a result and used during the second year was further simplified to its present seven-category form. A large number of judges considered the categories in both the first and second years, following during the second year the same instructions as were given to the judges of the child protective services categories. After all that effort, we did not consider it necessary to obtain further judgments in the third year, but simply modified the second-year judgments to suit the slightly altered list.

As in the case of child protective services, the second step was to combine the individuals' judgments. The procedure followed was the same as that described above, and the results of that procedure make up the set of constraints for input into the RCEM.

EMPLOYMENT SERVICES OUTCOMES

(Includes 131, WIN-Related Services
132, Non-WIN-Related Services,
133, Self-Support for Handicapped Adult)

1. Employed due directly to service provided by Welfare Department's Services (training, referral, counseling, etc.)
2. Employed due to other cause.
3. Not employed due to client's rejection of Welfare Department's services.
4. Dropped out of program.
5. Client deemed inappropriate for training.
6. Client deemed inappropriate for employment.
7. Other _____

_____

Unmarried parents services. This service area, not previously studied in Minnesota, was studied in Washington State during the project's second year there. The outcome categories developed there were used in the Minnesota project's third year. They form a two-dimensional set, with one dimension reporting the fate of the illegitimate child and the other dimension describing the process of making, or of failing to make, a plan for the child. (See the next page.) The use of two dimensions arose from the absence of general agreement, either among social workers or in the population at large, as to the desirability of an illegitimate child's being raised by his biological mother or by adoptive parents. The objective of social services to a pair of unmarried parents is neither to help them to relinquish the child nor to help them (or the mother alone) to keep the child; rather, the objective is to help them to make the plan that will be best for all three individuals in their unique circumstances. That is the reason for the second dimension, which asks essentially, "Was a plan made, and was it well made?"

Procedures followed in Washington State for obtaining judgments and for combining them to get the constraints for the Model were essentially the same as described above.

Mental health services. Because attention had not been focused upon this service area in previous years, it was necessary to develop the set of outcome categories "from scratch." A set of categories was written to describe the various possible circumstances in which a client might be found at the time when mental health services were completed, that is, after the designated services had been given to the extent that the social

UNMARRIED PARENTS SERVICES OUTCOMES

(Includes 250, Unmarried Parents, Services to,
251, Establish Paternity
252, Services to Children born out of wedlock)

*Unmarried Parent Outcome Code will be a number code of 1-6, and a letter code of a-f. Code 7 will not have a letter code.

a. Keep the child
b. Place in temporary foster care; Mother retains parental rights
c. Commit to state guardianship
d. Surrender to voluntary agency for adoptive placement
e. Relinquish to others
f. Non-agency adoption by non-relative
g. Abandoned
h. Abortion

1. Mother, father and agency involved in establishing one of the above plans that was considered the best arrangement for the child and parents. No further services needed.

2. Mother, father and agency involved in establishing one of the above plans that was considered the best arrangement for the child and parents. Further services still necessary.

3. Mother and agency involved in establishing one of the above plans that was considered the best arrangement for the child and mother. Father was not involved because he was uncooperative or unnamed. No further services needed.

4. Mother and agency involved in establishing one of the above plans that was considered the best arrangement for the child and mother. Father was not involved because he was uncooperative or unnamed. Further services still necessary.

5. Plans were not developed and one of the above occurred.

6. Client was only given referral services and it is known by this worker that one of the above occurred.

7. Client was only given referral services and it is unknown what the child or parent's outcome was.

8. Other _____

_____

worker had intended to give them. (See the next page.) Three social workers knowledgeable in this area were asked to rank or rate the categories on the basis of the benefit-to-client criterion. Their judgments, expressed in quasi-ordinal form, were combined in the same manner as for the other service areas, giving the necessary input for the RCEM.

Mental retardation services. This was another service area that had not previously been given special attention. It occurred because several project social workers either specialized in this area or had many retarded clients, so that the services under this heading (codes 091 through 095 in the service list printed on the reverse side of Form 2) were among the most frequently reported services.

The unique feature of this area is the fact that there is a goal (which we call maximum feasible self-sufficiency) common to all cases, yet that the specific circumstances that serve to indicate the attainment of that goal vary tremendously from client to client, depending upon the degree of retardation. This called for a different type of outcome category. Therefore, we wrote a set of categories covering two dimensions: the presence or absence of a need for further social services, and the degree to which the common goal was attained by the client. (The latter dimension automatically takes into account his own potential, as will be evident from an examination of the categories and the accompanying instructions, which will be found on the page following the mental health categories.)

Because the categories had been wirtten in such a way as to make them "self-ranking," there seemed to be no need for a panel of judges to examine

OUTCOME CATEGORIES FOR

MENTAL HEALTH SERVICES (081, 082, 083, 084)

NOTES

If more than one category is appropriate, choose the one appearing first in this list.

"Mental health services were completed" means that any or all of the social services designated by the term "mental health services" (codes 080 through 084) were provided to the extent that the social worker had intended to give them.

Mental Health Services Were Completed:

A. Client has stopped the behavior that made mental health services necessary. He is now employable or capable of attending school.

B. Client has stopped the behavior that made mental health services necessary. However, he is not employable or capable of attending school.

C. Living in an unsupervised situation. Receives continuing mental health help from a source other than the welfare agency (e.g., mental health center, self-help group).

D. Living in a community-based facility which has a program directed toward his eventual independence (e.g., a halfway house).

E. Living in a community facility where he receives care aimed at maintaining his present level of functioning or at preventing deterioration.

F. Living in an unsupervised situation. Receives no help with his mental health problem. Unacceptable behavior persists but further mental health services from the welfare agency are not feasible.

G. Has been placed in an appropriate state institution. Further service by the welfare agency is not needed, or is not appropriate, at this time.

H. Client is no longer eligible for federally-matchable service.

I. Other. Specify.

OUTCOME CATEGORIES FOR

MENTAL RETARDATION SERVICES (090, 091, 092, 093, 094, 095)

NOTES

If more than one category is appropriate, choose the one appearing first in this list.

"Mental retardation services were completed" means that any or all of the social services designated by the term "mental retardation services" (codes 090 through 095) were provided to the extent that the social worker had intended to give them.

"Maximum feasible self-sufficiency" means the extent of independence in daily living that could be possible and practical for this individual, taking into consideration his age and any physical handicaps as well as the degree of mental retardation. This judgment should be based upon whatever assessment may have been made by a physician or psychologist, provided that the information is available to the social worker. (It is assumed that the worker took this assessment into account in making the service plan.)

A. Client has earnings which make him at least partially self-supporting.

B. Client has reached maximum feasible self-sufficiency, and no further social services are needed at this time.

C. Client has reached maximum feasible self-sufficiency, but other social services (other than MR services) are needed to keep him functioning at this level.

D. Client has become more nearly self-sufficient, but has not reached his maximum level. No further social services are appropriate at this time.

E. Client has become more nearly self-sufficient, but has not reached his maximum level. Other social services (other than MR services) are needed to maintain him at this level.

F. Client is no more self-sufficient than when MR services began, but a satisfactory care arrangement has been made and no further services are needed at this time.

G. No more self-sufficient than when MR services began. Social services other than MR services are needed to maintain him at this level.

H. Less self-sufficient than when MR services began. No other social services now needed.

I. Less self-sufficient than when MR services began. Other social services (other than MR services) are needed now.

J. Other.

them. Therefore, the constraints for input into the RCEM consist simply of their rank order.

Other bases for establishing benefit weights. Having read about the use of judges to specify the relative merits of the members of a set of outcome categories, the reader may be thinking that the only praiseworthy feature of our method is the shift in the level at which judgments are required, so as to avoid the task of judging each individual case. This is too limited a view of the method. The Relative Cost-Effectiveness Model can use data from a variety of sources to establish the constraints that will be fed into the Model. For example, there might be some data from a separate research study which would reveal the "goodness" of several outcome categories relative to one another. Such information would be usable even if it pertained to only a few of the categories in a set. During the project's second year, published research in the area of child protective services was reviewed in an attempt to find studies showing a relationship between case status at the time of closing (i.e., outcome category) and long-term benefit to the child. If we had found such a study, even if it answered the question for only a few of our outcome categories, we would have built the findings into our scale for child protective services, thus undoubtedly making it better and more believeable. We had hoped also to make our own follow-up study of a group of child protective service cases that closed several years ago, classifying these cases as to outcome at the time of closing and then looking for differential recidivism rates among the outcome categories. (Time limitations did not permit this.)

The point is this: the RCEM can use *any* available data showing the

relative goodness of two or more members of a set of outcome categories, with experts' judgments being used to supply the missing relationships among the remaining members. In our project, we have demonstrated how to produce some input for the RCEM, using judgments only. It remains for future research to supply the needed data on the real effectiveness (the genuine benefit to the client) of the members of a set of outcome categories relative to one another. This will have to be done separately for each service area, if service-specific outcome categories are being used.

Caseworker Assessment of Client Benefits. During the interview sessions with caseworkers concerning their closed cases, they were also asked to assess directly the extent of benefits they felt were achieved for the client. Naturally the assessment could not be presented in quantitative terms, but rather gross qualitative categories of ever-increasing amounts of benefit were used. These categories are presented below:

Category	Meaning
0	no benefits
1	less than average
2	average
3	above average
4	outstanding
-1	negative benefits
X	unknown

No claim is being made that caseworker assessments are the standard against which all other outcomes must be compared. Rather we are looking for where there are consistencies with different ways of measuring effectiveness, and where there are inconsistencies we seek a logical explanation of why. Preference should always be given to those measurement techniques which are objective and, simultaneously, sufficiently sensitive to discrimi-

nate among alternate delivery mechanisms. In violation of this rule, and for lack of how to define objective outcomes, many social services data systems either ignore outcomes altogether or rely completely upon caseworker assessment of the type we are using. Unfortunately, such systems cannot be used to monitor results of delivery system changes on cost-effectiveness. As a matter of fact, judgment information at this level has proved of no value whatever when made part of an on-going process of collecting data.

Comparison of Alternate Outcome Category Definitions

In this section comparisons between the four types of outcome categories (two defined using service-generic goal dimensions, one using service-specific outcomes and one derived directly from caseworker assessment of results) will be accomplished through correlational analysis. Each set of outcomes will be rank ordered and compared statistically to each other by means of rank order correlation.* Of course none of the sets of outcomes is a generally acceptable standard for measuring the effectiveness of social services; rather, each has some merit which can be reinforced empirically with high correlation with others. Where high correlation is missing, theoretical explanations are necessary. Finally, indications can be gleaned from this analysis as to future developments which might be expected to further enhance measurement in social services.

But first we must answer in advance what is high correlation. Correlation coefficients are mathematically restricted to values being between -1 and 1. A value of 1 indicates perfect correlation between two streams of numbers; when the first is numerically large, so is the second. The value -1 indicates exactly the opposite; as one is large the other is small - always. The value 0 means that the two streams of numbers have no relation; the value of the first has no bearing on the value of the second. Fractional values are associated with interim situations where a relationship exists, but not perfectly. Psychometricians typically demand rather high correlations for validating test instruments before they feel comfortable in acting on test

* Walker, Helen M. and Lev, Joseph, Statistical Inference, Holt, Rinehart & Winston, 1953.

results, because their acts concern individuals. So far we have restricted usage of measures to evaluate the effectiveness of groups, not individuals, thereby reducing the amount of correlation necessary to provide us with confidence in our results. The amount of correlation we need before we can claim two measures similar can be determined mathematically as follows:

> Suppose a measure x is a surrogate for measure y and their coefficient of correlation is ρ . If x is used to evaluate the relative average effectiveness of two client groups, each of size n, then
>
> $\bar{x}_1/\bar{x}_2$ is to be compared with $\bar{y}_1/\bar{y}_2$
>
> where subscripts denote group membership and the bars indicate averaging. The latter expression is the actual ratio of the effectiveness of the first group to the second, while the former expression is the measured ratio of the effectiveness of the two groups.

Table 3.4 presents 95% confidence intervals about the percentage error in the surrogate ratio as a function of the correlation between x and y and group sizes. The data in the table apply to CPS where y is taken to be the benefits as assessed by the caseworker. The theoretical conditions in the table are discouraging. They indicate that although group comparisons cause a relaxation in the necessary size of correlation required before one can have confidence in results, nevertheless either very high correlation or excessively large samples are necessary. To be within a 10% error 95% of the time in comparing two groups in CPS, a sample of 100 in each group would still require a correlation of .8 between the surrogate measure and actual benefits. A casual perusal of the correlation coefficient we obtained in Table 3.5 should convince the reader of the difficulty of achieving a .8 correlation with these kinds of measures.

What can be done? First, one can and should strive to obtain higher correlations by improving outcome definitions. Second, one can limit all analysis to large sample observations. Third, one can accept the inherent error and disregard results as insignificant unless they cannot be explained by probable error. In the summary report on the first year of the project, the latter was exactly what was done. As a rule of thumb, only comparisons when one group appeared at least twice as beneficial as another were considered significant. This practice allows the use of surrogate measures with a correlation coefficient as low as .25 along with sample sizes of around 25 or more. Given the quality of data available for analysis of social services and the local issues which management would like to examine (with small samples), only extremely significant appearing results should be admitted. Fortunately, many results appear to be extremely significant, so that the power of relative cost-effectiveness analysis is acceptable when used this way. Of course, with higher correlations and/or large samples, more explicit interpretation of results is acceptable.

Armed with a theoretical appreciation of minimum acceptable correlation coefficients, let us re-examine Table 3.5, looking for acceptable surrogate outcomes.

Employment Services. Employment Services outcomes, however measured, will result in similar client-group evaluations. All correlations between generic, specific and caseworker-assessed outcomes are high. Reasons for such unequivocal results with Employment Services are twofold: (1) employment-related outcomes are naturally more objectively related to client benefits than outcomes for many other services, (2) the goal of Employment

Table 3.4

Percentage Error With Correlation ρ_{xy} *

Number in each group being compared	ρ_{xy} .1	.2	.3	.4	.5	.6	.7	.8	.9	1.0
1	1264	622	406	292	216	170	130	95	61	0
9	421	207	135	97	72	57	43	32	20	0
16	316	156	102	73	54	43	33	24	15	0
25	253	124	81	58	43	34	26	19	12	0
49	181	89	58	42	31	24	19	14	9	
100	126	62	41	29	22	17	13	10	6	0
400	63	31	20	15	11	9	7	5	3	0
900	42	21	14	10	7	6	4	3	2	0
1600	32	16	8	7	5	4	3	2	2	0

Derivation: For each of n clients sampled from group i, let x_i be the surrogate value for y_i, where $x_i = b y_i + \epsilon$, and the error ϵ has zero mean. It can be shown that the 95% confidence interval for the percentage error in the ratio $\bar{x}_1/\bar{x}_2$ in estimating $\bar{y}_1/\bar{y}_2$ is approximately

$$\pm \frac{196 \cdot \sqrt{2}}{\sqrt{n}} \sqrt{\text{Relative Variance } (y)\left(\frac{1}{\rho^2_{xy}} - 1\right)}$$

* Figures in the tables are applicable to Child Protection Service where Relative Variance of assessed benefits = .21.

Table 3.5

Correlation Coefficients for Various Outcome Definitions

Service	ρ_{gs}	ρ_{go}	ρ_{gB}	ρ_{so}	ρ_{sB}	ρ_{oB}
CPS 118	.69	.35	-.05	.46	.05	.24
ES 91	.92	.54	.44	.65	.48	.40
UP 28	.21	.03	.15	.21	.45	.38
MH 34	.32	.30	-.07	.05	-.34	.20
MR 13	.75	.24	-.07	.55	.18	.55

Notation: ρ denotes "correlation coefficient" between subscripted outcomes

g denotes the service-generic combined movement outcomes

s denotes the service-generic movement for ES or un-ES, respectively

o denotes service-specific outcomes

B denotes caseworker assessed benefits.

Services generally is to improve one's situation in a relatively short period of time, and not to just help maintain their living conditions.

Child Protective Services. Although CPS tends also to be directed toward improvement of a client's living condition rather than maintenance, outcomes are far less indicative of an individual's progress than for Employment Services. Caseworkers' assessment of the benefit to the child from services provided appear to be particularly ambivalent in relation to "elimination of the cause of abuse or neglect with child remaining at home." As often as not, caseworkers judge the benefits of this condition to be effectively zero, as they apparently are plagued by having to leave children in poor, if not dangerous, living conditions. Intellectually, most caseworkers today probably would embrace this outcome as best. But in practice, with individual children in individual homes with severe problems, their intellectual side gives way to the reality of what they see, and don't see.

Nevertheless, the service-specific outcomes are statistically adequate when judged against caseworker assessment, and may be more objective and more appropriate even without the correlation that does exist. The two outcomes constructed from service-generic goal dimensions prove to bear no significant correlation with caseworker assessment, but they do correlate properly with service-specific outcomes. Unless caseworker assessment is to be completely discounted, the goal dimensions, as we have interpreted them categorically, simply should not be used.

Unmarried Parents Services. Both the service-generic outcomes designed for Child Protective Services and the service-specific outcomes cross-validate

with one another and with caseworker assessment. Here again, the service is episodic rather than maintenance. The remaining service-generic outcomes are inadequate for this service area.

Mental Health and Mental Retardation Services. Service-specific outcomes can be used with some trepidation with Mental Health and Mental Retardation Services. Service-generic outcomes fail to correlate well enough with either caseworker assessment or service-specific outcomes to justify their use without additional rationale. The primary reason for the weakness of these outcomes is because maintenance is the more usual goal in these two service areas. Both service-generic outcomes were defined in terms of movement, which does not occur much with maintenance services.

Conclusions Regarding Outcome Measurement:

1. Service-specific outcome categories (as we used in the first two years of this project) appear both acceptable and superior to our first attempt at more generically defined scales.
2. Service-generic outcomes did not prove adequate for most services, with Employment Service being an exception.
3. Service-generic outcomes should be improved with further research, since service-specific outcomes are felt to be impractical for full-scale implementation.

Note: The next level of refinement is already underway in the State of Colorado at the time of this writing.

Cost Analysis

The methodology of Relative Cost Effectiveness analysis seeks to provide information to decision-makers on various client groups of interest within a service area. In order to support trade-off decisions, both government expenditures and other social costs should be considered in estimating the cost portion of the information provided. Nevertheless, in most instances, government officials are primarily concerned with the former, budgetary expenditures, both because those same officials are judged in terms of performance against their budget and because of the relative precision of expenditure data compared to the more elusive social costs. For these reasons, our efforts to date have been limited to cost analysis of government expenditures.

We have further restricted our objectives in cost analysis to the estimation of average costs for any client group and not marginal costs. This restriction is a direct consequence of the nature of the decision making process which this analysis is meant to support. "Is client-group A more cost-effectively served than client-group B?", is a frequent question asked by decision-makers. Based upon the answer we may decide to improve, or curtail, the service provided to one of the groups. Average costs are sufficient for this purpose. The decision-maker seldom makes truly marginal budgeting decisions, which require answers to the following types of question and which require marginal costs: "What is the effectiveness and the cost per additional client if we expand client-Group A to encompass individuals not currently being served?"

One main reason for decision-makers avoiding the latter question is

due to limitations of the state-of-the-art. Not only have marginal costs proved difficult to measure directly, but marginal effectiveness of social services has yet to be attempted. Thus, the fact that we concentrate on developing average costs does not imply that marginal costs are unimportant but only that until our understanding of the relation of effectiveness to cost, on the average, is improved, there is little point in proceeding to the next level of analysis.

We chose to orient our cost analysis toward disaggregating total government expenditures for local offices down to each client in our sample, so as to facilitate the determination of costs associated with any particular sub-group. Of course, any cost for a sub-group determined in this manner is only an estimate and is only as good as the means selected for disaggregation. In general, the "true" cost for any sub-group is unknown. One might assume that total expenditures should be evenly divided among all the clients yielding a single number to be associated with each, namely, the overall average cost per client. While almost everyone would object to this simplistic approach for a host of practical reasons (e.g., some client receive services much longer than others, thereby consuming far more resources), the fundamental objection to this approach is that the cost would not be measured at the same level of refinement as the effectiveness of the services rendered.

The requirement that cost and effectiveness be measured with commensurate refinement is an important aspect of the methodology, and thus worth considering in some detail. For the data on clients we sampled (whether the sample was drawn from closed case records, as in the past,

or from ongoing cases, as in the third year of the project), individual outcomes are recorded. And we have detailed information regarding the kinds of services provided to the client. To support the level of analysis appropriate to these data, we need to construct an algorithm which allocates costs to individuals with far more subtlety than the simplistic approach above. Otherwise, the cost term in an analysis would likely be insensitive to the ways in which services were provided, which would lead to erroneous cost-effectiveness conclusions.

The approach we advocate follows the guidelines of the Office of Management and Budget. We categorize costs as "direct" or "indirect" with the goal of maximizing the amount viewed as direct, insofar as it is practical. Indirect costs are prorated either against direct costs or activity indicators which give rise to direct costs. The standard for what is "practical" in maximizing direct costs flows directly from the analytic purposes to which the cost data will be put, which in turn depends on the nature of the performance data available. Thus, cost analysis is clearly inseparable from the overall analysis.

A basic cost model which can be made as sensitive as necessary to the ways in which services are provided (thereby capable of supporting any level of analysis desired) is the following:

$$\text{COST} = (\text{Related Caseworker Salary}) \cdot (1 + \text{Overhead}) + \text{Purchased Services} \qquad (1)$$

In this model, caseworker salary becomes the direct cost serving as the base for prorating all other costs, except for other directs, namely

purchased services. Note that this model applies as well to individual cases as it does to aggregate groups of clients. Sensitivity of the cost model depends upon the means taken to estimate caseworker salary, and the basis chosen for pooling indirect costs related to each type of caseworker.

For example, the Length-of-Service (LOS) of a case can be used to estimate caseworker salaries related to one or more clients. Formula (2) then becomes:

$$\text{COST} = (\text{LOS} \cdot \text{Caseworker Salary/Caseload})\ (1 + \text{Overhead}) + \text{Purchased Services} \qquad (2)$$

This formula is adequate (that is sufficiently sensitive) for many analytical purposes. By pooling indirect costs according to service area, the formula can be made even more accurate w/o undo effort, since then this overhead rate becomes a function of service area. Indeed, this formula is about the best we were able to implement during the first two years of the study when the sample was taken from closed case records. No other information besides LOS was available to serve a basis for prorating caseworker salary.

With the system which was pilot tested in the third year, another level of improvement is possible. The cumulative time spent on a case by caseworkers can be calculated by accumulating what they report as their activities. Actually the time reported is only accurate to within approximately 5 minutes, but nevertheless this is a far superior basis for prorating caseworker salary than simply LOS. The improved formula

now becomes:

$$\text{COST} = \left(\frac{\#\text{time units reported for case(s)}}{\text{Total \#time units reported}}\right)\left(\text{Caseworker Salary}\right) \cdot \left(1 + \text{Overhead}\right) + \text{Purchased Services.}$$

A more detailed discussion of the actual application of this formula may be found in Chapter IV, Section B of this report.

Chapter 4

SOURCES OF DATA

Principal Data Source: the Social Workers

Selection of Participants. To conduct an adequate field test of the forms and procedures, project staff members anticipated making frequent visits to the participating local agencies. In view of the increased emphasis upon extracting cost data from the local agencies' accounting records (which differ in form and degree of detail from county to county), the involvement of a few large agencies would clearly be the most efficient approach. These considerations led to the decision to invite the two largest agencies, the Hennepin and Ramsey County Welfare Departments (Minneapolis and St. Paul), to serve as test sites. Each agency imposed a condition for its participation. Hennepin, preparing at that time for agency-wide installation of its own social service information system (known as the "Interim System"), specified that a duplication of effort must not be required of the workers who agreed to take part. Ramsey asked us to meet with representatives of the Staff Council of its Social Services Division, using their ideas in the designing of the forms.

The original plan was to choose sample cases from a large population of cases for which the goal of self-support or self-care was appropriate. This sample would be so structured that each social worker would have only about 20 percent of his cases in the study. However, we soon realized that a worker would find it easier to report all of his cases in the same manner. Therefore, we requested the participation of a smaller number of workers that we had originally sought. Instead of trying to establish a

population of cases wherein every case would have either self-support or self-care as its goal, we identified the kinds of caseloads in which most cases could reasonably be expected to have one of those goals. Since we had experience during previous years with cases receiving child protective services (likely to be self-care cases) and employment services (self-support), we asked for some workers with caseloads in those areas. However, we excluded workers in the WIN program because DPW was preparing to issue a set of forms containing some GOSSS concepts, which would be mandatory for all WIN cases, and we did not wish to compete with that development.

On the basis of those criteria, plus whatever additional criteria the supervisory personnel in the two agencies chose to apply, 30 social workers became project participants. By organizational unit, they were distributed as follows:

	Men	Women
Hennepin, Child Protective Services	7	3
Hennepin, Adult Services	1	3
Ramsey, Child Protection	1	3
Ramsey, Mentally Deficient	1	2
Ramsey, Mentally Ill	-	3
Ramsey, Unmarried Mothers	-	2
Ramsey, Work and Training	1	3

The Case Data System, As Planned. The client-specific data included in GOSSS can be summarized generally by stating the following questions:

What was done for the client?
- Which service? How much of it?
- Who gave the service? Did Welfare pay for it?

Why was this done?
- Toward what goal was the service directed?
- Which barriers to goal attainment were to be conquered?
- What service plan was developed for conquering them?

What was the outcome?
- Was the goal reached?
- Were the barriers overcome?

To relate outcome information to what was done and why, one can collect

all data after the fact (as we did during the project's first two years) or one can require the recording of services at the time when they are given and outcomes at some later time. The latter approach has at least three advantages: the service data are likely to be more valid and more reliable, being less dependent upon records maintained for other purposes; the data-gatherer is not influenced by prior knowledge of the outcome; and greater flexibility for analysis exists when it is not necessary to specify the cohort in advance (e.g., "all cases that closed during a certain year"). But when the recording is spread over a period of time and when, further, provision is made for extracting data from the data base while that base is being created (for analysis, or for preparation of caseload lists), then the undertaking takes on the features of a system, including the problems usually encountered in systems. That is why a field-test of our project forms and procedures was such a different matter from field operations during the first two years.

In tangible terms, the part of the system visible to the social workers consisted of three forms, which are shown on the pages immediately following this one. Forms 1 and 2 were load documents, whose main purpose was to add cases to the data base. In October, the workers completed a Form 2 for each case, or primary client, in their caseload at the time, i.e., for each individual or group of individuals who were receiving social services and for whom a goal was established. Hennepin workers completed a Form 1 for each family unit represented in their caseload at that time. (Ramsey workers did not use Form 1, since their agency already had the data in computerized form.)

PROJECT ON RELATIVE EFFECTIVENESS OF SOCIAL SERVICES — FORM 1

CO.	CASE NO. C		FAMILY LAST NAME		SERVICE NO.	
					CENSUS TR.	
					RESIDENCE (CITY SIZE)	

PR. NO.	FAMILY COMPOSITION: LAST NAME	FIRST	I.	REL TO HEAD	LIV ARR		FATHER		MOTHER		YRS SCH.		BIRTH DATE: MO	DAY	YEAR
01															
02															
03															
04															
05															
06															
07															
08															
09															
10															

ACTION: (DATE _____)
1. START
2. NEW
3. REOPEN
4. ADD INFORMATION
5. CORRECT INFORMATION
6. NEW PLAN
7. NEW EVENTUAL GOAL
8. INFORMATION & REFERRAL ONLY
9. CLOSE

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PROJECT ON RELATIVE EFFECTIVENESS OF SOCIAL SERVICES — FORM 1

CO.	CASE NO. C	FAMILY LAST NAME	CROSS-REF		SERVICE NO.	
PRIMARY CLIENT'S ADDRESS	STREET NO. & NAME		CITY & STATE	ZIP CODE	CONG.	

APPLICATION DATE ____/____/____
ACCEPTANCE DATE ____/____/____

CLIENT(S) INCLUDED IN THE CASE SHOWN ON THIS FORM
1 INDIVIDUAL CHILD
2 INDIVIDUAL ADULT
3 FAMILY

REASON FOR REJECTION
1 NOT LIVING IN COUNTY
2 NOT ELIGIBLE
3 SERVICE NOT AVAILABLE FROM AGENCY
4 SERVICE NOT AVAILABLE IN COMMUNITY
5 SERVICES NOT ACCEPTED BY CLIENT
6 OTHER _____

PRIMARY CLIENT(S)	FM #	HLTH	DR	SP	SOCIAL SECURITY NUMBER

CODES TO BE USED:
HEALTH: 1-EXC. 2-GOOD 3-FAIR 4-POOR
DR'S CARE: 1-YES 2-NO
SPOUSE IN HOME: 1-YES 2-NO 3-NO SPOUSE (CHILD) 4-NA (INST.)

BASIS OF ELIGIBILITY FOR FEDERALLY-MATCHABLE SERVICE:

RECIPIENCY STATUS	ASST. CATEGORY
1 CURRENT	1 OAA, 2 AFDC, 3 AFDC-UF, 4 AFDC-FC, 5 AB, 6 AD, 7 EMERG. ASST.
2 FORMER	
3 POTENTIAL	
4 NONE OF THESE	

BASIS OF NON-ELIGIBILITY FOR FEDERALLY-MATCHABLE SERVICE:
1 GR
2 CW RELIEF
3 NONE OF THESE

SPECIAL AREAS (CIRCLE ALL APPLICABLE)
01. WIN
02. VOC. REHAB.
03. OTHER VOC. SERVICES
04. UNWED PARENT
05. MIGRANT WKR.
06. MENT. RETARD.
07. DRUGS
08. ALCOHOL
09. JUV. DEL.
10. ELDERLY
11. MENT. ILL.
12. PHYS. DISABLED
13. VISUAL HDCP.
14. MARITAL DISC.
15. STATE WARD PROTECTION:
16. VOLUNTARY
17. INVOLUNTARY

DATE TO FIELD ____/____/____
DISPOSITION ____

CONDITION OF LIFE: (SEE INSTRUCTIONS)

AT INTAKE:	AT ASSESSMENT:	DESIRED GOAL:
CONDITION: _____	CONDITION: _____	CONDITION: _____
DATE ____/____/____	DATE ____/____/____	EST. DATE OF ACHIEVEMENT ____/____/____

ARE CLIENT AND AGENCY AGREED ON THE GOALS, BARRIERS, DEADLINE AND PROPOSED SERVICES? 1-YES 2-NO

BARRIERS:
01. Physical disabilities
02. Mental Disabilities
03. Psych. dependency
04. Births o/w, unwanted pregnancies
05. Other employ. rel. disabilities
06. Lack of child care
07. Lack of transportation
08. Inad. educ., training
09. Lack of info. about comm. resources
10. Marital or family problems
11. Delinquency probs.
12. Child behavior problems
13. Family member ill or needs care
14. Discrimination
15. Lack of jobs
16. Lack of legal aid
17. Inad. housing, hazardous living arrangements
18. Inability of indiv. or family to accept hdcping condition
19. Isolation, loss of social contact
20. Potential or actual abuse, neglect
21. Lack of knowledge in parental functioning
22. Lack of ed., recreat., cul., oppt.
23. Discriminatory adm. policies
24. Family & indiv. neg. att. toward comm. or inst. care
25. Inad. agency screening, assess., ref. proced.
26. Inadequate interpersonal adjustment
27. Hdcping effects of blindness
28. Inad. home and family management
29. Lack of comm. awareness concerning service needs
30. Other _____

ACTION: (DATE: ____/____/____)	BARRIERS	SERVICES PLANNED	METHOD
1 START			
2 NEW			
3 REOPEN			
4 ADD INFORMATION			
5 CORRECT INFORMATION			
6 NEW PLAN			
7 NEW DESIRED GOAL			
8 INFORMATION & REFERRAL ONLY			
9 CLOSE			

CODE FOR METHOD
2 PROVIDED BY SERVICE WORKER
3 PROVIDED BY OTHER STAFF MEMBER
4 PURCHASED
5 REFERRAL
6 DELETED-SERVICES NOT AVAILABLE FROM AGENCY
7 DELETED-SERVICES NOT AVAILABLE IN COMMUNITY
8 DELETED - OTHER _____

AGENCY (IF PURCHASED) TYPE	NAME

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*** FAMILY CHARACTERISTICS ITEM ***

Reverse Side of Form 2

CODES FOR SERVICES

INFORMATION & REFERRAL SERVICES 000
- Income maintenance. 001
- Food programs 002
- Clothing & household equipment. 003
- General public serv. (fire, police, etc.) 004
- Health care 005
- Equal opportunity resources 006
- Other 007

ADOPTION. 010

AGING, SERVICES FOR THE 020

ALCOHOL/CHEMICAL DEPENDENCY SERVICES. . . . 030
- Detexification. 031
- Residential treatment 032
- Day center. 033
- Outpatient. 034
- Half-way house. 035
- Individual and group counseling 036

CHILD-CARE SERVICES 040
- Group day care, incl. before/after school 041
- Family day care 042
- In-home care. 043

CHILD-SUPPORT SERVICES. 050

COMPREHENSIVE SOCIAL & REHABILITATIVE SERVICES FOR CHILDREN AND YOUTHS. 060
- Residential treatment 061
- Other 062

CORRECTIONS 070

COMPREHENSIVE SOCIAL & REHABILITATIVE SERVICES FOR PERSONS WITH EMOTIONAL, BEHAVIORAL AND RETARDATION PROBLEMS
- Mental health services. 080
  - Pre-institutionalization. 081
  - Alternatives to institutionalization. . 082
  - Assistance in return to community . . . 083
  - Individual and group counseling 084
- Mental retardation service. 090
  - "Cost of care". 091
  - Guardianship. 092
  - Day activity center 093
  - Group home. 094
  - Individual and group counseling 095
- Behavior problems services. 100
  - Nonresidential services 101
  - Group homes, half-way houses, and day care programs 102

DEVELOPMENTAL SERVICES. 110

EDUCATIONAL SERVICES 120

EMPLOYMENT AND REHABILITATIVE SERVICES
- WIN-related services. 131
- Non-WIN-related services 132
- Self-support for handicapped adult 133

FAMILY-PLANNING SERVICES 140

GUARDIANSHIP 150

HEALTH NEEDS, SERVICES RELATED TO. 160

INDIVIDUAL AND FAMILY LIFE, SERVICES TO STRENGTHEN 170
- School social services 171
- Marital and family counseling. 172
- Money management, budgeting, consumer ed. 173
- Services to assist parents in child rearing
  - Child-rearing counseling. 174
  - Youth opportunity/camping. 175
- Family life education. 176

IN-HOME CARE 180
- Homemaker. 181
- Housekeeper. 182
- Home management, other functional educational services 183
- Chore services 184
- Home-delivered meals 185
- Housing. 186

LEGAL SERVICES 190

OUT-OF-HOME CARE
- Foster care for adult. 201
- Foster care for child or youth 202

PROTECTIVE SERVICE
- For child or youth 211
- For adult. 212

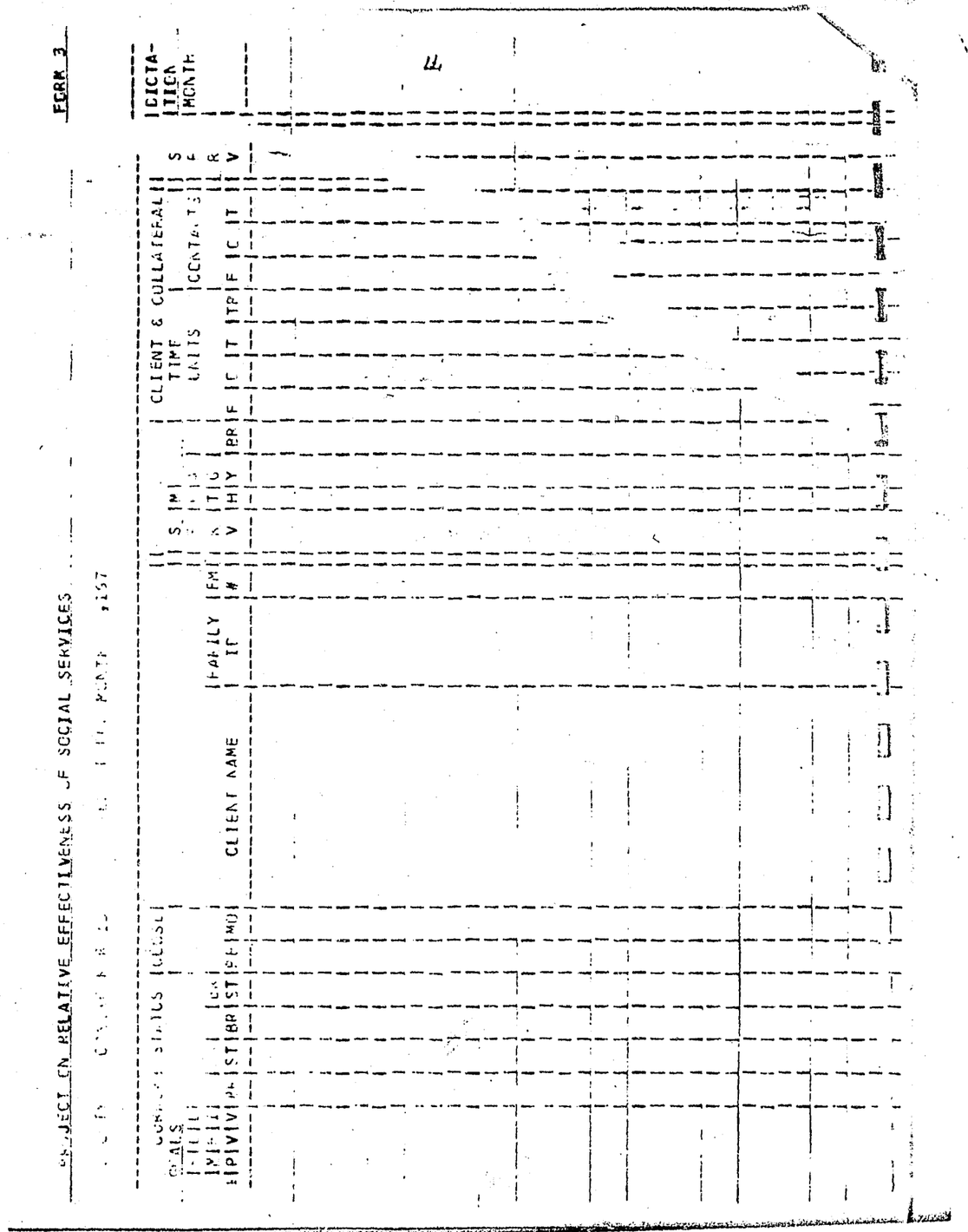
SHELTERED WORKSHOP/WORK ACTIVITY CENTER. . . 220

SPECIAL SERVICES FOR THE BLIND 230

TRANSPORTATION SERVICES. 240

UNMARRIED PARENTS, SERVICES TO 250
- Establish paternity. 251
- Services to children born out of wedlock . 252

VOLUNTEER SERVICES 260



Throughout the six-month period of field work (November, 1972-April, 1973), workers added cases to their caseloads by preparing new Form 2's and, if appropriate, new Form 1's also.

This pair of forms had other purposes, too. If a worker wanted to add information, to correct information previously reported, or to establish a new goal or a new service plan, he was supposed to complete the top line of the appropriate form and then supply only the new data. Closing a case, according to our original plan, was to be accomplished by using Form 2 — and also Form 1, if appropriate.

The forms were collected by project staff in DPW and forwarded to Unco, where a file of each worker's cases was established and updated. At the end of each month, Unco's computer produced a Form 3 for each social worker, dated for use during the following month. In addition to the fixed information which constituted the form itself (e.g., the column captions), the original plan was for the computer to print only the surname, case number, and family member number (FM #) of each primary client (individual or group), together with the latest information on the client's "condition of life" (defined in Chapter 1). The worker was then expected to record throughout the month every social service delivered to the client during the calendar month. He was to show whether the service was obtained from a source outside the county welfare department (either purchased by the welfare department or free of charge) or was rendered solely by a member of the agency staff. He was also expected to identify the barrier, from a standard list of barriers, toward which the service was directed and to report the end-of-month status of the barrier. Any contacts between the social worker and the client or a collateral person were to be recorded, both in terms of the number of contacts made and the number of 15-minute time units

spent in the making of those contacts. Finally, he was asked to update the condition-of-life code to show the client's month-end status. Case closings, with reasons, were to be shown on Form 3. New cases were to be shown on Form 3. New cases were to be written on Form 3, as well as being reported by means of Forms 1 and 2. Shortly after the end of the report month, the worker was supposed to submit his completed Form 3 to DPW for transmittal to Unco. Meanwhile, he should have begun recording activity for the new month on a new Form 3 given to him a few days earlier. Upon receipt of the completed Form 3 and the month's accumulation of Forms 1 and 2, Unco would then update the worker's case file, doing all necessary editing and coding so that the data would be available for analysis and so that a new Form 3 could be produced a few weeks later.

The Case Data System, As It Actually Operated. The preceeding subsection tells how we wanted the system to operate. Its actual operation was a somewhat different matter, partly because of improvements made during the course of the project and partly because of unforeseen problems. As "improvements", we can cite a series of changes intended to free the worker from dependence upon his copies of Form 2 and from having to prepare so many Form 2's for the purpose of reporting changes in continuing cases: (1) closings could be reported on Form 3 without a corresponding Form 2; (2) services given that had not been included in the original service plan could be reported on Form 3 without submitting a Form 2 to change the service plan; (3) the computer would print on Form 3 every barrier that had been reported on Form 2, so that the end-of-month status of every barrier could be reported; and (4) barriers that were now to a case (or newly recognized) could be added to Form 3 without the use of a Form 2.

Unco had originally planned to do most of the maintenance and updating of the workers' case files by hand instead of writing a file-maintenance program for the computer. With the introduction of the above improvements, the complexity of the updating function was greatly increased, so that increased use of the computer seemed essential. The fact that the format of Form 3 was revised several times during the project contributed to the time required for computer work. So did case-number problems. And not the smallest problem was the difficulty that some of the workers experienced in meeting deadlines for submitting completed forms. The result of these several problems was that we were always late in giving the workers their "case rosters" (i.e., the Form 3's as they emerged from the computer). This persistent tardiness decreased the likelihood that the workers would use the Form 3 for recording their activity on a day-by-day basis.

Other Case Data Collected. Data about costs were collected and will be described later in this chapter. The other form of case data obtained consisted of some outcome measures on cases that closed during the course of the project. These measures were obtained by interviewing each worker regarding each of his closed cases. They are described in Chapter 3 of this volume, but are mentioned here simply for the sake of completeness.

Assuring the Quality of Data. It is evident that the workers were asked to make a large, complex set of judgments pertaining to concepts that were new to them. Therefore, we spent considerable time and effort on various activities intended to maximize the quality of the data that the workers would be recording.

In each county, a training course of four two-hour sessions was conducted for the workers before they began completing forms for their be-

ginning-of-project caseloads. The course covered GOSSS concepts, the use of the three forms, and an item-by-item explanation of their content. Using an overhead projector and transparencies, fictitious cases of various types were discussed. The first two sessions were spent on concepts and on Forms 1 and 2, with the third and fourth sessions being devoted to Form 3. Lively discussions occurred in most sessions, with some revisions being made as a result of those discussions. The fact that the immediate supervisors of a few of these workers attended some or all of the training sessions was a definite plus.

During the training course, the first version of the Project Manual was distributed. This manual underwent substantial revisions in December and April, accomplished by issuing replacement pages rather than complete manuals. (Appendix of this report contains a complete copy of the final version of the manual and a summary of the principal revisions.) Issuance of revised manual pages was often preceded by memos explaining the changes briefly, so that changes could be implemented promptly. As a handy reference, each worker was given a "desk card" showing on a single sheet the codes needed for Form 3, including the codes for a more limited list of services tailored to that worker's specialty.

Making face-to-face consultation available on a regular basis was another technique intended to improve the quality of the recorded data. A project staff member spent certain days in each of the two agencies, having made known to the workers the dates, desk location, and telephone number so that they could discuss problems, especially problems that were unique to a particular case. (Of course they could contact staff members at other times by phone also.) Although the need for this kind of help decreased as the workers gained experience, the practice of spending one day per

week in each agency was continued almost without fail until nearly the end of field work. While in the agency, the staff member also made a quick audit of any forms submitted on that day, as time permitted.

Finally, we attempted to assess the reliability of data entered on Forms 1 and 2. From among the cases active at the beginning of the project, one case was chosen at random from each worker's load. The agency's case record was read by a project staff member, a former county welfare director with a thorough knowledge of Minnesota public welfare programs and procedures. His objective in making this review was to determine whether the workers recorded factual information accurately on the project forms and whether their judgments agreed with his independent judgment. This undertaking is described as an assessment of reliability, not of validity, for two reasons: we cannot assume that the factual information in the case records is absolutely complete and error-free, and we cannot claim that an independent judge whose judgments are based only upon the case records will make more correct judgments than the social workers who wrote those records and who are acquainted with the clients. Rather, we perceived this as a way of making sure that no critic can say, "There is no resemblance between what appears on the project forms and what was actually happening in the case," or "The framework within which the workers were asked to make judgments is so esoteric or incomprehensible that they could not make judgments with which a reasonable person could agree."

The sample consisted of 36 primary clients representing the 30 social workers. (Some family cases contained more than one primary client.) Two could not be reviewed because recent dictation was unavailable. For the 34 clients reviewed, there was good agreement on condition of life at intake or currently, with a little more disagreement--but still not much--on the

goal condition: in four cases, reviewer and worker agreed on the broad goal (e.g., self support) but were not equally optimistic about the extent to which it could be attained; in another four cases, they disagreed on the broad goal. In nine cases, the reviewer disagreed as to the barriers that should have been identified, sometimes wanting to add to the worker's list and at other times objecting to a barrier marked by the worker. Similarly, there were seven cases in which the reviewer disagreed with the services shown in the worker's service plan. Five Form 2's were thought to be superfluous, since the individuals had the same goals, etc., as other family members and could have been listed on the same Form 2 with these others. (This assessment was made early in the project, before we had become aware of the problems related to the use of "primary client groups.") There were only four cases in which the reviewer disagreed with the worker on more than one judgment item. Factual errors and omissions were found in thirteen cases. In view of the fact that this sample was drawn from forms completed at the very beginning of the project, before experience had improved both the workers' performance and our instructions, the number of errors and disagreements does not seem alarming. One probable cause of problems that could be eliminated by improvements in the design of Form 2 was the worker's failure to note the relationship of an individual item to the main heading to which it belongs.

The Climate for Productive Field Work. Our hope was that the field test of the project forms and procedures could be truly beneficial. Certainly we wanted the social workers to make a diligent effort to use the system as designed. But, we also wanted them to improve upon the system, giving us the benefit of their frustrations in trying to do paperwork while responding to the needs of their clients, telling us which concepts

or procedures did not make sense in their agency or with the types of cases in their caseloads, and suggesting specific ways in which the system could be improved. We used five ways of obtaining these benefits.

Before designing the forms, we met with two Ramsey workers representing the Staff Council of that agency's Social Services Division. We did not approach them with draft forms to be reviewed; rather, we showed them the constraints (principally the GOSSS items that must be included) and asked them for advice on a number of issues, such as how to define a case or how to manage the updating process. Later they reviewed the drafts that we designed after that meeting. The fact that one of these workers worked in the WIN program made her ineligible to participate further in the project. The other worker did continue, however, and served informally as a liaison person between the Ramsey workers and the staff of the project.

To make the project less burdensome to the workers, we sought ways to avoid duplication. In Hennepin, the project workers did not participate in their agency's Interim System, as all others in their agency were doing. Instead, project staff members transcribed data from the project forms onto the Interim System forms. (In fact, some of the items on Form 2 were placed on the form solely to make this possible.) The Ramsey workers did not complete Form 1, since we could obtain the data directly from that agency's computer. DPW requires social services workers throughout the state to report each service given during one month of each calendar quarter, and the project staff attempted, not entirely successfully, to protect the 30 project workers from the duplication that this reporting requirement entailed.

Those workers who chose to submit an invoice were paid for working overtime to complete the project forms at a flat rate for up to a maximum of 20 hours. Originally, this provision was intended to make the task of "loading the system" less painful, but we later changed the policy to allow anyone who had not claimed the full 20 hours to request payment for additional hours at any time during the course of the project. Most of the workers did submit invoices, and the majority reported the full 20 hours. Although the workers were not asked to keep track of uncompensated overtime, it was abundantly clear that many of them, if not all, spent large amounts of their own time on the project.

Feedback meetings were conducted from time to time in each agency, at which time the workers not only expressed their complaints but also provided constructive suggestions. Indeed, many of the improvements made during the course of the project (mentioned earlier in this chapter and spelled out in detail in Volume II of this report) arose directly from the discussions that took place during these meetings. On her own initiative, one worker produced an extensive list of suggestions and presented them to the project staff.

Finally, a member of the project staff interviewed some of the workers about their methods of using Form 3 and their opinions of the GOSSS concepts. The interview schedule, which is reproduced in Appendix , was intended to elicit information about the original version of Form 3 and the first revision. Therefore, the responses given at that time may or may not be similar to responses that would have been given after further revisions. At that time, two-thirds of the respondents said that they recorded their activity first on another form and later transcribed it to the Form 3. Most did not record immediately after each casework interview,

or even every day. However, a number of them believed that it would be possible to revise Form 3 in such a way as to make immediate recording feasible. (Unfortunately, we did not succeed in making such a revision.) With regard to the GOSSS concepts, most respondents objected to the condition-of-life categories (which we later changed completely); none objected to the barrier concept, but all thought the list too long (so we later shortened it); and half of them found that the GOSSS framework fit some cases poorly.

How effective were these efforts to involve the social workers in the development of the system, to learn from them, to keep them interested, to express our appreciation of the extra effort that was required of them? In the absence of a control group, an answer is difficult. In all candor, it must be admitted that none were sorry to see the field-test end, that two workers failed to turn in Form 3 for the last two months, and that the workers in one county wanted to withdraw from the project in November. Two reasons for our less-than-perfect success can be identified, in addition to the complexity of the system: we were sometimes slow in fulfilling our promises to the workers (e.g., we delayed two or three months in producing a "desk card" to spare the workers the inconvenience of consulting the project manual), and the workers' awareness that GOSSS was being dropped by the federal agency and would probably not be used in DPW's statewide social services information system made the project seem like an exercise in futility. On the positive side, we can cite two workers who completed their work despite extended illnesses. (We believe that the workers who "volunteered" for this project were among their agencies' most conscientious staff members. This was undoubtedly an important factor.) A number of the workers expressed their appreciation of our responsiveness,

stating that they had never before participated in a project in which this happened. Subjectively, we are convinced that this is a good way to conduct a project of this sort, in which the development of a workable system is primary and the production of case-related findings is a secondary consideration.

Other Data Sources: Cost Data

The Project collected cost data as inputs for its cost effectiveness analyses. These data were of several kinds:[1]

Records of direct salary costs for project-workers' time.

Records of other local agency costs properly assignable to project worker salaries as an overhead loading.

Records of administrative costs within the State Department of Public Welfare assignable to social service programs and allocable to local agencies as overhead on local social service expenditures.

Records of payments for purchased social services provided to project clients during the reporting period.

The project also collected other information to use in distributing State Department overhead to local agencies and in distributing local agency overhead to individual project workers' salaries.

Our aim was to produce a cost assessment for each project case for the period of time it was active during the project. This was accomplished

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[1] We did not try to assess non-welfare-department costs for services to project clients, except when these were billed to the participating county departments and paid. Such costs, both for services not billed to welfare and for components of service costs borne by other social agencies above and beyond invoiced amounts, are an important consideration in shaping welfare policy. To measure them, however, would require a much more massive effort than we were staffed for.

We also did not make any attempt to assess the social opportunity costs of tying up investments in the services provided, nor to assess discounted present values of delayed payoffs (though we discussed the applicability of such concepts where outcome measures are firmer than those at hand).

Finally, we did not attempt to trace sources of financial support, believing this irrelevant to our research objectives.

relative to project worker costs and overhead loadings. We found considerable softness in our data on purchased services, however. Because of this, the final cost analyses were not carried down to a case by case level. Rather, a few cost effectiveness comparisons were carried out for certain groups of cases, excluding consideration of purchased services.

More detailed cost analyses of the data base may be done in future, but they are outside the scope of this report.

Costs of Worker Provided Services: The data on numbers of contacts and time units workers reported spending on each client and service (see Form 3) provided a basis for defining the actual costs of each worker's activity in giving service.[2]

In assessing worker costs, we began with the measure of time units spent on a case or service (the count of quarter hour time units, converted to hours). We multiplied this measure times the worker's adjusted and loaded salary cost (per hour, as derived from monthly figures).

The loadings on salary costs made it possible to distribute local and state welfare agency overhead costs to individual cases and services. Each worker's salary was increased by an even share of his or her supervisor's and clerks' salary costs (distributed linearly according to number of people served or supervised). Next, each salary was further increased by a similar pro-rata share of summed salary costs for higher level supervisors and their clerks within the social service program.

[2]These counts of contacts and time units also give measures of how social workers distributed their time among services. And they serve as independent variables for analyzing differential case outcomes (thus: Did cases receiving more than 40 hours of contact time make significantly more progress than others?).

The resulting hourly salaries were multiplied times one plus the ratio of in-program non-salary costs to in-program salary costs. This loaded them with a share of costs for things like furniture, office supplies, and fringe benefits in the social services operation.

Department-wide general support and administrative costs were distributed as a loading ratio of support and administration costs over the sum of the operations costs for social services and public assistance (excluding financial assistance grants and expenditures for purchases of social services). This loading plus one was multiplied times the last stage's loaded salaries. (It was a loading not only on salaries but on all social service and public assistance expenditures other than grants and service purchases.)

Finally, the loaded salaries were increased by a factor of the ratio of the county's share of the state department's social service overhead to the total dollars spent in the county for provision of social services, excluding purchases.

Since contact time was only 30% to 50% of total worker time during the project, we apportioned the costs for non-contact hours to the contact times. We did this by multiplying for each worker his adjusted hourly salary by the ratio of his total time units at work during the project over his total time units of client contacts. This gave the final loaded hourly cost of contact time.

To allay fears of invidious comparisons among workers, we took as our initial salary costs the average for all project workers in any given county job class (such as Social Worker II or Principal Social Worker).

More detailed records are available in the project history file concerning the documents tapped for fiscal data, the exact data extracted, and the stages of calculation the data went through. Most of these working papers are

methodologically unexciting. Two quirks are worth mentioning though.

1. We were unable to assess the proper loading for support and administration in Ramsey County for months before January, 1973. Before that date the monthly financial reports aggregated all salary and fringe benefit costs for the whole department under a support heading. An improved program budget format was adopted in January, which made cost distributions easier to look at. PPBS may have its faults, but well-designed program budgets that define cost and activity centers related to specific organizational objectives are of great value for program evaluations of all sorts.

2. State welfare department social services costs (excluding dollar pass-throughs) were allocated to counties on the basis of county agency reports of numbers of cases which received one or more services in November of 1972. The counts we found on record seemed high for Hennepin County. Investigation showed that Hennepin counts included persons who had received allowable purchased social services without any contact with a county social worker. This reporting was consistent with the instructions for the survey, but the fact that apparently only 1 of 87 counties reported such no-agency-contact services indicates a communications problem between DPW and the local agencies. We disregarded the no-agency-contact service cases in allocating state agency overhead.

Costs of Purchased Services: Data on expenditures for purchase of social services for project clients were hard to access. The most complete sets of records on such costs in both counties were the files of vendor invoices. Other records were contained in computerized payments histories and abstracts.

Vendor invoices were filed in alphabetical order by vendor name (except for the foster care file in Ramsey County which was arranged by client name). After January 1, 1973, these invoices were generally itemized to show units of particular services provided to each client served, giving client name and case/FM number. To access such invoices, however, for the over 1,000 clients in

the study would have required an accurate monthly report of which vendors were providing service to which clients. Such reports were not available, and requiring case workers to prepare them would have been an unacceptable further burden on the workers. Even it they had been available, we lacked clerical staff (because of a freeze on hiring) to read invoices and post data. We therefore did not exploit the invoice files beyond recording the peculiarities of their organization in each county.

Printed abstracts of some service purchase payments were produced by the data processing departments in both counties. These seemed at first to offer better data. Unfortunately, the Ramsey County records (when not in only summary form) generally lacked identifying case and family member numbers. This conditioned use of the records on the vagueries of name matches and manual consistency checks, something again beyond the staff time available, considering the number of cases for whom payments of one kind or another were made each month. In Hennepin County, the abstracts were equipped with case numbers but were printed in a different order, further complicating search. In both counties there were machine-readable records of abstracts contents. These are discussed below.

In Hennepin County there were machine-readable payments history records. These aggregated data on payments for child welfare and social services for each client, giving year-to-date figures and year-to-date adjustments. We made our initial records searches in these tapes, matching on case and family member numbers and subtracting one month from the next to produce monthly expenditure figures. This approach yielded considerable data on foster care, services to unmarried mothers, and mental retardation services (DAC's). Beginning

with the end of March tape, these records also contained partial records of payments for other purchased social services. The tapes lacked, however, any firm data on service dates for which particular payments were made.

Near the end of the project, we discovered the availability of abstract tapes in Hennepin County which provided monthly detail paralleling the cumulative detail in the history tapes. Feeling the detail records superior (since they gave exact service dates), we acquired copies of as many as possible, going back to the record of payments during February for services provided during or before January. We compared the cases included in our match list with our client roster, eliminating some fifty odd false case number matches, and correcting social worker numbers. The resulting selected tape records provided most of the purchased service information included in our final results.

The data from the Hennepin abstracts tapes were soft in several respects. First, during the period of time we looked at them, the tapes did not record all payments for purchased services. The record keeping and accounting were in transition from one system to another. Second, case numbers were quixotic. Child welfare, mental retardation, unmarried mother, and public assistance case numbers carried directly into the tapes. Social-service-only cases were recorded in the tapes with new case numbers, however, and no match list was available to key these to the case numbers we had for project clients. This means that many purchases of service for project clients were not found.

In Ramsey County, the best records of payments for social services were scattered in the fund-accounting disbursement tapes. Unfortunately, these often had empty case number and family-member-number fields, requiring a case-name match to find cases. Such matching was made unreliable by the lack of consistent locations of given names following surnames, and by variant spellings of given names.

We preserved three months' records from these tapes and from data on payments for child care, but we have not yet attempted to read them.

If the project were to be carried out this fiscal year instead of during the past one, reliable records of expenses for purchased social services could be had in both counties. As it worked out, we came up with a picture of services purchased in Hennepin County for child protection, mental retardation, unmarried mothers, and walk-in counseling and health-referral. These data are of some interest, but the lack of other service data was a disappointment.

One lesson we learned is that local agencies will not lean over backward to keep more detailed records (such as itemized vendor invoices and detailed abstracts of payments) then they need to satisfy their reporting requirements to the state. A corollary lesson is that the state agency should allow ample time to local agencies to set up mechanisms for collecting and filing newly required data elements.

Chapter 5

Findings

Briefly summarized in the first two sections in this chapter are the main findings of the three-year project regarding demonstration of the RCEM as a management innovation. Subsequent sections contain a variety of descriptive statistics obtained from client information collected with the pilot system during the third year.

Demonstration Findings of RCEM:

Four distinct phases were followed in a natural order for completing this three-year demonstration of RCEM. The main activity of the project's first year was focused on the analytical method (RCEM) to be applied, its rationale, setting, assumptions, shortcomings, advantages, etc. Most briefings presented during the first year on the project were highly abstract and concerned largely with the logic of the model.

This second phase was undertaken concurrently with the first phase, in which the question of how to measure client outcomes was to be answered. The answer was slow in coming, with Chapter 3 providing the most recent developments. Some questions still remain, however, about possible refinement.

Phase three concerned the mechanism for obtaining on-going information as input to the model and, ultimately, the decision-making process. The data requirements for the first two years were fulfilled by one-shot surveys, having fairly high costs associated with the collection, coding,

and keypunching effort. Moreover, the limitations on the collection effort (imposed by our restricting the sample to case records as data sources) were felt to be extreme. The third year pilot of systematic procedures for collecting data proved successful and has provided Minnesota with a wealth of data on the dynamics of casework. There is little doubt but what Minnesota will construct its social services information system to reflect the experiences of this project.

The final phase was never fully anticipated at the start of the project. This phase concerned the utilization of the information and analytical results of RCEM by decision makers. Everyone talks about needing cost-effectiveness information, but if it is provided to management--in whatever form they choose — managers often don't use it for good reason. The proper form for providing RCEM is again as difficult to develop as are the model, the measures, and the data collection system. Utilization of research findings or management innovations is a new and vastly growing field with its own developments and precepts. We have tried to extract from that new discipline the established concepts for achieving full utilization of RCEM.

Highlights of Project Findings

Phase 1. RCEM - An Analytical Model

Although some modification to the original RCEM of three years ago was necessary to apply the technique to social services, few doubts remain as to its applicability. It requires about the smallest possible set of assumptions, yet still obtaining significant results.

The first-year RCEM analysis based on outcomes developed specifically for Child Protective Services (limited to abused and neglected children, as defined in the Child Welfare League's Standard for Child Protection Services) indicated that the following variables influence cost-effectiveness of the services provided:

- length of time that a case remained open
- the presence or absence of foster care
- the amount of medical care provided
- the education of the child's mother

Greater efficiency was associated with short-term service, a better-educated mother, the absence of foster care, and little or no medical care. Obviously agencies cannot consistently avoid the use of foster care or medical care; what was shown is that these costly services increased the denominators of the cost-effectiveness ratios to such an extent as to overpower our measures of effectiveness.

For Employment Services the variables of age, education, number of pre-school children, and the total number of children proved important. Although younger clients apparently received more effective service, such a direct chronological correlation failed, when viewed in terms of cost-effectiveness. For example, persons who had finished high school received more cost-effective service than persons whose education had terminated at the eigth grade.

In the third year, the structure of the project caused the inclusion of a wide variety of services, often represented by so few cases that it was not feasible to apply the RCEM. Nevertheless, where the sample could support analy we did investigate certain variables in the relationship that is established between caseworker and client. Is it beneficial to obtain prior agreement betw

caseworker and client as to specific objectives for services? To the extent that agreement may shorten the amount of time required to bring about change, there is likely to be dollar savings associated with its use. But does it encourage more effective services (i.e. better outcomes) to be provided as well? For Employment Services, cases in which there were acknowledged agreements of objectives at the outset proved significantly more effective than those in which there were no agreements. For the specific service outcome used in this comparison, the former services appeared to be provided with more than twice the effectiveness of the latter. The result was the same for Child Protective Services, but with less distinction.

Another interesting variable we examined was the comparison between cases which were maintained (or improved) without services and cases with the same results after receiving services. Our outcomes supported the claim that caseworker-achieved results as slightly best. This result seems more true of Child Protective Services than it does for Employment Services. But for neither service is the result so numerically significant that we would expect the same conclusion to be drawn irrespective of the particular method for measuring outcomes.

A general conclusion of our analysis is that now it is more important to improve outcome measures than the model itself, and this leads to:

Phase 2. Measures of Effectiveness and Cost

Service-specific outcomes appear to be acceptable for at least rather gross analysis of relative effectiveness. These are client outcomes

Table 5.1

Effectiveness of Worker-Client Agreement on Goal:

Employment Services

NOTE: This RCEM analysis is based upon the following question in the interview questionnaire which was used in reviewing each closed case with the social worker:

> Was the outcome achieved by this client your agreed-upon desired goal?
>
> 1. Yes
> 2. No, did not achieve desired goal.
> 3. No, client and social worker never agreed on goals.

In the analysis, the first response category was compared with the others combined.

INTERPRETATION: Among closed cases that had received Employment Services, the service was found to be 2.149 times as effective in those instances where the social worker's answer to the above interview question was yes as it was in the remainder of the cases. The probability is 1.000 (i.e., certainty) that a real difference exists. This probability is to be understood in the same way as those probabilities that are attached to various well-known statistical tests of significance. See Chapter 2, pages 1 through 8.

	Responses Compared: Code 1 to Codes (2 + 3)
Average relative effectiveness of the service to the first group as compared to the second group	2.149
Probability that service to the first group is more (or less) effective than service to the second group	1.000
Average relative cost-effectiveness of the service to the first group as compared to the second group	2.149
Probability that service to the first group is more (or less) cost-effective than service to the second group	1.000

Table 5.2

Effectiveness of Worker-Client Agreement on Goal:

Child Protective Services

NOTE: See the note accompanying Table 5.1.

INTERPRETATION: Among closed cases that had received Child Protective Services, the service was found to be 1.442 times as effective in those instances where the social worker's answer to the interview question was yes as it was in the remainder of the cases. The probability is .997 that a real difference exists.

	Responses Compared: Code 1 to Codes (2 + 3)
Average relative effectiveness of the service to the first group as compared to the second group	1.442
Probability that service to the first group is more (or less) effective than service to the second group	.997
Average relative cost-effectiveness of the service to the first group as compared to the second group	1.442
Probability that service to the first group is more (or less) cost-effective than service to the second group	.997

Table 5.3

Effectiveness of Receipt/Non-Receipt of Services:

Employment Services

NOTE: The RCEM analysis is based upon the following question in the interview questionnaire which was used in reviewing each closed case with the social worker:

Without services would condition of life have improved, remained the same or degraded?

1. Condition of life would have improved without services.
2. Condition of life improved because of services given.
3. Condition of life would have been maintained without services.
4. Condition of life was maintained because of services given.
5. Condition of life deteriorated without services.
6. Condition of life deteriorated even though services were given.

In the analysis, the sixth response was dropped because too few cases fell into that category, the first and third responses were combined, and the second and fourth responses were combined.

INTERPRETATION: Among closed cases that had received Employment Services, the most effective service was found to have been given to cases which the social worker said had either been improved by the giving of service or at least had been maintained through services (codes 2 and 4); the second-most effective service, surprisingly, was found in those cases in which essentially no service had been given and the situation had deteriorated (code 5); while the least effective service had been given to cases that, one might say, really did not need service (codes 1 and 3).

Responses Compared:

	Codes 2&4 to Code 5	Codes 2&4 to Codes 1&3	Code 5 to Codes 1&3
Average relative effectiveness of the service to the first group as compared to the second group	1.026	1.346	1.310
Probability that service to the first group is more (or less) effective than service to the second group	.595	.998	.984
Average relative cost-effectiveness of the service to the first group as compared to the second group .	1.026	1.346	1.310
Probability that service to the first group is more (or less) cost-effective than service to the second group	.595	.998	.984

Table 5.4

Effectiveness of Receipt/Non-Receipt of Services:

Child Protective Services

NOTE: See the note accompanying Table 5.3.

INTERPRETATION: Among closed cases that had received Child Protective Services, the most effective service was found to have been given to cases which the social worker said had either been improved by the giving of service or at least had been maintained through services (codes 2 and 4); the second-most effective service had been given to cases that, one might say, really did not need service (codes 1 and 3); and the least effective service, obviously, was found in those cases in which essentially no service had been given and the situation had deteriorated (code 5).

Responses Compared:

	Codes 2&4 to Codes 1&3	Codes 2&4 to Code 5	Codes 1&3 to Code 5
Average relative effectiveness of the service to the first group as compared to the second group	1.284	1.532	1.196
Probability that service to the first group is more (or less) effective than service to the second group	.973	1.000	.858
Average relative cost-effectiveness of the service to the first group as compared to the second group .	1.284	1.532	1.196
Probability that service to the first group is more (or less) cost-effective than service to the second group	.973	1.000	.858

defined by using the language of each service area, e.g., in CPS, "cause of abuse eliminated or controlled with child remaining in home."

More generic outcomes, based on generic goal states (recall the four goal states of the original GOSS material), did not prove adequate, save for Employment Services. The need for refinements, beyond the way we measured goal achievement, is suggested in Chapter 3, and this need is currently being met in a Colorado State demonstration project. Unless the refinements prove more successful than what we have already obtained, no substitute for addressing outcomes specifically by service area may be valid.

From the beginning of the study, costs have proved conceptually easy, but burdensome to collect. The general formula we have always used is:

$$\text{Cost per case} = \left(\text{Related Caseworker Salary}\right) \cdot \left(1 + \text{Overhead}\right) + \text{Purchased Services}$$

Cost analysis must be geared to effectiveness analysis in that they must both measure at the same level of detail. The formula above can be made as detailed as desirable simply by refining the activity indicator used to prorate caseworker salaries. For general analysis, an acceptable level of detail in prorating caseworker salaries is obtained from caseworker time units recorded for each case on a monthly basis. Caseload information alone is inadequate, as is number of service contacts. An intensity measure of the duration of client contacts is a necessity for most analytical demands.

Phase 3. Collecting Social Services Information

After having successfully completed a pilot test of a system for collecting services information, we feel capable of completing the final design and implementing such a system. A large number of pitfalls, beyond our previous experiences with systems, are now identified and can be avoided. But perhaps more important, many positive activities have been identified which should be promulgated. Foremost of these is the notion of achieving caseworker involvement through encouraging them to see the system as useful for their own purposes, such as for "telling their story" to management.

Our open solicitation of caseworker suggestions led to this observation and we did not begin the third-year effort with fixed systems concepts. As the project closes officially, we are even more convinced of the appropriateness of a "bottoms-up" approach to systems development in social services. This is not to lend credence to the use of advisory panels, which are inadequate for this purpose, but instead to place emphasis on the need for perceived user-ownership of systems being developed, particularly, when the user must furnish the system with judgments and other input.

Phase 4. Utilization in Decision Making

We were never able to get beyond the thinking stage in this area during the project. Our earlier attempts at presenting results failed. (See Chapter 6 for a discussion of these.) As we finally came to grips with the nature of the problem, reasons for failure became clear: as with caseworkers, managers must self-initiate the solution to their problem.

This does not mean, though, that managers must all become systems analysts and derive their solutions completely on their own. Rather, they must articulate their problems in data terms, be helped to see the use of analytical devices for their specific problem, and be aided in interpreting results. There is no such thing as a cost-effectiveness evaluation of social services which has equal usefulness to all social service managers. Each manager has his own unique set of problems, with unique demands placed on how the analysis is to be framed and what the results mean.

The analytical capability, the measures, the information, caseworker activity, and results must all be developed and available to provide timely and accurate analysis against specific analytic objectives.

Nature of the Cases

Case Structure; Eligibility for Service. The 1682 cases included in the project were drawn from Hennepin and Ramsey Counties in the ratio of 4:6. Table 5.5 shows how they were distributed among the various organizational units. No claim is made that these cases are representative of the entire caseloads of the two agencies. Their selection is explained in Chapter 4.

The terms case and primary client require some explanation here for the benefit of the casual reader, although they are discussed in detail in Appendix A. We use them synonymously throughout the report. Attempting to adhere to GOSSS concepts, as we understood them, we defined a primary client as either an individual or a group of individuals from the same family,

Table 5.5

Primary Clients Included in the Project at Any Time, by Organizational Unit

Unit	Social Workers	Primary Clients N	Primary Clients %
Hennepin:			
Child Protection	10	421	25.1
Adult Services	4	271	16.1
Total	14	692	41.2
Ramsey:			
Child Protection	4	228	13.6
Unmarried Mothers	2	129	7.7
Mentally Ill	3	194	11.5
Mentally Deficient	3	186	11.0
Work and Training	4	253	15.0
Total	16	990	58.8

depending upon the goals and service plans that were appropriate to the various family members. Our original instructions to the social workers contained the following statement:

> ...Usually the primary client will be one person. However, if several individuals have the same barriers..., same goal, and same service plan, all may be shown on the same Form 2. This situation is most likely to occur in a protective service case, where several children are believed to be neglected and will be receiving the same service.

Thus, a primary client might be either an individual for whom an individual service plan and goal had been established or a group from one family having a common service plan and goal. In a particular family there might be one or more primary client individuals as well as a primary client group (but group members could not simultaneously be individual primary clients). An unforeseen problem was the tendency for the composition of a case to change over a period of time with changes in service plans, goals, and living arrangements. This was the project's worst single data-processing problem.

Thus, the number of cases in the study would have shifted from time to time even if there had been no intake and no closings. The 1682 cases for which the findings are reported consist of an unduplicated count of all primary clients appearing in the project at any time, using each primary client entity in its most recent form. For example, two members of a family who together constituted a two-person primary client group at the beginning of the project but who were later separated into individual primary clients through a change in service plans would be counted as two individual primary clients. Based upon that criterion, the estimated distribution of the primary clients by type was as follows:

Groups	344	20.4%
Adults treated as individual clients	1010	60.1%
Children treated as individual clients	328	19.5%
Total	1682	100.0%

Most of the cases were eligible for federally-matchable services under the regulations in effect at the time: between 83 and 93 percent (incomplete data make a precise figure impossible) were current, former, or potential recipients of federally-aided public assistance. Nearly six-tenths of these categorically-related cases were covered by Title IV-A, about one-third of them were covered by aid to the disabled, and the remainder were scattered among all the other public assistance titles. Of the cases that were not linked to public assistance, fewer than 100 were reported as receiving either general assistance or child welfare assistance (not to be confused with federal funds for child welfare services). The majority of the cases unaccounted for in this distribution, fewer than 200 in number, are probably those child welfare cases that involved no vendor payments.

Client Problems Identified. To describe the problem population to which a case belonged, a list of 17 "special areas" was provided from which one or more could be selected. We found that the cases were distributed as follows with regard to the number of special areas marked:

No special area	7.2%
One special area	47.7%
Two special areas	30.6%
Three special areas	11.3%
Four special areas	2.5%
Five special areas	0.7%

(Thus, it appears that an information system which asks the social worker to assign each case to one and only one problem population may not be adequate for an appreciable portion of the caseload.) The portion of the caseload tagged with each of the special area designations is indicated in Table 5.6.

Table 5.6

Cases Assigned to Each Special Area

Special Area	Number of Cases	% of 1682
Protection, involuntary	392	23.3
Mental retardation	275	16.4
Mental illness	274	16.3
Protection, voluntary	231	13.7
Physical disability	208	12.4
Vocational Rehabilitation	192	11.4
State ward	171	10.2
Unwed Parenthood	168	10.0
Other vocational services	150	8.9
Alcohol problem	132	7.9
Marital discord	127	7.6
Juvenile delinquency	71	4.2
Elderly (over age 60)	67	4.0
Drug abuse	59	3.5
Visual handicap	56	3.3
WIN	40	2.4
Migrant Worker	2	0.1

As a prelude to the making of a service plan, each client's status was assessed with respect to the four-dimensional goal structure shown in Table 5.2. This gives a second way of describing the problems identified in these cases. (GOSSS goals were used for this purpose at the beginning of the project. When they were abandoned, it was necessary to translate the assessments to the new four-dimensional structure. Translations were accomplished in more than 90 percent of the cases, but the untranslated cases clutter up the frequency distributions to such an extent that we are unwilling to present the results in tabular form.) On the "income maintenance" scale about half the clients were found to be totally dependent upon assistance from the agency, while one-seventh were currently receiving no assistance. On the "employment/job readiness" scale, the most frequent category, unemployable, accounted for fewer than 40 percent, with the remainder of the cases spread almost uniformly over the other six categories. We hesitate to make a statement about the "level of functioning" scale, where the translation problem apparently peaked. The "living situation" scale showed at least 70 percent to be living in their own homes at the time of assessment and able to function independently there in the majority of instances, fewer than 25 percent in community-based care facilities, and roughly five percent in institutions (defined here as mental hospitals, institutions for the severely mentally retarded, and medical hospitals for the chronically ill).

Service Plans

Following GOSSS constructs, the social workers were expected to identify the barriers preventing a client from reaching an appropriate goal unaided, the social services that should be directed against each of these barriers, the method of delivery that should be employed in getting each of these

services to the client, and the type of outside agency that should be the source of each service not available within the county welfare department itself. Thus, each service plan consisted of one or more sets of these four elements: barrier, service, method, agency type. (See Form 2, in Chapter 4.) More than one service might be planned for the removal of a certain barrier in a case, in which event that barrier would appear more than once in the data extracted from that service plan. Also, more than one barrier might be linked to a chosen service, thus causing a duplicated count of the cases in which that service was to be given. For any barrier-service pair, however, only a single method was likely to be shown. The cases were distributed as follows with regard to the number of four-element sets:

No barrier-service-method-agency sets	4.6%
One set	19.5%
Two sets	28.2%
Three sets	21.6%
Four sets	14.3%
Five or more sets	11.8%

Barriers. The accompanying table shows the frequency with which each barrier was mentioned in service plans. For the reason explained above, this is not the number of cases having the barrier. Rather, it is a rough measure of the amount of attention that the barrier should be getting, in the opinion of the social workers. The reader is reminded that these cases do not constitute a representative sample of either agency's social service caseload.

Services Planned. The worker was given a 74-item list of codes to represent the various kinds of service. (See the reverse side of Form 2.) To reduce the excessive amount of detail, we have combined many of the specific items to produce the 31-item array that appears in Table 5.8.

Table 5.7

Barriers Mentioned in Service Plans

Barrier	Number of Times Mentioned	% of All Barrier-Service Combinations
Personal problems	88[illegible]	20.4
Family problems	168	39.0
Need for training or education	380	8.8
Need for advocacy, information & referral, resource mobilization	311	7.2
Physical disabilities	356	8.2
Mental disabilities	596	13.8
Inadequate living arrangements	68	1.6
Other	40	0.9
Total	4317	100.0%

Again, as in the preceding table, this is not a count of cases. Rather, we offer it as an indicator of the relative importance of the services in the plans made for these cases. (This is not the best possible measure for the purpose, but it is the only one available now.)

Methods Planned; Anticipated Duration of Service. Of all the barrier-service-method combinations reported, 62 percent indicated that the social worker planned to provide the service himself, and 3 percent showed that he expected it to be done by another member of his agency's staff. About 25 percent of the services would be provided by "referral", i.e., another agency would perform the service free of charge to the welfare department. These would be tax-supported agencies, in most instances: Manpower Services, Vocational Rehabilitation, the local schools' social workers, for example. Thus, only about 9 percent of the services were to be purchased.

The worker was asked to estimate the date on which the goal desired for the case would be achieved. Although the interpretation of the answers to this question might vary from case to case (e.g., the arrival of a

Table 5.8

Services Mentioned in Service Plans

Service Planned	Code	Number of Times Mentioned	% of All Barrier-Service Combinations
Information and referral	000-007	48	1.1
Adoption	010	13	0.3
Services for the aging	020	7	0.2
Alcohol/chemical dependency services	030-036	133	3.1
Child-care services	040-043	42	1.0
Child-support services	050	-	-
Soc. & Rehab. services for emotionally disturbed children & youths	060-062	79	1.9
Corrections services	070	27	0.6
Mental Health services - general	080	132	3.1
Mental health services - specific	081-084	394	9.2
Mental retardation service	090-095	445	10.4
Behavior problems services	100-102	65	1.5
Developmental services	110	11	0.3
Educational services	120	69	1.6
Employment & rehabilitative services	131-133	389	9.1
Family-planning services	140	109	2.6
Guardianship (dependent/neglected)	150	12	0.3
Services related to health needs	160	274	6.4
Services to strengthen individual & family life, except counseling	170,171 173, 175, 176	149	3.5
Counseling: marital, family, child-rearing	172, 174	732	17.2
Child foster care	202	173	4.1
Child protective service	211	463	10.9
In-home care	180-186	64	1.5
Legal services	190	41	1.0
Adult foster care	201	25	0.6
Adult protective service	212	36	0.8
Sheltered workshop/work activity center	220	36	0.8
Special services for the blind	230	27	0.6
Transportation services	240	19	0.4
Services to unmarried parents	250	225	5.3
Volunteer services	260	26	5.3
		4265	100.0

certain date may automatically produce a certain goal condition regardless of the supportive social services given to the client prior to that date), in general it seems reasonable to call this date the anticipated end-point of social services under the stated plan. The social workers skipped this question in one-fifth of the cases. Where they did supply an answer, the overwhelming majority of the service plans (92 percent) were expected to be completed within one year of the assessment date. Indeed, 20 percent were scheduled for completion within one quarter of the assessment date, 30 percent were expected to require three to six months for completion, 20 percent seemed likely to take six to nine months, and 22 percent would need between nine and twelve months for accomplishment. Although one service plan was predicted to last more than six years, 99 percent would be finished within two years of the date on which the service plan was prepared. These figures may convey an unduly optimistic impression. Two reasons for caution should be noted: (1) The end of the present service plan does not necessarily mean that no further social services will be needed -- in fact, the workers were asked to report proximate goals if the ultimate goal was rather far in the future and likely to require changes in the service plan as the case moved through successive stages. (2) The absence of an estimated date of achievement in so many cases leads one to suspect that these would be long-term cases and would therefore reduce each of the percentages quoted above if they were included in the distribution.

Service Execution

Total Amount of Worker-Provided Service. During the six months of the project, the 30 workers reported spending approximately 10,263 hours in contacts with clients and collaterals. The distribution of these hours by mode of contact (field, office, telephone, and travel time) and the

corresponding distribution of unweighted contacts is shown in Table 5.9.

Table 5.9

Contacts, Time Units, and Hours by Mode of Contact

Mode of Contact	Cases with Contacts Reported	Number of Contacts	Cases with Time Units Reported	Number of Time Units	Number of Hours
All modes	1341	20704	1355	41053	10263.25
Field contacts	1068	6142	1090	16368	4092.00
Travel time	Inap.	Inap.	868	6289	1572.25
Office	449	1309	446	2682	670.50
Telephone	1155	13253	1152	15714	3928.50

The discerning reader will note some actual or seeming inconsistencies within this table. Why is the number of cases with contacts reported less than the number of cases with time units reported? This disparity may be accounted for by instances in which a primary client received service entirely through contacts with another primary client who was a member of his family. (For example, an infant in a foster home might receive service entirely through the worker's contacts with his mother, whose own problems were being discussed during those same contacts. In such instance, all contacts would be counted against the mother's case, but some of the time units would be counted against the child's case. (Other discrepancies in the table are probably due to mistakes in recording or coding, and are trivial.)

The figure 1355 is our best estimate of the unduplicated number of project cases receiving service in the form of client or collateral contacts during the project. This does not mean that the remainder of the 1682 cases were ignored for six months. Some of them may have received a service from the

social worker in the form of a letter or report prepared without the occurance of a contact during the study period. In other cases, a continuing service obtained from an outside source, either purchased or free, may not have required any reportable activity by the social worker. Also, some cases were open only a short time during the project--in particular, some cases were just about ready to be closed at the beginning of the project. The 10,263 hours of contact time constitute about 36 percent of the hours of payroll time allocable to the project.*

Another frequently-cited measure of quantity of service is the "length" of a case. The length of time that a case is in the active caseload can be thought of as a measure of the number of months in which it is "at risk" of receiving service. Our judgement-based definition of a case made it impossible to get a high-quality estimate, due to the shifting composition of cases over a period of time. However, we have attempted to make an estimate of the average number of months that cases were open during the six-month period of the project, using the number of primary clients listed on each month's Form 3. For this purpose, we deleted the three workers whose data covered a period of less than the full six months. By this method, we estimate that cases were open an average of 5.0 months out of the six-month period. This figure varies for individual workers, ranging from 4.3 to 6-plus. This measure is greatly influenced by the extent to which the worker had been changing the composition of his cases during the course of the project. If

*Payroll time allocable to the project was calculated for each worker, then summed. For 23 of the workers, it was simply 40 hours X 26 weeks = 1040 hours. Three workers reported activity for a period of less than six months, so their payroll hours were reduced proportionately. Four other workers had such large caseloads that they were permitted to exclude some of their cases from the project, so their payroll hours were reduced in proportion to the number of their excluded cases. This procedure yielded a total of 28,162 hours of payroll time allocable to the project. This included sick leave, vacation time, etc.

he combined some primary clients who had earlier been counted separately, this artificially increased the average (since the divisor was the unduplicated number of cases, as those cases were constituted at the project's end), making it even larger than the logical maximum of 6.0. On the other hand, if he converted some primary client groups to individual cases, this increased the divisor relative to the number of cases listed on Form 3 in the earlier months, thus artificially reducing the average length of case.

The Services-Barriers Relationship. In recording the time units spent on giving a particular kind of service to a case, the workers were also asked to indicate which barrier was the object of the service. (Occasionally they recorded a service-barrier combination without showing any time units, presumably an indication that the service was coming from an outside source, but it is believed that reporting in this fashion was incomplete.) The modal barrier-service combinations were as follows:

Barrier	Service Classification Most Often Given
Personal problems Mental disabilities	Mental health services - specific
Family problems Inadequate living arrangements Other	Child protective service; foster care, marital, family, child-rearing counseling
Need for training or education Need for advocacy, information and referral, resource mobilization	Employment & rehabilitative services
Physical disabilities	Family planning, guardianship; health needs

Some presumed effects of the services upon the barriers are summarized in Table 5.10. Problems in the data prevent a more complete description. There are two reasons why the first column of this table differs from the figures in the earlier table of barriers: The earlier table showed the number

Table 5.10

Extent of Removal or Control of Each Barrier

Barrier	All Cases with This Barrier (=100%)	Not Worked On	Included in Plan Worked On, Removed	Included in Plan Worked On, Controlled
Personal problems	980	48%	1%	13%
Family problems	1067	30%	2%	12%
Need training, education	532	60%	3%	15%
Need advocacy, etc.	456	55%	10%	12%
Physical disabilities	490	62%	1%	12%
Mental disabilities	646	56%	0%	18%
Inadequate living arrangements	106	57%	11%	8%
Other	61	74%	5%	3%

of instances in which a barrier was mentioned, which might be more than once within a case; and the earlier table was limited to data in the service plan on Form 2, whereas the table shown here includes newly-identified barriers that were reported only on Form 3.

Given the global nature of some of the barrier titles (e.g., "personal problems"), it is difficult to draw meaningful conclusions from these data. They are disappointing, of course. Perhaps six months is too short a time.

Amount of Each Kind of Service Provided by the Social Worker. In the absence of adequate data on purchased services, the discussion is limited here to the quantity of social worker activity. These data on worker-provided services have considerable value apart from the presence or absence of data on services provided in other ways.

Table 5.11 gives five items of information about each listed service: the number of cases in which at least one contact had been made primarily to

deliver this service, the aggregate number of such contacts, the number of cases in which at least one 15-minute unit of contact time had been devoted to this service, the aggregate number of such time units, and the estimated cost of this service. The first four items come from Form 3, where the recording was limited to contacts and travel time. (See the discussion pertaining to Table 5.9.) An example will clarify Table 5.11: Social workers gave information-and-referral service to 47 cases during the project, and the giving of this service to these cases consumed 192 time units (48 hours). Forty-five of these cases participated in interviews that were devoted either exclusively or primarily to information-and-referral, and such interviews totalled 122 in number. The other two of the 47 cases got information-and-referral only as a secondary matter during the course of interviews having some other kind of service as their primary purpose. (The cost estimates will be explained later.)

The list of services appearing in Table 5.11 is slightly shorter (27 classes) than the 31-class list in Table 5.9. This is the result of making the following two combinations:

- Family-planning, Guardianship of dependent and neglected children, and services related to health needs.
- Child protection; Child foster care; and Marital, family, and child-rearing counseling.

With these two exceptions, the service classes in Table 5.11 correspond to the classes of planned services in Table 5.9.

With the exception of child-support service, all these classes of service were used by these social workers at some time during the six-month period. The most "popular" services, both in terms of the numbers of cases receiving them and the amount of time devoted to them, were child protection (defined to include foster care and certain kinds of counseling); specific mental health services; employment and rehabilitative services; the combination of family-planning, guardianship, and health needs (separate data are un-

Table 5.11

Contacts, Time Units, and Costs of Worker-Provided Services

Service	Cases with Contacts Reported	Number of Contacts	Cases With Time Units Reported	Number of Time Units	Cost of Worker-Provided Service*
ALL SERVICES (unduplicated)	1341	20704	1355	41053	$472,800
Information and referral	45	122	47	192	2,500
Adoption	10	32	13	55	1,000
Services for the aging	12	49	13	105	700
Alcohol/chemical dependency services	51	451	53	925	9,100
Child-care services	34	98	33	136	2,800
Child-support services	-	-	-	-	-
Soc. & Rehab. serv. for emot. disturbed childrn. & youths	37	218	37	606	8,500
Corrections services	27	127	27	258	2,600
Mental health services - general	40	118	40	213	4,000
Mental health services - specific	233	1637	239	3212	36,300
Mental retardation service	125	580	126	1189	15,500
Behavior problems services	34	199	34	408	4,600
Developmental services	6	10	6	20	100
Educational services	13	51	13	72	800
Employment & rehabilitative services	220	1011	221	1602	33,800
Family-planning, guardianship, health needs	199	1106	212	2034	21,000
Strengthen individual & family life, except counseling	138	830	142	2212	15,700
Child protection, foster care, marital, family counseling	655	9783	675	20096	209,300
In-home care	56	486	58	795	7,700
Legal services	36	140	39	355	2,200
Adult foster care	18	101	19	170	1,600
Adult protective service	55	330	57	708	5,900
Sheltered workshop/work activity center	9	31	9	67	900
Special services for the blind	23	140	27	294	1,800
Transportation services	13	32	15	55	600
Services to unmarried parents	97	415	100	894	19,400
Volunteer services	5	16	5	32	300
Service not identified	NR	2791	NR	4348	64,000

*Figures rounded independently.

available, but health needs are believed to account for the bulk of this); various non-counseling services to strengthen individual and family life (codes 170, 171, 173, 175, and 176 on Form 2); mental retardation service; and services to unmarried parents. In view of the distribution of cases by organizational unit (Table 5.5), this list of frequently-reported services presents no surprises.

Several interesting measures could be calculated from the first four columns of Table 5.11: the percentage of the 1355 cases that received each of the services, the average number of time units per contact, etc. Instead of burdening this long report with additional tables, we leave such calculations to the interested reader.

Cost of Services

Cost of Worker-Provided Service. Whether estimating the cost for an individual case—a technique mentioned in Chapter 3—or for a given service provided to a number of cases, as summarized in Table 5.11, two data items are needed: a weighted salary figure for the worker(s) who provided the service and the appropriate number of time units. As explained elsewhere, a separate computation was made for each of the thirty social workers. This took into account the DPW overhead (not the same for the two county agencies), the agency's own supervisory structure (which weighs differently upon workers in different parts of the agency), the amount and cost of clerical support for the worker (different for the various organizational units), and the worker's job classification. This produced a weighted hourly salary corresponding to each worker. These hourly rates were then applied to the "payroll time allocable to the project", a concept explained earlier in this chapter. The resulting dollar amount, which we call the "total adjusted cost of payroll time", is the

figure to which we must relate the number of time units. In view of the many variations just mentioned, it is perhaps surprising that the thirty values were not all different from one another. There were, in fact, only nineteen different amounts representing each worker's total adjusted cost of payroll time. These amounts for the individual workers ranged from $6,700 (for a worker who had included only 37.5 percent of his caseload in the project) to $21,000. For the thirty workers combined, it was $472,800, rounded to the nearest hundred dollars. Let us repeat for the sake of emphasis the meaning of this quantity: This is the total payroll for these thirty workers, plus their shares of the cost of operating the local agency (clerical support, supervision, administrative salaries, and non-salary items), plus their shares of the cost of DPW's supervision of their agency's programs—covering a period of six months and covering all of their work time (except where otherwise indicated). It includes personal time during office hours, such as coffee breaks and sick leave, but it does not include any overtime payments.

Each social worker's total adjusted cost of payroll time was divided by the total number of time units that he reported on Form 3, producing a "cost per time unit". This unit rate ranged from $3.55 (for a worker who reported an amazing number of time units) to $34.56. The weighted average cost per time unit for the thirty workers was $11.52.

To obtain the cost of the various services shown in Table 5.11, we multiplied each worker's cost per time unit by the number of units of a particular service that he reported, then summed this product over all the workers reporting that service.

The interested reader may wish to make the various other computations that are possible with the data in Table 5.11. In addition to the rates obtainable in that way, we can provide two others: (1) The cases assigned to the workers amounted to 8282 case-months of "open" cases (regardless of whether they received any attention), and the rate per case-month on that basis amounted to $57.09. (2) Counting only cases that actually got service during a specified month, the project covered 4889 case-months of service, costing $96.71 per case-month. We do not have this information by kind of service.

To summarize:

Total cost of social service included in this project	$472,800.00
Cost per 15-minute time unit	11.52
Cost per case-month as an open case	57.09
Cost per case-month of service	96.71

Purchased Services. Despite a very great amount of effort, the only data on purchased services that we were able to associate with the specific cases in the project were from Hennepin County. For reasons explained elsewhere in this report, at that time only the traditional child welfare services were covered completely by that agency's computerized file (although the agency was gradually adding other services to its record). Further, we found it practical to use the payments that were made during February, March, and April only (which covered mostly services provided during the period January-March). Under these limitations, it turned out that 99 percent of the payments were for child foster care. The total amount paid for that purpose during the three months, for the cases in the project, was $102,468.49. This amount, which corresponded to an estimated 416 case-months of foster care, was broken down in the agency's records into the following types of expenditure:

Room and board	$85,731.96
Clothing	3,263.18
Incidentals	4,419.97
Gifts	20.00
Miscellaneous	9,033.38

Supplementary Data About Closed Cases

Reason for Case Closing. Only 372 of the 1682 cases were reported to be closed as of the end of the project. In notable contrast to the rather dismal picture presented earlier in this chapter on the subject of success or failure in the removal of barriers, the most frequently cited reason for closing the case, reported for 38 percent of those closed, was "goal achieved". Nest most popular reason, in 17 percent, was "transferred to another worker", a reason whose interpretation undoubtedly varies from case to case. Ten percent closed because the client moved out of the county, another ambiguous reason. Negative reasons for closing, "further service deemed ineffective" and "client rejects service", appeared in 9 percent and 8 percent of the closings, respectively.

Workers' Responses to Interview Questions. Workers were asked to make several judgments about each closed case, some of them alluded to in the first section of this chapter. When asked, "Without services would condition of life have improved, remained the same or degraded?", their replies were distributed as follows:

Would have improved without services	2%
Improved because of services given	34%
Would have been maintained without services	24%
Was maintained because of services given	6%
Deteriorated without services	30%
Deteriorated even though services were given	3%

Asked, "Was the outcome achieved by this client your agreed-upon desired goal?", they responded:

Yes	64%
No, did not achieve desired goal	13%
No, client & social worker never agreed on goals	15%
Other responses	7%

In 82 percent of the closings, the workers felt that the length of service was justified by the outcome.

Chapter 6

RCEM UTILIZATION

This chapter presents the procedures and principles involved with actual utilization of the RCEM. Whereas Chapter 2 provides an indepth and highly technical narration of the RCEM -- its input requirements, processing logic, and output -- in this chapter RCEM utilization is presented within the context of an agency or organization. The first five utilization steps are actually preconditions which must exist to allow for RCEM utilization, and involve a commitment of the agency and appropriate decisions. Step six is a joint effort involving both the manager and analyst. The next two steps are the actual data processing which are the analyst's responsibility, and the final two steps, using the RCEM output, are the joint responsibility of manager and analyst.

In the second section of this chapter, four basic utilization principles are presented and discussed. These principles are essential to any utilization setting and actually determine many of the specific utilitzation procedures for the RCEM.

Utilization Procedures.

1. Management first has to see the need for using relative cost-effectiveness (RCE) information as the foundation for decision making. In addition, this type of information has to be based on client experiences.

Managers use a variety of justifications for making decisions, only some of which are relevant. Although in theory all decisions should be made

using appropriate information, in practice many decisions are made with inadequate information or in response to pressures of the moment. In virtually any area of decision making in an administration or bureaucracy, many decisions are made as a consequence of political, social, or administrative demands. In essence, the problem is often one in which the relevant information suggests (or mandates) a decision that runs counter to what may be politically expedient.

As a technique, RCEM can provide decision makers with certain kinds of information relating to cost, effectiveness, and client experiences. Until a potential user of this information becomes committed to including this type of information in his decision process, RCEM may be adopted but not really used.

2. The agency must decide on ad hoc versus on-going, systemmatic methods for collecting data to support RCE analysis.

A variety of information about recipients, services provided, delivery processes, and client outcomes are required to form an adequate data base for effectiveness or cost-effectiveness analysis. The required data can be collected on an *ad hoc* sample basis using interviews or case record readers. Alternatively, sufficient data can be collected and maintained systematically with a Social Services Information System (SSIS). Main advantages of the former are: flexibility to orient data collection toward current issues, and minimal demands on caseworker time and effort. Main advantages of the latter are: analysis based on data from the full population, the possibility of capturing case dynamics lost with point-in-time

surveys, and the compelling fact that this kind of information is deemed essential for managing and monitoring services.

3. Data gatherers have to be sufficiently motivated so that their input to the information system is "clean data." If caseworkers, for example, do not find their own rewards in gathering data, the validity of the data may not be adequate to support useful RCE analysis.

It has been Unco's experience both in Minnesota and elsewhere that information systems can be a significant means for caseworkers to express themselves -- their successes, failures, and frustrations. The system can be designed for them to "tell their story" to management. Their input is further encouraged when they receive qualitative feedback from management either through direct communication about their job situation, etc. or through new procedures, policies or programs. When sensing that their input is seriously considered, caseworkers are more likely to fulfill their role as data gatherers. Caseworker input may also result in better management and supervision and thus improve the agency's performance and efficiency. Finally, the information system is more likely to succeed when the caseworkers themselves are involved in its construction, since they are likely to identify with the system and regard it as for their own use.

Sample-based information gathering may use people whose only job is to gather information. In this case, the reward structure is likely to be based on completeness, efficiency, or accuracy of the data itself.

4. Case outcomes must be agreed upon, including estimates of their relative effectiveness. The outcomes may be either generic or specific to

the particular agency and its services, but they must be all-inclusive.

For short-term evaluation (rather than evaluation using follow-up measures), case outcomes provide one of the best indicators of effectiveness. In order that they may properly serve this function, the case outcomes must: be stated in operational terms that everyone can understand, not have any overlap among the outcomes, and include all possible client impacts as a result of receiving services.

The estimates of effectiveness are especially crucial, for they indicate the consensus of participants as to which consequences are more desirable or more closely fit the objectives of the agency. The comparisons need not be quantitative and may be stated in such basic terms as one outcome being "better" than another.

5. Each data record should contain the following information for each client:

- demography
- services provided
- caseworker responsible for providing services
- problems/barriers to be overcome
- cost-related information
- case outcome

The first four data elements enable the analyst to group the data so that analysis is responsive to the issues at hand. Since data is collected on an individual basis, any issues related to case demography, services provided, the experience or qualification of caseworkers, or case problems

can theoretically be resolved by forming appropriate groupings using these data elements. An average effectiveness and an average cost can likewise be determined for each group by virtue of the last two data elements. Cost-related information includes measures of intensity of services provided, caseworker salary, cost of purchased services, length of case and agency financial records. These factors can be converted to per-client cost estimates. (For States with an adequate SSIS, this process of estimating case costs is also recommended for allocating social service costs for purposes of Federal matching.)

6. Prior to actual analysis, the analytical objectives must be determined by a cooperative effort between the manager and analyst. Cooperation is necessary since the analytical objectives must be converted into data terms.

The first five steps in the utilization process are actually preconditions. In other words, these are the conditions that must exist to support RCEM analysis. Essentially these are the responsibility of the manager. Decisions have to be made as to whether RCE will be the basis of decision making, whether data will be gathered systematically, etc.

In this step, the manager and analyst work together in converting the manager's problems and issues into statements that can be responded to with RCE analysis. In concert, the manager and analyst first prepare a problem statement in systematic terms encompassing as many aspects of management concern as practical within the system construct. The analyst must simultaneously consider the problem to be solved and the informational aspects

of the system (data, measures, analytic tools) available for preparing a quick response. Thus, a strategy for the solution is "designed."

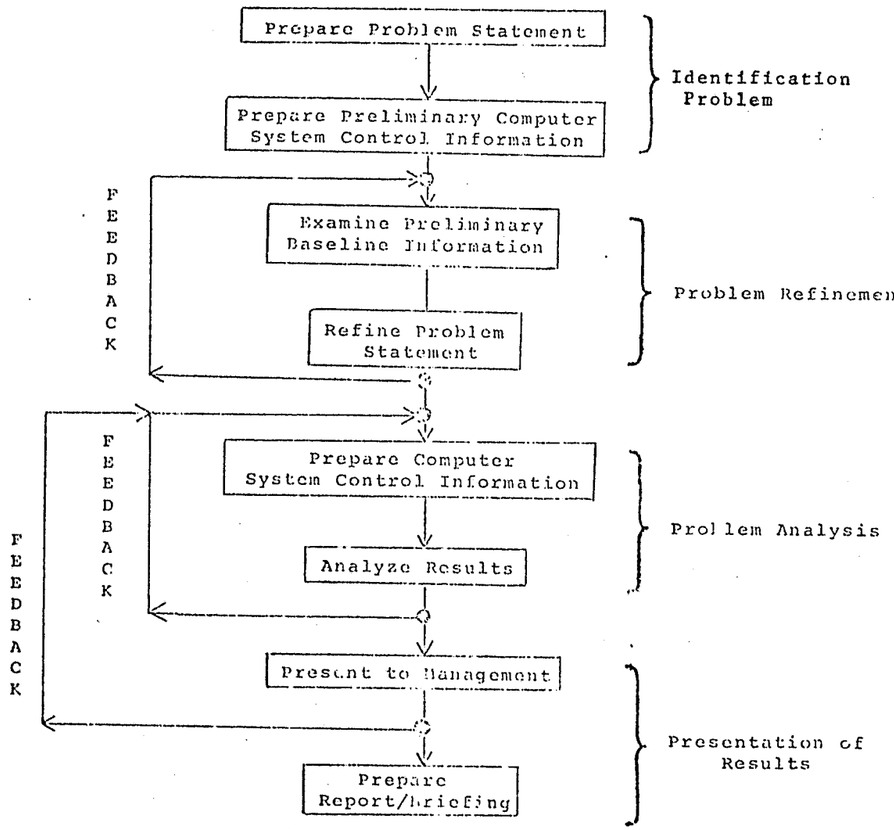
As can be seen in Figure 6.1 on the following page, this interaction between the manager and the analyst is actually cyclical in which there is greater precision in each cycle. Few problems can be solved strictly on the basis of an initial design. Most problems require preliminary baseline information and some require trial solutions and re-runs prior to achieving a final problem definition. Thus, the steps leading to successful analysis of a problem are somewhat iterative and, to be effective, must be supported by powerful computer techniques for performing data manipulation and analysis.

7. RCE analysis begins by grouping cases on file according to demography, services, caseworker characteristics and/or client problem in conformity to each issue at hand. Each group's outcomes and estimated costs are then interpreted mathematically as an estimate of the effectiveness produced per dollar spent.

Once a relevant data base has been established and analytical issues have been stated in data terms, RCE calculations can be performed. The results of analysis can be best expressed in relative terms of one group compared to another. Absolute baselines are not only much more difficult to establish but often are irrelevant to the needs of decision makers who are most concerned about facilitating the best trade between cost and effectiveness.

An example of this analytic procedure is to identify the optimal caseload (in cost-effectiveness terms). This is accomplished by grouping

FIGURE 6.1 RCEM ANALYSIS: PROCESS FLOW CHART



cases according to the primary service received and according to the average caseload for each caseworker. RCE analysis can then pinpoint for each type of primary service the best trade-off between the size of caseload (as expressed by associated costs) and the results of services (as expressed in client outcomes). Following is a list of just a few of the many issues that can be addressed using this analytic procedure:

- impact of staff development
- optimal experience and education for caseworkers by service area
- effect of racial homogeneity between caseworker and client
- RCE of local offices
- RCE trends from one year to the next
- RCE comparison between direct and purchased services
- variation in outcome achievement of clients according to age, race, and sex
- variation in difficulty of overcoming different problem areas or barriers

8. The actual grouping of case records and calculating cost-effectiveness ratios and probabilities is done through computer processing.

Though there are several steps involved with the computer processing, there are two major phases: data preparation through grouping case records and subsequent cost-effectiveness analysis. The former is not a function of RCEM processing, but rather it is accomplished by another computer program, known as GFA (Generalized File Analyzer). In some ways the grouping process is more difficult than the cost-effectiveness analysis, since it involves

preparing the data for grouping, arbitrarily defining groups, and properly aggregating cost and outcome data for each group. The GFA package enables the analyst to specify groupings mnemonically, knowing the computer will aggregate all the data properly and automatically interface with RCEM. For example, to define a grouping which will rank local offices within and across service areas, the following statement is presented to GFA (which in turn operates on the file):

```
** RCEM COST, OUTCOME, SERVICE AREA, LOCAL OFFICE
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If this processing cannot be accomplished expeditiously, the analyst cannot provide decision makers with timely and relevant information.

RCEM itself is initiated with statements regarding the decision maker's perceptions about the outcome categories. For example, if there are five categories in rank order and (1) the third category can be assumed to be at least twice as effective as the first and (2) the distance in effectiveness between the fifth category and the fourth is greater than the distance between the fourth and the third categories, then these perceptions would be provided to the computer in the following form:

```
E2 > E1
E3 > E2
E4 > E3
E5 > E4
E3 > 2 * E1
E5 - E4 >E4 - E3
```

These statements along with the grouped data are analyzed mathematically, in accordance with the formulas presented in Chapter 2, to derive the output rankings and probability assessments.

9. RCE output is analyzed and becomes the basis for policy and operational decisions. The decisions which are formulated are made within the range of feasible alternatives (determined by external factors such as budget, legislation, and time constraints).

As an analytical technique to assist managers in making decisions, RCEM is based on four assumptions:

1. Decision makers do not deal only in absolute terms. Rather, their main concern is on the relative comparison of one alternative to another.
2. Information used by management must be produced in a timely fashion. Long-term or follow-up studies may be useful, but for daily decision making, the information has to be more immediate.
3. The focus of information must be on the persons receiving services.
4. Managers are more concerned with effectiveness of services in terms of client impact than with frequency counts of service activities. (The latter are useful only as they relate to client impact.)

Based on these assumptions, the RCEM technique has several practical applications for administrators in solving policy, programmatic, and operational problems. The information required by, and the output from, RCEM is readily comprehended by managers, who play an active role in its application. By collecting data during the process of providing services (rather than follow-up information), the manager has analytical results at the time when they are most needed and relevant. In this fashion, administrators are able to make important decisions without having to wait until a program has been completed.

There are at least three major applications of the RCEM technique in

program and service evaluations. Altogether, these represent a broad range of capability for identifying relatively poor or successful delivery systems and their trends over time, either at the local office level or in summary terms.

Cross-Office Analysis. Two or more offices, within any service area can be compared and ranked by RCEM. There are many uses of office rankings, but the main point is that overall improvement in efficiency is accomplished by sensing and correcting offices with poor performance while encouraging successful offices. Cross-office comparisons in the form of cost-effectiveness rankings are useful to guide management in this endeavor.

Trend Analysis. An office's current and past performance are compared to determine its cost-effectiveness trend over time. This type of analysis is possible only for programs with an established information system which can support the evaluation. Trend analysis has such potential value for management that it may be more pertinent to the management process than cross-office analysis.

Aggregated Analysis. Two or more offices within a service area may be aggregated to form a hypothetically larger grouping for summary analysis. Also, population subgroups can be aggregated across offices for analytic purposes. As with other RCEM applications, the capability to perform this kind of analysis depends on the existing information system, and the analysis can satisfy information needs at different levels of management. Aggregation is often necessary to produce a more stable

analysis of overall trends and to obtain State and regional comparisons.

10. The consequences of decisions based on RCE analysis are monitored through further data collection and subsequent RCE analysis.

The way in which RCE fits into the ongoing decision-making system is depicted in Figure 6.2. All of the information required for each of the four inputs is obtained and subsequently analyzed by RCEM,* which produces two types of indicators: the expected differences between alternatives and the risk or confidence in choosing one alternative over another. This output, in combination with other available information, assists management in making and implementing decisions that have subsequent impact on RCEM inputs and future analytical objectives. The continual feedback on individual clients supports more accurate program and policy decisions since they are based on the observed results of recent decisions and actions.

Utilization Principles

As a result of the experience in demonstrating the RCEM in a State agency setting, we have come to understand some of the dynamics involved in utilization of new techniques. In particular, we encountered some difficulties at the beginning of the three-year Minnesota project which subsequently led to a project ammendment focusing directly on the utilization problems. Known as CMUTR (pronounced as "commuter");** this six-month study

*A more detailed representation of the RCEM analysis was presented as Figure 6.1.

**Communication Model for the Utilization of Technical Research (CMUTR); Project Number 11-P-57111/5-02 (as amended); a Minnesota Demonstration Project funded by Department of Health, Education, Welfare, Social and Rehabilitation Services Administration, Office of Research and Demonstration. Completed on June 30, 1972.

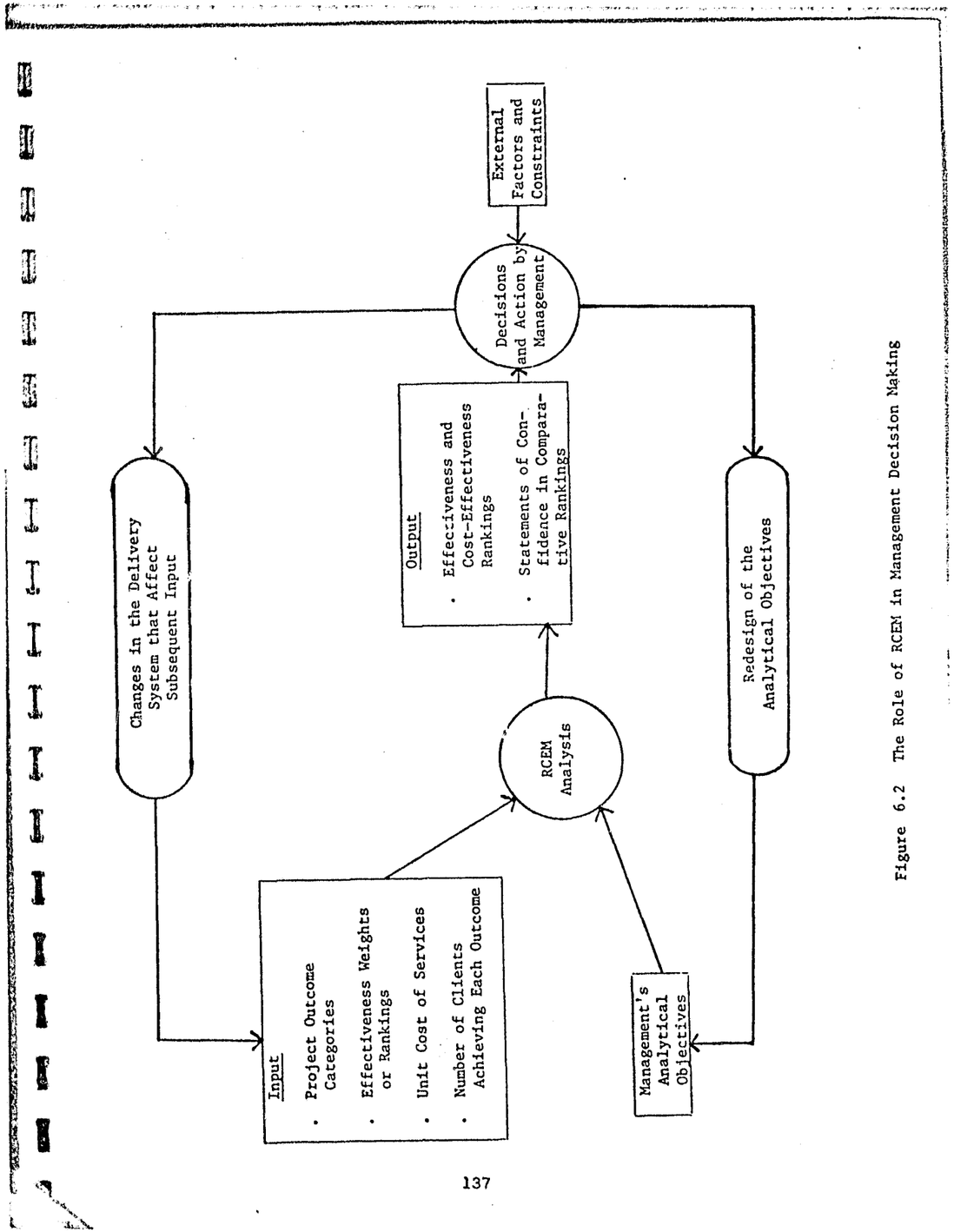

Figure 6.2 The Role of RCEM in Management Decision Making

examined the communication aspects involved in research utilization with RCEM as the example. The CMUTR study involved three States (Minnesota, Washington, and Colorado), each of which was at a different point of involvement in demonstrating the RCEM. Subsequent to the CMUTR study, Unco has been continuing with the Colorado Department of Social Services as a testing ground for the major CMUTR findings.*** Many of the findings from the CMUTR study and the CMUTR study and the experience in Colorado are incorporated in this discussion.

In reviewing the process and conditions for successful research utilization, most of the findings and experience can be synthesized into four underlying principles. The process of using new research must essentially be (1) user-initiated in which (2) the user's needs and the potential solution are matched with increasing precision over time. The two major conditions that support the process include (3) a minimum level, type, and quality of communications between the user and research groups, and (4) a final solution that requires the mimimum possible changes on the part of the user's organization. The following is a more complete summary of these four utilization principles. It should be noted that these are hardly all-inclusive; but, for purposes of this discussion, these are among the most fundamental principles relating to using technical research.

Utilization Principle #1. Both the need for, and use of, technical

***The Extension & Testing of Communication Concepts in Research Utilization; Project Number 11-P-57311/8-01. A Colorado Demonstration Project funded by the Department of Health, Education and Welfare, Social & Rehabilitation Services Administration, Office of Research and Demonstration. In progress.

research and development must be primarily self-initiated. Though other people can have a significant role in the utilization process, it is the user's responsibility to make all key decisions. The role of outside agents, such as consultants, is essentially catalytic.

New methodologies, techniques, and other forms of technical research and development may be adopted by an agency for several reasons. For example, an evaluation tool such as RCEM may be adopted on the basis of misinformation regarding its purposes, capabilities, and usage. Research packages may also be adopted (without necessarily being used properly) for misdirected reasons such as prestige or "empire-building." In some cases adopting a new technique is done only through higher-level pressure or mandate to do so. These last two reasons for adoption often occur when Federal funding carries the burden of demonstration costs.

When a new technique is adopted for the above reasons, the actual value or appropriateness of the technique to the adopting agency is left to chance. That is, the correctness of the decision is not known and the reasons for the decision are not necessarily valid. If from first exposure to final implementation the only reason for using a new technique is a begrudging response to a national mandate, it is not likely that the new technique will be used to its fullest potential. A mandate can provide the initial impetus to stimulate an agency into seeking out new methodologies, but thereafter the real functioning of the new technique must be the basis for decisions as to implementation.

At the outset of the Minnesota project, little attention was devoted

to this crucial area of research utilization. It was assumed that management would immediately apply needed information to the decision-making process. As it turned out, management was reluctant to incorporate externally-generated information into its decision making process. (It was subsequently found in the CMUTR study that this is typically the case.) In particular, management was especially slow to use the new type of information provided by RCEM analysis.

As this resistance became evident during the project's first year, Unco began to address the problem through training and workshop programs. At first it appeared that the problems could be dealt with through briefings and training sessions using step-by-step procedural explanations, diagrams, etc. Our belief was that as soon as all the aspects relating to the RCEM were explained, the methodology would then be readily accepted by management. The concept of cost-effectiveness analysis is intuitively acceptable since it deals with delivering the services with best returns for the money spent. However, when managers are exposed to the underlying sciences of measures, statistics, and computerized techniques, cost-effectiveness becomes surrounded with confusion. Drawing too much attention to the technical details is self-defeating.

Following this failure Unco tried another method of presentation through analytical briefs. Each brief was devoted to a particular problem in which the issues were presented with accompanying analytical results. This technique also failed, perhaps due to the heavy reliance on technical written communications.

These failures heightened the concern about utilization problems which in turn led to the CMUTR and Colorado studies. As a consequence of this subsequent work, it appears that management must go through a problem-solving approach to understanding its own problems, matching problems with solutions, testing the match, and finally implementating on a full-scale basis. At each major point, management is responsible for making decisions to progress further, and these decisions obviously should be based on sufficient, valid information about the solution's usefulness.

Everyone uses this approach in a modified and less formal way for dealing with all types of problems. Initially, problem-solving is done internally, and a person only looks outside himself when special resources or skills are needed. Likewise, with organizational problems an agency will turn to specialized resources and talents outside the organization, when needed. Regardless of the existence of outside involvement, the same steps or procedures are used. It has been our experience that consultants should perform as catalysts for internal action, within the agency, or as special resource persons responding to the specific agency needs.

Utilization Principle #2. The articulation and matching of needs and solution is an evolving, cyclical process that becomes more precise as time passes. The difficulty of precise matching is a function of the complexity and uniqueness of the needs.

In the case of research utilization, and in our particular experience with RCEM, the associated needs and problems are extremely complex. In part, this is inevitable since the needs relate to an agency which itself

is complex. Consequently, the problem of developing information to be used by decision makers in the agency also is complex, due to the variety and nature of the decisions to be made. A policy decision, for example, will have an impact on many aspects of an agency's functioning and therefore should be made on a fairly broad base of valid information. This particular need for information cannot be met with a simple solution to meet the overall information needs for many major decisions; the solution will therefore be correspondingly more complex.

There are perhaps two levels of developing a solution to meet a set of needs. The first level is to develop the technique itself in particular response to the needs at hand. This typically is the case in which the needs are unique and therefore no previously developed solutions are applicable. The second level begins with certain basic tools and techniques that have already been developed and proceeds to tailor their application to the present needs or problems. The actual technique remains unchanged; it is the way in which it is applied that must be matched with the needs. Operating from this second level of matching need and solution requires existing techniques that have sufficient flexibility to be adapted uniquely to each situation.

In the case of solving management information needs with the RCEM analytical technique, the matching process is unquestionably evolutionary. The needs for information are extremely complex and the RCEM has been designed to maintain maximum flexibility. In virtually every application of the RCEM, there has been at least one preliminary matching prior to final problem resolution, and often there have been several preliminary

cycles. In each phase the needs are more precisely defined, the information input is more adequately structured, and therefore the RCEM analysis is more responsive. This process has been described as both evolutionary (in which at the outset both the problem and solution may be stated only in vague or approximate terms) and cyclical since in each phase the same steps are taken but with increasing accuracy or precision.

Utilization Principle #3. Several minimum conditions must exist to support adequate communications regarding the use of any new technique. Without proper communications it is considerably less likely that the new technique will be used properly, if at all.

The essence of the communication problems center on the fact that technical research is being applied to meet management's needs. Participants in the utilization effort involve both technical and management personnel. The differences in the ways that these two groups think and communicate manifest themselves in communication problems about the searching, matching, testing, accepting, and implementing of a new technical methodology. Management personnel includes all those persons directly affected by the innovation, such as decision makers and supervisors. In addition, the management group would also include those who would be directly affected by the decisions made in regard to the innovation and those who (in the case of an evaluation tool) would provide input data. The technical group could include people both within and outside the agency. These might be social scientists, computer science personnel, systems analysts, statisticians, etc.

In this era of technical sophistication, the gap between technical and management personnel is a well-known fact. The problems are particularly evident when the two groups must work together in implementing a technical solution in a non-technical setting. The two primary areas of communication are in the initial conceptual understanding of the principles underlying the technical solution (and how these match the extant problems) and an understanding of how to deal with the technical innovation (input preparation and output interpretation).

As can be seen in the RCEM procedures for utilization, there are several points of interaction between technical and management people. Each of the first group of steps, the pre-conditions, has some technical aspects or implications which would likely involve management interaction with technical people. Problem definition and establishing analytical objectives are perhaps the most difficult interaction settings. Finally, interpreting the analytical output requires (at least at the outset) some involvement by technical people.

The communication problems actually center around differences in conceptualization and language.* When each group is given the same problem to solve, technicians are more likely to regard the problem and its solution as a technical matter, whereas management people are more likely to view the matter in non-technical terms. Even if there is no difference in the conceptualization about a problem and its solution, the ways in which these

*It is generally agreed among linguists that language affects conceptualization which in turn reinforces specialized language development.

groups express themselves is likely to differ extensively. The jargon, actual content, and philosophical variations are sufficiently different that for our purposes they may as well be considered as two separate languages.

As the most important minimum communication condition that must exist, the presence of a "common language" or "translators" who are knowledgeable in both areas in large measure will determine the success of implementing a technical solution in a management setting, regardless of the innovation's worth. In any individual communication situation between a member from each of these two major groups, one or the other must be "bilingual" if communications are to succeed. If this does not exist, a third party should be available who would act as translator between these two groups. It would be safe to say that the success of interaction is directly a function of the presence or absence of "bilingualism."

There are several secondary, yet still important, communication conditions that are needed to improve the likelihood of successfully implementing and using a technical innovation:

- Networks must exist for decision making and communications (both formal and informal) about the new technique.
- There should be enough variety in the communication media and channels so that a particular medium can be properly selected according to the nature of the message and the people involved.
- Feedback is essential to improving the success of each step toward implementing and using an innovation. Too often, for example, communications go from the top down through an agency's structure without enough feedback coming back up.
- A high volume of messages should be avoided, since receivers increasingly tend to disregard the messages and rely more on

informal sources. Conflicting information coming from multiple sources ruins the credibility of other communications within the system.

Utilization Principle #4. Complexity of the user system's response to a new methodology is negatively related to the likelihood that the innovation will be accepted, implemented, or properly used. As the system's response to the innovation becomes increasingly complex, the probability of utilization decreases.

Though perhaps less vital than the other principles, user responsiveness is, nevertheless, a critical factor in the probability of utilization. Known as "user packaging," a technical solution should be designed to minimize the demands on the user system.

There are several factors that constitute the complexity of the user's response. A technical solution, to the extent feasible should be:

- comprehensible -- Management should be able to understand the basic principles of the solution and the solution's output
- timely -- A new methodology must be able to function within the time limitations or needs of the management.
- efficient -- The expense of using the innovation (for example, data gathering) should be relatively low compared to its benefits.
- compatible -- Using the innovation should not disturb the functioning of the agency. (The results, however, may have a strong impact, particularly in the case of an evaluation methodology.)

APPENDIX A

PROJECT MANUAL

PROJECT MANUAL

PROJECT ON RELATIVE EFFECTIVENESS OF SOCIAL SERVICES

Planning Office
Minn. Dept. of Public Welfare
Revised April 1973

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INTRODUCTION TO PROCEDURES AND INSTRUCTIONS

For the past two years, Minnesota has been involved in a project to develop a method of measuring cost-effectiveness of social services. Project staff members have been extracting data from closed case records in several agencies.

At the current stage of this development we would like the social workers to participate in the data collection effort through recording case information and activities on an on-going basis as part of their normal recording procedures. Towards this end, the project staff is assuming responsibility for transferring information from existing recording forms to alleviate much of the burden placed on the social worker in participating in a pilot project. The results of this pilot project will surely be enhanced by having selected social workers record information on their current caseload.

Three forms are to be used in gathering information. Form 1 registers the family, identifed dependents, and identifies demographic characteristics. Form 2 records initiation of case activity, defines goals, and further identifies the primary client's needs and the social worker's plan of action. It describes the problem areas and barriers to be overcome in aiding the client and the methods by which this could be achieved. Form 3 is an on-going tally of caseworker activity of provision of services against the barriers identified in Form 2.

Those of you familiar with current developments in OSA (Community Services Administration) for reporting of social services data will note that our categories of goals and barriers, for example, are consistent with OSA's.

One of our objectives is to process the information gathered by social workers participating in the project and to return to the caseworkers information on a case-by-case basis. We will be particularly interested in social worker reaction to receiving this type of information. A variety of analytical tasks will be conducted in order to test the value of the measures which are contained in all of the forms.

Ultimately, we hope to be able to identify the services and activities that are most cost-effective which in turn should help social workers to do their work most efficiently.

Thank you for your cooperation.

1. PROCEDURES TO BE FOLLOWED BY SOCIAL WORKERS IN USING FORMS 1, 2, AND 3

FORM 1: FAMILY INFORMATION -10

Hennepin County social workers fill out Form 1 every time they take responsibility for a case not previously in a project worker's caseload, and for all their cases as of October 16, 1972.

In Ramsey County, Form 1 data will be extracted from the MIS computer file.

FORM 2: INFORMATION ABOUT PRIMARY CLIENT -20

This form records information on the primary client and specifies a time-limited plan for social services.

Social workers complete a Form 2 for each of their existing cases and for each case opening after the start of the study. This should be done as soon as feasible after receiving the case. If you provide some service to a new case but do not know enough about the case to make a worthwhile service plan, list the case (name, case number, and family member number) on Form 3 and report the service given, then submit a Form 2 as soon as possible thereafter.

A new Form 2 should be prepared and submitted whenever a major change is to be made, such as changing a "Desired Goal", changing a client name or address, receiving a client into your caseload by transfer from another project worker, or deleting a member from a family group which has been treated as a single primary client. Update copies of Form 2 should show the case identification number, all family member numbers in the primary client group, the social worker number, and only the changes in other items. If reporting the transfer of a casefrom another project participant, show the social worker numbers of both workers involved.

FORM 3: SOCIAL WORKER ACTIVITY ON BEHALF OF CLIENTS -300

This form collects current information on social worker activity regarding each case, updates the service plan, updates client status with respect to goals and barriers, and shows case closings.

Social workers record all client and collateral contacts, their location, their length, and their purpose on Form 3. At the end of the month, they record each client's current condition of life, the status of each barrier, and reasons for any case closings during the just-finished month.

Each month social workers receive new Form 3's based on previously reported case information.

SUBMITTING FORMS TO THE PROJECT OFFICE -400

Forms 1 and 2 should be prepared whenever a case is opened or reopened, and submitted before the end of the month, if possible. Form 2 updates should be submitted whenever needed. Form 3's, which should be completed continually, are due no later than the 7th of the following month. New clients should be written on Form 3 by hand.

II. INSTRUCTIONS AND DEFINITIONS FOR COMPLETING FORMS 1, 2, and 3

-100

FORM 1: FAMILY INFORMATION -110

Identifying and Geographical Information -111

County of service ("Co.")
27 Hennepin
62 Ramsey

-112

Case number ("Case No.C")
Enter the six-digit case number (which may be a family number) assigned by the county welfare agency. In the space designated "C", enter the check digit, if any. For Ramsey cases, omit the family code (A,B, or C) which appears on Form RCW 123 following the case number.

-113

Family last name
Enter the surname of the head of the family whose members appear on this form. Any other surnames in the family may be written in this space also. In particular, if the primary client has a different surname, be sure to write that surname in this space, along with the surname of the family head. (The term primary client is defined in II-223) A "family" is defined as in Minnesota's Family Rehabilitation Method. That definition, quoted from the FRM Manual, appears below. However, if it has been found necessary to depart from this definition in a particular case, the project will use whatever grouping of individuals the local agency has chosen to designate as a "family".

-114

Definition of "family"
The basic case unit is that person or constellation of persons whose social functioning should be considered as an inter-related whole that is, the diagnostic and treatment unit. Thus, there are both family and non-family case units. A family consists of two or more persons related by birth, marriage, or adoption who usually reside together in a common household. Family members physically absent from the home, but legally still a part of the family are considered as part of the original family. Former family members legally separated from the family, regardless of whereabouts, are no longer considered as part of the original case unit; and if they continue to receive services from the reporting agency, are considered as a separate case unit.

Some examples of situations where all persons indicated would be part of the same case unit are as follows:

1. Adult married couples, living with unmarried adult children.
2. Adult siblings living together.
3. Adult married couples, one or both of whom are living in a nursing home.
4. A single adult and a minor child or children.
5. A married couple and their minor children.

6. Persons in penal or mental institutions and their families as long as they are legally still part of the family.
7. Children in foster care and their original families as long as parental rights have not been terminated.

Some examples of constellations of persons who would be considered as more than one case unit are:

1. An unwed mother and her child still residing with her parents would be considered as two case units.
2. An aged couple residing with children who have minor children of their own — this would be two case units.
3. Divorced or legally separated family heads would be two case units if both parties were still receiving agency service.
4. Families with children where parental rights have been terminated -- the family and the children would be separate units.

Service worker ("Service wkr.") -115

Enter the name and identification number of the service worker responsible for this case. Five digits are permitted; therefore, if the worker identification number contains fewer than five digits, annex zeros at the beginning. (For example, worker number 23 would be written as 00023.)

Census tract ("Census tr.") -116

From the Census Track Book, obtain the tract number corresponding to the family's address. This is a five-digit number.

Residence (city size) -117

Choose the code that corresponds to the family's address.

In SMSA County (Anoka, Clay, Dakota, Hennepin, Olmsted, Ramsey, St. Louis, or Washington)

1. In city of 250,000 to 500,000: St. Paul or Minneapolis
2. In city of less than 250,000: any other city in an SMSA county
3. Not in city limits

In any other county

4. City of more than 2,500
5. City of less than 2,500
6. Farm
7. Rural non-farm
8. Not in Minnesota

Family Composition -12

Family member number ("FM No.") -121

Family member numbers 01 and 02 are used for male and female heads of household, respectively. Family member numbers for children are sequenced from eldest to youngest beginning with family member number 03, etc.

Last name, first, initial -12

Limited to a total of 19 letters

Relationship to head of household ("Rel. HH") -123

1. Child of this marriage (also child of divorced parent who has not remarried)

Child of previous marriage:

2. of male head
3. of female head

Illegitimate child:

4. of male head
5. of female head
6. Other relative (except married son or daughter)
7. Married son or daughter
8. Foster or substitute head
9. Female head
0. Male head

Codes 7 through 0 apply to the head of the household. Codes 1 through 6 apply to the children in the household. The only exception is in a foster care case when both the head of the household and the child are coded 8. This exception should be used only if the case is already set up that way; i.e., if the child is in long-term foster care and the worker who completes Form 1 puts the child and his foster parent on the form together, rather than the child and his natural parent.

Living arrangement ("Liv. arr.") -124

01 Nursing home (Skilled nursing home or ICF I)
02 TB sanatorium
03 State mental hospital
04 Medical hospital
05 Maternity hospital
06 Board and care home for adults (ICF II)
07 Licensed boarding home for children
08 Adoptive home
09 Home of son or daughter
10 Home of other relative
11 Home of non-relative (board and room, or room only)

20 Other institution providing special services
21 Minor child not living in the household
23 Military service
24 Adult foster home

30 In own home
31 Not known to agency

Status of natural father ("Father") (Omit this column if children are not involved) -125

1 Dead
2 Incapacitated
3 Divorced or legally separated
4 Separated without court decree
5 Deserting
6 Not married to mother
7 Imprisoned
8 Absent for other reason
9 In home- not incapacitated

Race and Sex ("RS") -126

	White	Negro	Indian	Other	Unknown
Male:	1	2	3	4	0
Female:	5	6	7	8	9

Years of schooling ("Yrs. sch.") (Omit for children still in school) -127
01-12 Grades 1-12
13 Freshman year in college or first year of vocational school
14 Sophomore year in college or second year of vocational school
15 Junior year
16 Senior year
17 Graduate, or post-graduate studies

Birthdate -- month, day, year -128
2 digits, 2 digits, 3 digits. Example: March 7, 1898 = 03 07 898

Action (Date __/__/__) -130

1 Start: Case is already in the case load and this form is being completed in order to get the information into the project.
2 New: Services are being provided to this family for the first time.
3 Reopen: Client has received services which were terminated, and now services are being initiated again.
4 Add information: For adding information to that which has previously been reported.
5 Correct information: For correcting erroneous information, or for updating information previously reported.
6 New plan: Do not use this response on Form 1. It is intended for use on Form 2.
7 New eventual goal: Do not use this response on Form 1. It is intended for use on Form 2.
8 Information and referral only: Use this if I & R services are the only services being given.
9 Close: Use this code only if the entire family case is being closed.

FORM 2: INFORMATION ABOUT PRIMARY CLIENT (See I-200) -200

Identifying and Geographical Information -210

County of service ("Co.") -211
27 Hennepin
62 Ramsey

Case number ("Case No. C") -212
Enter the six-digit case number assigned by the county welfare agency. In the space designated "C", enter the check digit, if any. For Ramsey cases, omit the family code (A, B, or C) which appears on Form RCa 125 following the case number.

Family last name -213
Enter the surname of the head of the family. Also, if the primary client (defined below) has a different surname, write his surname in this space.

Cross-reference -214
Leave this space blank unless there is a closely related case to which it would be helpful to cross-reference this form. In that event, enter the case number of the related case here.

Service worker no. -215
Enter the identification number of the service worker responsible for this case. Five digits are permitted; therefore, if the worker identification number contains fewer than five digits, annex zeros at the beginning.

Primary client's address (Ramsey may omit this) -216
Enter the street number and street name (maximum of 19 characters), city and state (19 characters), and zip code (5 digits) of the place in which the primary client is living.

Congressional district ("Cong.") -217
Enter the Congressional district in which the primary client lives.
3 Anoka County or suburban Hennepin County
4 Ramsey County or Washington County
5 City of Minneapolis

Information about Primary Client, Service Eligibility -220

Application date (Best guess) -221
Enter the date on the Application for Social Service which is the starting point of this service case.

Acceptance date (Omit if not readily available) -222
Enter the date on which the decision was made to accept the service application. (Probably same as application date in most instances.)

Client(s) included in the case shown on this form -223

Indicate whether the primary client is to be an individual adult, an individual child, or a family group.

Usually the primary client will be one person who has applied for service or has had an application filed for him (as in the case of a child or mentally disabled person). A family group may be treated as a primary client if all its members have the same barriers, the same service goals, and are to be provided social services under the same service plan. (For instance, a group of children from one family all receiving protective services for neglect might be treated as one primary client, providing they were all receiving the same services.)

If at all possible, avoid using a group of persons as a primary client. Use of a separate Form 2 for each individual is much better, even when the same goals and plan apply to all. For a given family, do not show more than one multi-person group as a primary client. Also, do not show any family member on more than one Form 2 (i.e., do not show a child as an individual primary client on one Form 2 and as a part of a family group on another Form 2.)

Reason for rejection -224

If the service application was rejected, circle one of the codes to tell why.

1 Not living in county. Applicant had wrong welfare department.
2 Not eligible.
3 Desired service not available from agency, and the agency rejects the application rather than refer the applicant to another provider of services while keeping the case open.
4 Service desired not available in community.
5 Services offered refused by client.
6 Other. Specify.

Primary client(s) -225

Following this heading there are several questions. Fill in answers for each person for whom you enter a family member number (FM#). Do not put in more than one family member number unless you indicated "Family" in section II-223 above. Note the cautions in that section.

Health status ("Hlth") -225.2

Record your judgment of the primary client's health status by writing one of the codes given below in the proper box. Use Excellent and Good for persons for whom no corrective medical care is needed and who are not under a doctor's care.

1 Excellent
2 Good
3 Fair
4 Poor

Under doctor's care ("Dr") -225.3

Codes are printed near the right-hand side of the form. Write the code in the proper space.

1 Yes. Use this answer only if the individual regularly sees a physician for some purpose other than preventive check-ups.
2 No

Spouse in home ("Sp") -225.4

Codes are printed near the right-hand side of the form.

1 Yes. This client and his or her spouse live together.
2 No. This client has a spouse but they are not living under the same roof. This may mean that they are separated or it may mean that the spouse is in an institution.
3 No spouse (Use for child or for single widowed, or divorced adult)
4 Inapplicable. Use this code if the client is in an institution or in community-based care rather than in a home.

Social Security number -225.5

Enter the SSA account number of the client, if readily available.

Basis of eligibility for federally-matchable service -226

Beneath this heading are two questions. In combination, the answers to these questions will show whether the client is eligible under Title IV-A or under one of the adult categories for social services partially paid for with federal funds.

Recipiency status. Circle one of the codes. -226.1

1 Current. Currently receiving, or currently eligible for OAA, AFDC, AB, AD, or MA.
2 Former. Has received OAA, AFDC, AB, or AD within the previous two years, and meets standard in Public Welfare Manual V-2321.
3 Potential. Likely to be eligible for OAA, AFDC, AB, or AD within five years, and meets standards in PWM V-2321.
4 None of these.

Assistance category ("Asst. category") -226.2

A person currently receiving GR or Child Welfare Assistance, but who is a former or potential recipient of federally-matched assistance, should be coded according to the category of federal assistance. Thus, a person currently receiving GR but meeting the definition of a potential OAA recipient should be coded 1 in this question and 3 in the preceding question.

1 OAA
2 AFDC (regular AFDC)
3 AFDC-UF (AFDC for children of unemployed fathers)
4 AFDC-FC (AFDC for children in foster care)
5 AB
6 AD
7 Emerg. Asst. (Emergency Assistance)
8 MA (Since this is not printed on the form, please write it in necessary.)

Basis of non-eligibility for federally-matchable service -227
If the client is not eligible for federally-matchable service (i.e., if you marked "none" under "recipiency status") answer this question to show what kind of assistance he currently receives.
1 GR
2 CW Relief (Child Welfare Assistance)
3 None of these

Date to field (Ramsey may omit. Hennepin should record best guess.) -228
Enter the date on which the case was assigned to a field worker.

Disposition (Ramsey may omit) -229
If the case is being closed at this point, enter one of the following codes:
01 Service completed
03 Death
05 Moved
07 Voluntary withdrawal
09 Further service futile
11 Agency unable to provide service
13 Agency service not indicated
15 Service given by another agency
17 Care assumed by parents or relatives
19 Child self-maintaining
21 Child adopted

Problems, Goals -230

Special areas -231
This is a miscellaneous list of types of cases. Circle the codes for all that are applicable to the primary client currently. (Hennepin: Use two circles to indicate the most important one.)
01 WIN
02 Vocational Rehabilitation. Currently receiving services, or being referred for such services.
03 Other vocational services
04 Unwed parent. A current problem, not a past event.
05 Migrant worker
06 Mentally retarded. Diagnosed by a professional competent to make such a diagnosis.
07 Drug addiction
08 Alcohol addiction
09 Juvenile delinquency
10 Elderly (60 years or older)
11 Mentally ill
12 Physically disabled
13 Visually handicapped
14 Marital discord
15 State ward (either committed as dependent/neglected or as retarded)
16 Protection: voluntary. May apply to an adult or a child.
17 Protection: involuntary. May apply to an adult or a child.

Degree of dependency on financial assistance -232.1
% of total income that is financial assistance: (Disregard MA and food stamps)
0 None. Client is not dependent upon financial assistance provided by the agency.
1 Assistance constitutes 1% to 25% of the client's total income.
2 Assistance constitutes 26% to 50% of his total income.
3 Assistance constitutes 51% to 75% of his total income.
4 Assistance constitutes 76% to 99% of his total income.
5 Client's entire income consists of financial assistance provided by the agency.

Employment -232.2
1 Client is employed full time
2 Client is employed part time
3 Client has another type of employment, such as on-the-job training, public service employment
4 Client is not now employed, but has completed training and is job-ready
5 Client is undergoing job training, and is not employed
6 Client is unemployed but able to work, and none of the above codes apply
7 Client is unemployable due to incapacity, age, children in home, blindness, or other legally prescribed standard (includes children)

Level of functioning -232.3
1 Client requires intensive, immediate services to prevent serious neglect or abuse that may lead to death.
2 Client requires services to maintain current style of living. Without such services there could be severe consequences; all alternatives are unattractive.
3 Client requires services only intermittently to deal with particular situations as they arise. This is not long-term on-going service.
4 Client requires no services.

Living situation -232.4
If code 4, 5, or 6 is used, write one of the letters A-M immediately following it, to show type of facility. (See -232.41.) Similarly, if code 7, 8, or 9 is used, it should be immediately followed by the letter N, P, or R. (See -232.42.)
1 (Home) Client can function independently within the home. For children, this means functioning at a level appropriate for their age.
2 (Home) Client is not totally independent, but requires some care from an individual and/or social services to remain in the home. For children, this means functioning at a less-than-normal level for their age.
3 (Home) Client is totally dependent upon an individual and/or social services in order to remain in the home. For children, this means total dependency. (A normal newborn child is coded 1, not 3.)
4 (Community-based care) Leaves the facility regularly (e.g., daily) for a period of time unsupervised.
5 (Community-based care) Client can leave facility occasionally, but usually needs some supervision.
6 (Community-based care) Client is completely dependent on staff supervision.
7 (Institutional care) Stable arrangement.
8 (Institutional care) Arrangement is in the process of becoming stabilized.
9 (Institutional care) Unstable arrangement.

Condition of life -232

Goals are to be established for each primary client with respect to four dimensions of behavior: degree of dependency, employment, level of functioning (i.e., the extent of need for social services), and living situation. A rating scale has been developed for each of these dimensions, and the client is rated according to the situation at three points in time: at intake (omit if the information is hard to find), at the time when you are filling out Form 2 ("at assessment"), and at some future date to show the hoped-for situation. Since the first two of these points in time refer to the past or the present, the title Condition of Life is used on the form, rather than the title Goals.

In the space labelled "At Intake," write the intake date and the rating code for each dimension. (You may skip this question if the information is hard to find.) Under "At Assessment," write the rating codes that describe the current situation (i.e., the situation at the time of assessment). Under "Desired Goal," show the goals for this client and your estimate of the date on which you expect the client to attain this combination of goals.

Since the present version of Form 2 does not make specific provision for recording case status in terms of four separate dimensions, please write the four codes one after the other, keeping them in the order in which they are named above. You may use commas or dashes to separate them, but this is not mandatory. For example, if the goal is to make the client economically self-sufficient, as well as independent of social services, the goal will be shown as follows: 0141.

If the "living situation" dimension involves either community-based care or institutional care, an additional code is required to show the type of facility. (See -232.4, -232.41, and -232.42.)

If the case will have several stages, state your first major objective in the "Desired Goal" space, rather than the ultimate goal for the client. For instance, if self-support is the ultimate goal but certain family problems must be solved before the client can turn her attention to preparation for employment, state first a goal calling for improvement in level of functioning or living situation. Then, when this is attained, modify the casework plan and change the goals, reporting the changes on a supplemental Form 2.

Sub-goals (like 4 on the employment scale) may be used as your Desired Goal if they will take considerable time to attain. But you should hesitate before you choose them.

You may program a Desired Goal which appears to be poorer than the condition at assessment if the client cannot be stabilized in a less-dependent condition. Thus, a client with Huntington's Chorea might enter service as fully self-supporting, but his ultimate service goal will be terminal maintenance in a mental hospital or successful placement in a nursing home.

Type of community-based care facility -232.41
- A Half-way house
- B Maternity home
- C Foster home for children, youth, or adults
- D Group home for children, youth, or adults
- E Home for emotionally disturbed children or adults
- F Skilled nursing home
- G Home for the aged ("Board and care" home: I.C.F. II)
- H Intermediate care facility (between "skilled nursing home" and "board and care home": I.C.F. I)
- J Residential foster care institution for children
- K Residential vocational rehabilitation center
- L Residential school for blind or deaf
- M Detention home for children or youth

Type of institution -232.42
- N Institution for the severely mentally retarded
- P Medical hospital for the chronically ill
- R Mental hospital

Client/agency agreement on goals, barriers, deadline and proposed services -233

Mark "Yes" if at the beginning of service you have explained the services of the agency to the client, if you have given the client an opportunity to accept or reject services, if you have developed a service plan with clearly stated goals and an estimate of time needed to attain those goals, and if you and the client have agreed on the service plan, goals, barriers, and timetable--all of these. Otherwise, mark "No".

Barriers; Service Plan -240

Barriers are problems that prevent the attainment of the desired goals. The service plan shows which services will be directed against each barrier, and should be based upon worker-client agreement. List the barriers in their order of importance, then list the services next to the barriers they are mainly directed against.

Barriers (Disregard code numbers printed on form.) -241
- 10 Personal problems, including—
  - Psychological dependency
  - Delinquency problems
  - Inability of individual or family to accept handicapping condition
  - Isolation, loss of social contact
  - Family and individual negative attitudes toward community-based or institutional care
  - Inadequate interpersonal adjustment
  - Alcohol/drug abuse
- 20 Family problems, including—
  - Births out of wedlock and/or unwanted pregnancies
  - Marital or family problems
  - Child behavior problems
  - Family member's illness or need for care
  - Potential or actual abuse or neglect
  - Lack of knowledge in parental functioning
  - Inadequate home and family management
- 30 Need for training or education, including—
  - Inadequate education or training
  - Employment-related disabilities not listed elsewhere

(Continues)

40 Need for advocacy, information and referral, or mobilization of resources, including—
Lack of child care
Lack of transportation
Lack of information about community resources
Discrimination
Lack of jobs
Lack of legal aid
Lack of educational, recreational, or cultural opportunities
Discriminatory admission policies
Inadequate screening, assessment, or referral procedures
Lack of community awareness concerning service needs
50 Physical disabilities, including—
Handicapping effects of blindness
Other physical disabilities
60 Mental disabilities
70 Inadequate living arrangements, including—
Inadequate housing
Hazardous living arrangements
80 Other

Services planned -242

Services and their codes are listed on the back of Form 2. Do not use service 110 (Developmental Services) or 120 (Educational Services) as a reporting code. These are for future use.

Do not report medical care under Title XIX (Medical Assistance) as a social service under code 160. Social service 160 (Services Related to Health Needs) refers to the services that the social worker provides when he alerts clients to health problems, helps them to understand the importance of getting proper health care, helps them get transportation to a health-care facility, and other related services including public health nursing services funded with federal social services money.

Method -243

Write in one of the codes given below to show the method by which the service will be provided.

Code 4 (purchase) overrides all others. If code 4 doesn't apply at all, try code 5 (referral to another agency) to see if it applies. If not, ask whether code 3 (provision by another employee of the county welfare department) fits. If none of these codes fit, write in code 2 (provision by social worker--you).

You will spend some of your own time for services provided mainly by methods 3, 4, or 5. The time you contribute will show up in your activity reports on Form 3.

Codes 6, 7, and 8 are for later use to report deletions from the service plan.

Method Codes

2 = Provision by social worker--you. Write in this code if you (the worker whose number appears on the form) expect to provide this service yourself without substantial help from other staff people of your agency and without the use of resources from other agencies.

3 = Provision by another employee of the county welfare department. Use this code if the service will be provided by another employee of the social services division of your agency. Neither financial nor medical assistance is a social service. Therefore, a simple referral from the social worker to the financial assistance worker will not appear at all on Form 2. If the social worker plans to provide "services related to health needs," (service # 160) the appropriate code will usually be method 2. Method 3 would apply to public health nursing services provided by county welfare department staff. The same services provided by a county nursing board would be coded as method 4 or method 5.

4 = Purchase. Use this code if any substantial portion of the service is purchased. But note that care in a foster family home is not treated here as a social service. The social worker provides a social service (by method 2) when he arranges to place a child in foster care and when he gives continuing supervision of the placement.

5 = Referral to another agency. Use this code if the other agency is to provide the service at no cost to your agency.

6 = Service deleted because not available from your agency.

7 = Service deleted because not available from your community.

8 = Service deleted for other reasons (state them).

Agency -244

If you reported a service to be delivered by method 4 or method 5, enter the code for agency type in the "Type" box on the same line as that service. See the reference chart of codes on the next page.

Enter the name of the agency you intend to refer the client to in the "Name" box on the same line as the service.

Ignore the words "If Purchased" on the form.

REFERENCE CHART OF SOCIAL SERVICE AGENCIES

Child Care Providers:

- Day-care center/nursery school. . . 05
- Family day care home. 07
- Voluntary child-caring agency . . . 01
- [Foster family home for children . . 13]
- [Group home: . . . . . 15]
- OEO 11
- Summer camp:. 08
- Temporary holding facility. 19
- Delinquent children, public institution for:. 20
- Delinquent children, voluntary. . . institution for 23

Disabled Persons, Agencies Providing Services for:

- Department of Public Welfare, e.g., Services for the Blind, Crippled Children's Services: 04
- Institutions for the physically handicapped 21
- Voluntary institutions for the retarded or handicapped 24
- [Foster family home for adults:. . . 14]
- Homemaker/home-health-aide agency (if single-purpose agency):. . . . 29*
- Home-delivered meals licensee:. . . 30*
- Local School System:. 10
- Vocational Rehabilitation:. 09
- Manpower Services or other employment service other than Vocational Rehabilitation:. . . . 36
- Business firms providing a service not coded elsewhere, e.g., Handicaps:. 35

Families and Individuals, Agencies Providing Services for:

- Family service agency:. 02
- Big Brothers, Big Sisters:. 28
- Local School System:. 10
- Tutorial Program: 31*
- Private physician providing family planning service:. 33
- Maternity shelter:. 25
- Homemaker/home-health aide agency:. 29*
- Home-delivered meals licensee:. . . 30*

Mental Health Services Providers:

- Area mental health/retardation board:. 03
- State mental hospital:. 17
- Half-way house: 18
- [Foster family home for adults:. . 14]
- Voluntary institution for emotionally disturbed children:. . 22
- Psychologist, psychiatrist, or agency providing psychological service, other than area board: 32
- Vocational Rehabilitation:. . . . 09

Mental Retardation Services Providers:

- Area mental health/retardation board:. 03
- State institution for the retarded: 38
- Day activity center:. 06
- [Foster family-home for adults:. . 14]
- Voluntary institution for the retarded or handicapped:. . . . 24
- Vocational Rehabilitation:. . . . 09
- Local school system:. 10
- Psychologist, psychiatrist, or agency providing psychological service, other than area board: 32

Other Sources of Social Services:

- OEO:. 11
- Model Cities, Pilot Neighborhood: 12
- Legal Aid:. 26
- County Attorney:. 27
- Court (for use with service 070 only):. 39
- Manpower Services or other employment agency other than Vocational Rehabilitation:. . . 36
- Other county or state welfare dept 37
- Other licensed voluntary non-profit organization:. 34
- Other govt. facility: 40
- Business firm providing a service not coded elsewhere, e.g., Handicabs:. 35

Examples of service/method/agency combinations -245

The following examples may clarify the use of service, method, and agency codes.

Medical care

If a client goes to University Hospitals, to a general hospital, or to a nursing home, your agency is not purchasing "social services," despite the presence of social workers on the staffs of these facilities. If you have a role in arranging such services, you are yourself providing service 160 by method 2. You leave the agency boxes blank.

Foster family home or group home

Care in such facilities is not a social service for project purposes. If you supervise the placement and arrangements, the service will be 201 or 202, the method will be 2, and the agency boxes will be left blank. If a child is in a voluntary agency's boarding home, however, and that agency is supervising the placement and arrangements, then the service reported would be 202, the method would be 4, and the type of agency box would be filled with the code 01.

Residential treatment facility

This kind of care is a social service. The physical maintenance and care are incidental and supportive to the treatment, which is social rather than psychiatric. This service would be reported as 061 or 032. The method would be 4. And the agency type would be 22, 23, or 24.

Education

There are two kinds of services related to education that are to be reported as "social service": 1) services of school social workers, which should be reported as service 171, method 5, agency type 10; and 2) HELP at the University of Minnesota, which should be recorded as service 132, method 4, type 34. Other purchases of education for clients (such as beauty school) are not purchases of social services. Arranging the education is a social service, however, and that should be reported as service 132 or 133, method 2.

Vocational Rehabilitation

Cases involving the Division of Vocational Rehabilitation are reported in several ways. If sheltered employment or a work activity center is being provided, Vocational Rehabilitation is giving a social service, code 220, method 5, agency type 09. Other services from Vocational Rehabilitation are not social services. Setting them up should be reported as service 007 or 133, method 2.

Referrals to Services to the Blind are coded 007, method 2.

Action (Date__/__/__) -250

Enter the date on which you fill out the form, and circle an action code to show what the Form 2 is for.

0 Change of worker. Write this code (which is not printed on the form) if the case has been transferred to you from another worker participating in the project. If you are simultaneously making other changes--a new goal, for instance--mark another appropriate code too.

1 Start. Case was already in the caseload as of October 16, 1972, and this form is being completed in order to get the information into the project's data base.

2 New. Services are being provided to this primary client for the first time.

3 Reopen. This primary client has received services which were terminated. Now, services are being initiated again.

4 Add information. For adding information to what has already been reported.

5 Correct information. For correcting and updating information already reported.

6 New plan. Circle this code if the service plan (see II-240) is being changed.

7 New desired goal. Circle this code if the desired goal (see II-252) is being changed.

8 Information and referral only. Use this if I & R services are the only services being given.

9 Close. Circle this code if the case of this primary client is being closed and, for some reason, you are reporting this action on a Form 2. (In general, it is not necessary to do so: reporting the closing on Form 3 is sufficient.)

FORM 3: SOCIAL WORKER ACTIVITY ON BEHALF OF CLIENTS (See I-300) -300

Starred (*) items will normally be pre-printed on the form by computer.

Identifying Information -310

*County of service ("COUNTY") -311
27 Hennepin
62 Ramsey

*Social worker's identification number ("CASEWORKER ID") -312
Identification number of the service worker responsible for cases printed below. Space is reserved for five digits.

*Report month ("REPORT FOR MONTH , 197 ") -313
Month is indicated by its place in the year: e.g., November is coded 11.

Current Status -320

*Degree of dependency on financial assistance ("$") -321
See codes in section II-232.1.

*Employment ("EMP") -322
See codes in section II-232.2.

*Level of functioning ("LEV") -323
See codes in section II-232.3.

*Living situation ("LIV") -324
See codes in section II-232.4.

*Current barriers ("BR") -325
The computer will print the two-digit code for each barrier reported to date that has not been reported removed. Barriers were reported on Form 2 at intake. Write codes for new barriers under the printed codes.

Codes are shown in detail in section II-241. Briefly, they are as follows:
10 Personal problems
20 Family problems
30 Need for training or education
40 Need for mobilization of resources, advocacy, or information and referral
50 Physical disabilities
60 Mental disabilities
70 Inadequate living arrangements
80 Other

*Barrier status at end of month ("BR ST") -326
At the end of the month, write one of the codes from the list below next to each of the printed barrier codes to show the status of that barrier. If a code is already printed, let it be if it is correct; cross it out and write in the new status if there is a change.

1 Existing. Barrier still exists; social worker is seeking its resolution.
2 Controlled. Barrier has been controlled through agency efforts.
3 Removed. Barrier has been eliminated through agency efforts.
4 Not resolvable. Insurmountable problems or client resistance prevent a solution.
5 Eliminated by removal/control of other key barriers, separately reported.
6 Eliminated by events outside agency control.
7 Controlled by removal/control of other key barriers, separately reported.
8 Controlled by events outside agency's control.
* Delete. Barrier recorded by mistake.

Case Closing Data ("CLOSE") -330

Reason case closed ("RE") -331

Enter one of the two-digit codes listed below if the case of this primary client is now being closed for social services.

00 Transferred to another worker. Write in the name of the other worker, and, if he is in the project, give his worker number, if readily available.
01 Goal achieved.
02 Client rejects services.
03 Lost contact with client.
04 Barriers remain, but further service considered ineffective.
05 Client transferred out of agency's jurisdiction; another agency handles barriers.
06 Client moved out of county.
07 Client married.
08 Client sent to jail, workhouse, prison, etc.
09 Client institutionalized.
10 Client became age 18; state no longer responsible.
11 Client died.
12 Other. Note reason on back of form.

Month in which case closed ("MO") -332

Enter the number of the month. (November is 11, etc.)

Client Identification -340

*CLIENT NAME -341

Surname of the client as listed on the Form 2 case plan.

Write in names of new clients for whom you have filled out Form 2 if they do not appear on this form. Write case and family member numbers.

Also write in names of new clients for whom you have not yet filled out Form 2's (pending better identification of barriers and goals). In these cases, be extra sure you write in the case number and family member number for each primary client. Do not use groups as primary clients (the old 99 family member number)! Use only individuals as primary clients.

*FAMILY ID -342

Case identification number. Six digits followed by a seventh check digit, if any.

Write in case numbers for new clients (see -341 above).

HENNEPIN WORKERS should write in new case numbers as they appear on their case files. Since Hennepin County case numbers have no check digits, the keypunchers (NOT YOU) will add a zero at the right of each case number.

*FM # (Family Member Number) -343

The primary client's family member number. The code 99 means a group of clients taken together. This code is to be discontinued eventually. Do not use it for new cases. If a 99 group changes in composition, break it up and submit new Form 2's for all its members.

Services Given and Units of Service -350

This section of Form 3 has two identical blocks of columns in which to record information about services provided. Record as many services as you need to. If you run out of space, rewrite the client's name, case ID number, and FM number at the bottom of the form and record the additional services there. Connect the two report locations with an arrow from one to the other. Record only one service per line in each block.

Record any service provided or arranged. even if you did not record it when you charted the case plan on Form 2.

You do not need to correct the Form 2 plan by submitting an update copy except when: 1) Client name or address is to be changed, 2) The targeted condition of life ("Desired Goal") is to be changed, 3) Other major changes in the case are to be begun or portions of a family dropped from service, or 4) The case is being transferred to you from another project worker.

SERV (Service Code) -351

Write in the three-digit code for the service you are reporting.

Service codes are listed in a table on the back of every Form 2.

METH (Method) -352

Record the method by which the service is being provided, using the codes given below. The codes are explained in section II-243 of this manual.

2 = Service provided by social worker (you).
3 = Provided by some other employee of your county welfare department.
4 = Purchased.
5 = Obtained free by referral to some other public or private agency or provider.
6 = Service deleted because not available from your agency.
7 = Service deleted because not available in your community.
8 = Service deleted because of other reason:_____.

AGY (Agency Type) -353

Write in the code for agency type if you are arranging this service by free referral (method 5). Otherwise leave this blank. Agency type codes are given in section II-244.1 of this manual and also in a little reference chart you may have been given.

BR (Barrier Against Which This Service Is Mainly Directed) -354

Write in the two-digit code for the barrier against which the service on this line is mainly directed. The short list of new barrier codes is below. Choose one of the codes given. (A more detailed list of barriers and codes will be provided at a later date.)

10 = Personal problems
20 = Family problems
30 = Need for training or education
40 = Need for mobilization of resources, advocacy, or information and referral
50 = Physical disabilities
60 = Mental disabilities
70 = Inadequate living arrangements
80 = Other

Client and Collateral Contacts Records -355

Time Units -355.1

Pencil in the number of quarter-hours you spend on client or collateral contacts for each service you peported in the SERV columns. Round off times to the nearest quarter-hour unit greater than zero. Put your entry into whichever column applies: Field, Office, Telephone, or Travel. Do not add travel times into field times; they should be separate quantities, not part and whole.

If there is already a time reported for the kind of contact you are reporting (say, a number in the Office Contacts column under the Time Units heading), erase the old number and add it to the new number of units you are reporting. Then write the sum where you erased the old value. See the example below.

If you work on several services with a client, put down a guesstimate of how many quarter hours you spent on each service.

You do not have to distinguish between client and collateral contacts.

Contact Tally -355.2

Make a hash mark (/, //, ///, ////) in the appropriate column each time you have a client or collateral contact. Make only one tally per contact, on the line for the service the contact/interview was mainly about. (Tally one service, but report times for all services you work on.)

Example -355.3

	SERV	KEY	AGY	BR	CLIENT AND COLLATERAL TIME UNITS FIELD	OFF	TEL	TRAV	CONTACT TALLY FIELD	OFF	TEL
①	172	5	32	10	2	3		4	1	///	
②	131	3		30		2	4			/	////
③	211	2		20							

Here, line 1 indicates a half-hour field visit regarding service 172 and three quarter-hour office contacts regarding that service.

Line 2 indicates a half hour office contact regarding service 131 and four telephone contacts reported as 15 minutes long (though some may have been short).

Line 3 indicates no contacts so far this month relating to this service.

Now, if the client were to come in to see the social worker, and if they spent thirty minutes discussing the WIN training program and forty minutes deciding on when a child could come home from temporary protective foster care, the worker would change the the form above to look like this:

172	5	32	10	2	3		4	1	///		
131	3		30		4	4			/	////	
211	2		20		3				/		

APPENDIX B

Why Three Forms? The GOSSS materials available to us in the fall of 1972 (in draft form only) contained a Social Services Information Subsystem. This SSIS consisted of a "load form," accompanied by detailed coding, that was designed for adding clients to the data base, reporting certain changes in factual or judgment information about those clients, and periodically verifying the fact that previously reported information remained unchanged. Although this aspect, the recording of facts and judgments about cases, was worked out rather fully, the procedure for recording services delivered was virtually undeveloped. It seemed clear that a separate form (our Form 3) should be designed for this purpose.

In the GOSSS material a load form was to be completed for each primary client, but the form also called for some demographic data about the family of which the client was a member. Since a given family might contain several primary clients, and therefore require several load forms, we decided to put the family information on a separate form (our Form 1), limiting our Form 2 to factual information about the primary client plus the judgment items essential to GOSSS.

Format and Content of Form 1. Ramsey County Welfare Department follows the DPW-recommended practice of numbering the family units within its caseload, using the family unit number together with an appropriate combination of suffixes to identify the case within the family, such as the individual child who is the subject of child welfare services. Ramsey was already loading family information into its own computerized information system, using a load form (designated RCW 123) that listed the family members and gave factual information about each one. To design our Form 1, we simply

deleted the unneeded items--those not appearing on the GOSSS load form--from the RCW 123. We had already decided [illegible] to ask the Ramsey social workers to complete Form 1, knowing that we could get the necessary data from the RCW 123. Our original intention was to have project staff extract the data manually by placing a template over the RCW 123 and copying the exposed columns onto Form 1. This explains the unusual spacing of Form 1.

Content of Form 2. With few exceptions, items on Form 2 were derived directly from the GOSSS load form. The exceptions (other than trivial matters relating to case identifiers) are those items surrounded by asterisks: the primary client's address, the date on which the case was transferred from the intake worker to the field worker, and the "disposition" or reason for the closing of any case that terminated immediately. These bits of information, which the Ramsey workers were permitted to skip, were added for the benefit of the Hennepin agency. Hennepin had designed an Interim System, so called because it was intended to meet that agency's immediate need for social service data until such time as a more comprehensive system could be developed and installed. Hennepin put the Interim System into operation throughout the agency during the period of our project. As a condition of that agency's participation in the project, we agreed that participating social workers would not be required to do duplicate reporting. Since the fourteen workers in the project would be using project forms, the project staff had to translate project data into Interim System data. Hence, all data items included in the Interim System had to be obtainable from project forms, if from no other source.

The "Primary Client" Concept. What is a case receiving social services?

What is a primary client? Is a case identical with a recipient of public assistance--bearing in mind the fact that GOSSS was supposed to refer only to social services covered by Federal participation under the public assistance titles? Since Minnesota would not want to establish an information system limited to public assistance-related clients, how would Minnesota wish to define a service case? Since a field test of GOSSS concepts in the Minnesota environment was one of the avowed purposes of this project, we felt compelled to adhere to the definition used in GOSSS--if we could figure out what it was! Here is a quotation from a GOSSS draft dated January 1972:

> SSI documents...are completed on each case actually receiving services. This includes all cases with which the staff member is involved....
>
> Occasionally, when the case involves a family, individuals in the family may be assigned goals different from the goals assigned to the family as a whole. In this instance, a separate document is completed for each individual having a different goal, in addition to the document completed for the family as a whole. Thus, an SSI document is completed for each different goal in the case....

Also, the "SSI document" (the GOSSS load form) contained a space for indicating whether the case was an individual child, an individual adult or a family. A GOSSS draft dated July 1972 did nothing to clarify this matter. Thus, it appeared that a case (or a "primary client"; the terms seemed to be interchangeable) might be either an individual or a group of individuals. (Indeed, we interpreted the above quotation as meaning that CSA actually preferred the group.) Therefore, we originally wrote as follows (in Project Manual, II-22):

> ...Usually the primary client will be one person. However, if several individuals have the same barriers..., same goal, and same service plan, all may be shown on the same Form 2. This situation is most likely to occur in a protective service case, where several children are believed to be neglected and will be receiving the same service.

Thus, for project purposes, one case was represented by one Form 2, regardless of the number of individuals appearing on that form. (The individuals included in the case are shown in the grid area in the upper right quadrant of the form.)

Having defined the composition of a case so ambiguously, we found differences in the way in which the workers used this provision. We also found some unexpected problems. Consider, for example, a family in which the mother and oldest child live at home and have the same goal, self-care; while the two younger children are in foster care and likely to remain so (community-based care). Most workers would prepare two Form 2's, as follows:

- mother (FM # 02) and first child (FM # 03) on one form
- younger children (FM # 04 and # 05) on one form

Now, before the start of field work, we had decided not to keypunch any data items not contributing to the operation of the system (Social Security numbers, for instance). Therefore, we punched only a single set of cards from a Form 2. The case identifier punched into the card consisted of the case number, followed by the FM # of the individual. If more than one individual was included in the case, we punched FM # 99 instead of the FM #'s of the individuals. In the above example, there would therefore be two cases for which the same number had been punched, a problem that we did not foresee. Another unforeseen problem was the tendency for the composition

of a case to change over a period of time, as the worker changed his service plan for a group member or established a goal different from the goal for other members of the primary client group. We tried to cope with these difficulties, the worst single type of problem in the entire data-processing experience, by modifying the instruction. The modified instruction is found in II-225 of the current version of the Project Manual, which appears elsewhere in this report

The List of Services. The GOSSS material contained a short list of services. At the time when the project forms were being designed, other organizational units within DPW were attempting to produce a uniform list of services consistent with our Federally-approved State Plan, with currently required statistical reports, and with various other structures and procedures. It appeared desirable for the project to use the definitive list also. The list that was considered to be "official" at the time was reproduced on the reverse side of Form 2. Despite the many criticisms of this list--partly because of its excessive length, and partly because it seems to be a mixture of "programs" and "services"--it was used without change throughout the project.

Barriers. On Form 2 there is printed a list of barriers with the codes assigned to them. This list is printed on the form solely to provide a ready reference. Workers were not expected to make notations on the code list itself, but rather to write the selected codes in the spaces below it. Therefore, when we revised the list during the course of the project, we did not think it necessary to print new forms; we simply changed the manual.

With two exceptions, the original list of barriers was drawn from the GOSSS materials available at the time. The additions to the list were "03. Psychological dependency" and "31. Alcohol/drug abuse," the latter added after the forms had been printed. In most instances, we made no attempt in the manual to define these barriers.

The workers found the list of barriers too long and unwieldy. Therefore, in mid-project it was considerably shortened, as shown in Project Manual, II-241. Since each of the original barriers was assigned to only one of the new barrier categories, the older data could be translated into the new terms. (By the time this happened, events elsewhere had made it evident that GOSSS was a dead issue. Therefore, we no longer felt obliged to maintain the original GOSSS categories when experience indicated the need for change.)

Condition-of-Life Measurements. According to GOSSS concepts, anyone receiving social services should have one of the following goals: self support, self-care, community-based care, or institutional care. Although not expressly stated, the interrelationship among these four appeared to be heirarchical. Clients could move, in the course of time, from one to another of these. But they could also move within one of the goal categories. For example, here is the scale provided by the authors of GOSSS to describe movement related to self-care (which actually means family care if the client is a child). Although we have re-worded it and cast it into chart form, we have not altered the substance of the scale steps that we found in the GOSSS material:

Capacity for Independent Living	Barriers Removed or Controlled	Social Services Needed
2100 - Adult in own home, able to cope. Child in family home, functioning at level appropriate for age and condition.	All	Maybe
2200 - Improved	2 or more, but not all	Yes
2300 - Improved	1, but not all	Yes
2400 - Entering self-care; planned movement to self-care from institutional care, community-based care, or from self-support.	None	Yes

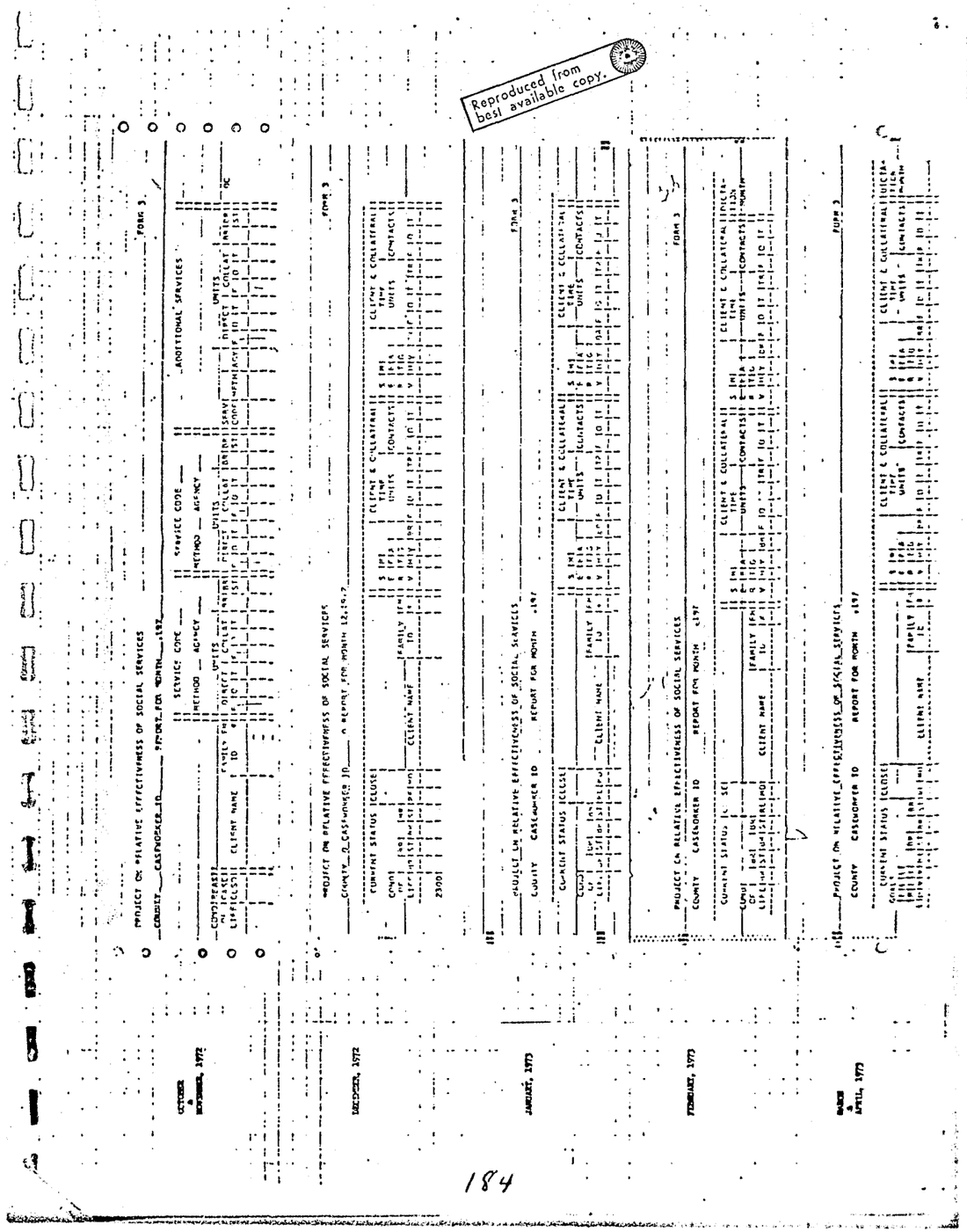
Thus, a child who is about to be returned to his family home after living in a foster home is described initially by code 2400 and eventually (after social services have succeeded in removing or controlling all barriers) by code 2100.

Experience with this framework revealed its inadequacies. What is the current status, and what is the goal, for a mentally retarded adult who must live in a group home so that he can receive necessary supervision, but who is able to work at an unskilled job in the community? If the goal is said to be community-based care, and he has already attained that goal by successfully adjusting to the group home (i.e., all barriers to adequate care have been removed), how can the worker indicate his subsequent progress when he obtains a job? Or if the goal is said to be self support, shall we say that he has attained that goal, to a limited extent, even though welfare funds continue to be used to pay for his care in the group home? Although this case example (and there are others like it) does not prove

that the GOSSS goal structure is impossible to use, it should give the reader an insight into the difficulties that the social workers encountered in trying to apply it.

When it became clear that GOSSS was not likely to be mandated immediately, we responded to the criticisms voiced by the workers and, with their help, devised a replacement: four independent dimensions, each with a scale attached. The dimensions were: degree of dependency on financial assistance, employment, level of functioning, and living situation. (The accompanying scales are shown in the Project Manual, II-232 through -232.42.) To use them, it was necessary to ask each worker to translate the GOSSS codes for each of his cases (current status and status when first assessed), including cases that had already closed. However, if necessary, it would be possible to make a translation mechanically from the four-dimensional coding back to the GOSSS framework. (After making this revision, we learned that others working on GOSSS, in another part of the country, had independently made a similar change.)

Format of Form 3. The four successive versions of Form 3 are reproduced together on the following page. (December and January are the same. The December segment illustrates some of the computer-produced coding.) To make quick and inexpensive revision possible, the form was computer generated each month as a part of the process of producing each worker's case roster. Conventional 15-inch computer paper was used. The number of carbon copies varied from month to month, with two being the optimum number. At month's end, the original was returned to Unco, the first copy to the DPW project office, and the second copy was kept by the worker.



At first, we expected most of the social workers to have one or two "favorite" services, i.e., services that they gave to most of their clients. The right-hand portion of the October-November version of Form 3 contains two identical panels, those headed "Service Code__", intended for the worker's two "favorite" services. The service, method, and outside agency involved were supposed to be coded at the top of the panel so that these items of information would not have to be repeated for each case. The last panel, headed "Additional Services," was intended for services that the worker gave less often. This feature proved not to be helpful. Our list of service codes was so detailed that a worker who recorded conscientiously would use a great variety of the codes (e.g., a "child protection"worker" does not give only "child protective services"). When we discovered this, we discontinued the "favorite service" panels, thereafter producing two identical panels similar to our original "Additional Services" panel. (The only reason for two panels was to give the worker space opposite each case name for the recording of several services.)

Not only have the panels on the right half of the form changed; the individual columns within those panels have changed also. The reader will recall that the workers recorded their interaction with clients and collaterals in quantitative terms, using two measures: (1) the "time unit," a fifteen-minute period spent in field, office, or telephone contact, or in travelling to make such a contact (abbreviated on the form as follows: F, O, T, TR); and (2) the unweighted count of contacts. In the October-November version of the form, the worker was expected to write a numeral indicating the number of time units, then circle the numeral to indicate a single

contact. Thus, an office interview lasting one hour and concerned with only a single service was indicated by writing a 4 (under O for "Office") and circling the 4 to show that all four time units took place in a single interview. This proved cumbersome. Therefore, we eliminated the unimportant distinction between "direct" (i.e., with client) and "collateral" contacts, and used the space thus saved for one set of columns (F, O, T, TR) in which to accumulate the time units and another set (F, O, T) in which to tally the contacts.

When the giving of a service was recorded, i.e., when time units and contacts were written opposite a service code, it was necessary to know which barrier was the object of this service. Therefore, there are "barrier" columns (BR) in the right-hand half of the form associated with each set of columns where activity was recorded. In the October-November form, each such column was followed by a column in which to indicate the status of the barrier at month's end (BR ST). This arrangement was changed for two reasons: (1) Since only the barriers being worked on were reported, a barrier could disappear without any attention from the social worker and we would never hear of its disappearance. (2) The workers complained that they could not recall which barriers they had recorded on Form 2, and hence were inadvertently introducing new barriers on Form 3. Therefore, they wanted the computer to print an up-to-date list on Form 3 of the barriers that they had recorded on Form 2. Moreover, they wanted to be able to add barriers without preparing a new Form 2. For these reasons, we changed the left side of Form 3 by adding two pairs of columns (BR, BR ST) for showing all barriers in a case and the end-of-month status of each, regardless of whether the barrier was worked on during the month. (The

two pairs of columns are simply a space-saving device, so that a case with many barriers will not require so many horizontal lines of space.)

On the December, January, and February forms, the computer printed data in the left half of the form, using all appropriate columns over as far as the first pair of double lines: the latest available code for condition of life, all barriers previously reported, the barrier status codes previously report, and the case name and number. During the month for which the form was issued, the worker recorded activity in the right half of the form. (Note that he still indicated which barrier he worked on.) Then at the end of the month he turned his attention to the left half of the form, where he updated the condition-of-life code, changed the barrier status codes as necessary, and gave closing information if the case had closed. If a new barrier had arisen, he simply wrote it in a BR column. When the computer updated on the basis of the information recorded by the worker, it printed any new barrier that he had added and it deleted any barrier that he had coded as "removed." It also deleted any case that had closed.

In March, we replaced the extreme left column with four narrow columns for the new four-dimensional coding scheme described earlier.

Some Untested Suggestions for Further Improvement. The purpose of the following paragraphs is neither to attack the COSSS concepts nor to propose a radically different set of forms and procedures than those used during the six months of field work. Rather, the intention is to point out a few things that we would now do differently, assuming that we were committed to essentially the same concepts (case goals, barriers to

attaining those goals, etc.) and assuming that we chose to accomplish the input to the data system by means of a "load document" for case information and a list-type "turnaround form" for social worker activity.

The list of services, as mentioned earlier, was difficult to use. Separating "programs" from "services" would be helpful, especially if the program designation attached to a case could continue throughout the life of the case and could reflect the organizational unit from which the client was receiving service. (Others in DPW have been working on this problem, which is by no means trivial.)

A good feature of Hennepin County's Interim System was the separation of services into those provided by the social workers and those secured from outside agencies, the latter group of services being collectively called resources. Since the resources being used for a particular case tend to continue from month to month, the computer prints them on Hennepin's turnaround form until the worker deletes them (rather than expecting the worker to remember to list each resource each month, as on our Form 3). A further improvement would be to separate the resources into those purchased from other agencies or individuals and those obtained free from other agencies (usually other units of government). Data on the purchased services could then be obtained from the local agency's vendor payment records without any effort on the part of the social workers.

In view of the great amount of trouble caused by the use of "primary client groups," we would use a separate load document for each individual who is a client (not necessarily every member of the family). This load document would replace Form 2. Essential items from Form 1 would appear

thereon, and Form 1 as a separate instrument would be abolished.

Workers were expected to update the condition of life and the status of each barrier every month, and the updating was done on Form 3. Since DPW policy requires a quarterly review of each social service case, we would require updating only once each quarter, as a part of the required review. As part of a more thorough consideration of the case (including a revision of the service plan and a change in goal, perhaps), the result of the updating and general review should be recorded on the load document rather than on the turnaround form.

The title and column captions of the turnaround form (the replacement for the project's Form 3) would no longer be produced by the computer, of course. Therefore, the form could be made easier to use by shading certain columns and by printing some of the code lists in the margins.

The presence on Form 3 of two identical panels in which to record the worker's activity proved to be unnecessary. It would be better to use that space for making the columns wider, especially if time units are to be recorded.

It is not really necessary to relate the kind of service to the mode of contact (field, office, or telephone). Therefore, the right-hand portion of the turnaround form could begin with a three-column panel for tallying contacts by mode, regardless of the nature of the service. Then the remainder of the right-hand portion could be used for recording time units by kind of service, barriers, etc., but with no further reference to the mode of contact. (This idea comes from Hennepin's Interim System.)

The new four-dimensional coding scheme for condition of life can be improved in several ways: (1) "Degree of dependency on financial assistance" requires the social workers to gather information that they would not otherwise have, in view of the separation of aids from services. Unless local agencies can establish a routine for routing the necessary information to the social workers when needed, this scale should be simplified. (2) The "Level of functioning" scale needs at least one more level, as there is too large a gap between "Client requires intensive immediate services to prevent serious neglect or abuse that may lead to death" and "Client requires services to maintain current style of living." (3) The "Living situation" scale needs two improvements: an additional letter code for type of institution to represent "Correctional institution;" and some re-wording of scale steps 4, 5, and 6 so that the user will know how to apply them to children (especially infants) in foster homes.

APPENDIX C

INTERVIEW QUESTIONNAIRES FOR SOCIAL WORKERS

COUNTY _____

INTERVIEW QUESTIONNAIRE

SOCIAL WORKER # _____ CLIENT NAME _____ CASE ID _____ FM# ___

DATE OF INTERVIEW _____
TIME : start _____ finish _____

* Reassessment of Condition of Life (Look at Roster of Closed Cases, make changes on Roster) 1)Condition of Life at Assessment, 2)At time of Case Closing

1. _____ Which services (looking at desk card) did you give most frequently to this case? Which major service area did these fall into?

   CHILD PROTECTIVE SERVICES - CPS
   EMPLOYMENT SERVICES - ES
   UNMARRIED PARENTS SERVICES - UM
   MENTAL HEALTH SERVICES - MH
   MENTAL RETARDATION SERVICES - MR

2. _____ In the service area chosen above, what was the outcome for this case? (Give Outcome sheet to social worker).

* Reason for Case Closing should complement Outcome. (Look at Roster and make changes that are necessary).

3. _____ Without services would condition of life have improved, remained the same or degraded?

   1. Condition of life would have improved without services.
   2. Condition of life improved because of services given.
   3. Condition of life would have been maintained without services.
   4. Condition of life was maintained because of services given.
   5. Condition of life deteriorated without services.
   6. Condition of life deteriorated even though services were given.

INTERVIEW QUESTIONNAIRE (CONT'D)

4. _____ Was the outcome achieved by this client your agreed upon desired goal?

   1. Yes
   2. No, did not achieve desired goal.
   3. No, client and social worker never agreed on goals.

5. _____ Do you feel that the Length of Service was justified by the outcome?

   1. Yes
   2. No

* Do you feel that you correctly identified barriers for this client? (Make any changes necessary on roster).

* Are the statuses that are printed out the correct statuses at close of case. (Make any changes necessary on roster).

6. _____ If services were not provided towards the removal of identified barriers, why not?

   1. Services not available from agency.
   2. Services not available in community.
   3. Not enough time to spend on providing services to client.

7. _____ Rank the overall benefit to the client on a scale of 4 to -1. Four being the high value, -1 the low value. Code x if the overall benefit is unknown.

   4 Outstanding
   3 Above average
   2 Average (in your experience as a worker in this type of case)
   1 Somewhat, but less than average
   0 Little or no benefit
   -1 Detrimental
   X Unknown

MINNESOTA DESK CARD

CONDITION OF LIFE

Scale 1: Dependence on Assistance

0 = No financial assistance
1 = Assistance is 1-25% of total income
2 = Assistance is 26-50% of total income
3 = Assistance is 51-75% of total income
4 = Assistance is 76-99% of total income
5 = Assistance is 100% of total income

Scale 2: Employment/Job Readiness

1 = Works full time for pay
2 = Works part time for pay
3 = Works in public service type employment, etc.
4 = Unemployed but trained and job-ready
5 = Unemployed and in job-training
6 = Unemployed but able to work
7 = Unemployable

Scale 3: Level of Functioning

1 = Needs intensive immediate services to prevent serious neglect or abuse
2 = Needs services to maintain current style
3 = Needs services intermittently
4 = Client requires no services

Scale 4: Living Situation

1 = Can function independently in own home
2 = Needs some care to be able to live at home
3 = Totally dependent on others if living at home
4 = Leaves community-based care facility regularly, unsupervised } Plus
5 = Leaves community-based care facility occasionally, supervised } Codes
6 = Completely dependent on staff supervision in community-based care facility } A-M
7 = Stable institutional care } Plus
8 = Institutional situation becoming stabilized } Code
9 = Unstable institutional arrangement } N,P,R,

Community-Based Care Facility

A = Half-way house
B = Maternity home
C = Foster home
D = Group Home
E = Home for emotionally disturbed children or adults
F = Skilled nursing home
G = Board and Care; ICF II
H = ICF I
J = Residential foster care institution, for chn.
K = Residential voc. rehab. center
L = Residential school for blind or deaf
M = Detention home for children or youth

Institution

N = Institution for the severely mentally retarded
P = Medical Hospital for the emotionally ill
R = Mental Hospital

Reason case closed ("CC")

Enter one of the two-digit codes listed below if the case of this primary client is now being closed for social services.

00 Transferred to another worker. Write in the name of the other worker, and, if he is in the project, give his worker number, if readily available.
01 Goal achieved.
02 Client rejects services.
03 Lost contact with client.
04 Barriers remain, but further service considered ineffective.
05 Client transferred out of agency's jurisdiction; another agency handles barriers.
06 Client moved out of county.
07 Client married.
08 Client sent to jail, workhouse, prison, etc.
09 Client institutionalized.
10 Client became age 18; state no longer responsible.
11 Client died.
12 Other. Note reason on back of form.

MINNESOTA DESK CARD (CONT'D)

BARRIERS

10 PERSONAL PROBLEMS, including--
- Psychological dependency
- Delinquency problems
- Inability of individual or family to accept handicapping condition
- Isolation, loss of social contact
- Family and individual negative attitudes toward community-based or institutional care
- Inadequate interpersonal adjustment
- Alcohol/drug abuse

20 FAMILY PROBLEMS, including--
- Births out of wedlock and/or unwanted pregnancies
- Marital or family problems
- Child behavior problems
- Family member's illness or need for care
- Potential or actual abuse or neglect
- Lack of knowledge in parental functioning
- Inadequate home and family arrangement

30 NEED FOR TRAINING OR EDUCATION, including--
- Inadequate education or training
- Employment-related disabilities not listed elsewhere

40 NEED FOR ADVOCACY, INFORMATION AND REFERRAL, OR MOBILIZATION OF RESOURCES, including --
- Lack of child care
- Lack of transportation
- Lack of information about community resources
- Discrimination
- Lack of jobs
- Lack of legal aid
- Lack of educational, recreational, or cultural opportunities
- Discriminatory admission policies
- Inadequate screening, assessment, or referral procedures
- Lack of community awareness concerning service needs

50 PHYSICAL DISABILITIES, including--
- Handicapping effects of blindness
- Other physical disabilities

60 MENTAL DISABILITIES

70 INADEQUATE LIVING ARRANGEMENTS, including--
- Inadequate housing
- Hazardous living arrangements

80 OTHER

BARRIER STATUS AT END OF MONTH

1. Existing. Barrier still exists; social worker is seeking its resolution.
2. Controlled. Barrier has been controlled through agency efforts.
3. Removed. Barrier has been eliminated through agency efforts.
4. Not resolvable. Insurmountable problems or client resistance prevent a solution.
5. Eliminated by removal/control of other key barriers, separately reported.
6. Eliminated by events outside agency control.
7. Controlled by removal/control of other key barriers, separately reported.
8. Controlled by events outside agency's control.
9. Delete. Barrier recorded by mistake.

CODES FOR SERVICES

INFORMATIC. & REFERRAL SERVICES 000
- Income maintenance. 001
- Food programs 002
- Clothing & household equipment. 003
- General public serv. (fire, police, etc.) 004
- Health care 005
- Equal opportunity resources 006
- Other 007

ADOPTION. 010

AGING, SERVICES FOR THE 020

ALCOHOL/CHEMICAL DEPENDENCY SERVICES. . . . 030
- Detoxification. 031
- Residential treatment 032
- Day center. 033
- Outpatient. 034
- Half-way house. 035
- Individual and group counseling 036

CHILD-CARE SERVICES 040
- Group day care, incl. before/after school 041
- Family day care 042
- In-home care. 043

CHILD-SUPPORT SERVICES. 050

COMPREHENSIVE SOCIAL & REHABILITATIVE SERVICES FOR CHILDREN AND YOUTHS. 060
- Residential treatment 061
- Other 062

CORRECTIONS 070

COMPREHENSIVE SOCIAL & REHABILITATIVE SERVICES FOR PERSONS WITH EMOTIONAL, BEHAVIORAL AND ADJUSTMENT PROBLEMS
- Mental health services. 080
  - Pre-institutionalization. 081
  - Alternatives to institutionalization. . 082
  - Assistance in return to community . . . 083
  - Individual and group counseling 084
- Mental retardation service. 090
  - "Cost of care". 091
  - Guardianship. 092
  - Day activity center 093
  - Group home. 094
  - Individual and group counseling 095
- Behavior problems services. 100
  - Nonresidential services 100
  - Group homes, half-way houses, and day care programs 101

DEVELOPMENTAL SERVICES. 102

EDUCATIONAL SERVICES 110

EMPLOYMENT AND REHABILITATIVE SERVICES
- Job-related services. 130
- Non-job-related services 132
- Self-support for handicapped adult 133

FAMILY-PLANNING SERVICES 140

GUARDIANSHIP 140

HEALTH NEEDS, SERVICES RELATED TO. 150

INDIVIDUAL AND FAMILY LIFE, SERVICES TO/ STRENGTHEN 160
- School social services 170
- Marital and family counseling. 171
- Money management, budgeting, consumer ed. 172
- Services to assist parents in child rearing
  - Child-rearing counseling. 174
  - Youth opportunity/camping. 175
- Family life education. 176

IN-HOME CARE 180
- Homemaker. 181
- Housekeeper. 182
- Home management, other functional educational services 183
- Chore services 184
- Home-delivered meals 185
- Housing. 186

LEGAL SERVICES 190

OUT-OF-HOME CARE
- Foster care for adult. 201
- Foster care for child or youth 202

PROTECTIVE SERVICE
- For child or youth 211
- For adult. 212

SHELTERED WORKSHOP/WORK ACTIVITY CENTER. . . 220

SPECIAL SERVICES FOR THE BLIND 230

TRANSPORTATION SERVICES. 240

UNMARRIED PARENTS, SERVICES TO 250
- Establish paternity. 251
- Services to children born out of wedlock . . .

VOLUNTEER SERVICES 260

Project on Relative Effectiveness
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INTERVIEW QUESTIONNAIRE FOR SOCIAL WORKERS

A. FORM 3: Questions 1-3 are to be answered two ways: (1) According to the way in which the worker is now using Form 3, and (2) according to the way in which he intends to use it after the form is revised and after Unco begins to produce the form with cases listed on it.

1. Do you write the service time units on Form 3 immediately after the interview occurs? (For example, after you return from a field visit, or after you hang up the phone.)

2. If not, do you record your activity somewhere else first, and then copy it later onto Form 3? (If this is what you do, please attach an example showing how you record your activity initially, or sketch an example on the back of this page, or give the title and form number of the form on which you make the first record of your activity.)

3. If you don't record on Form 3 immediately after the interview, how often do you record on it? Daily? Weekly?

4. If you don't now record on Form 3 immediately, and if you're not planning to, under what conditions would you be willing to do so? Do you feel that it is possible to have Form 3 revised in such a way that you would record immediately?

B. SERVICES, GOALS, BARRIERS:

5. Which services did you list most often on Form 2? (Give the top 3 or 4, in order of frequency, as you remember them.)

6. What is your opinion of the GOSSS goals (self-support, etc.)? Do they fit most cases, from a logical point of view? If your caseload were tabulated by goal, do you think that such a tabulation would be a meaningful summary of what you are trying to accomplish with your clients? Do you have philosophical objections to the goals? What objections?

7. What is your opinion of the barriers? For a given case, can you usually find one or more listed barriers that seems to fit that particular case? Can you suggest barriers that should be added to the list? Do you object philosophically to the "barrier" concept? In what way?

8. Do you have a case example that does not fit into the GOSSS framework at all, or that fits very poorly? What is it?

APPENDIX D

PROCEDURES FOR DATA PROCESSING

APPENDIX D

Initial Loading of Cases. Only those workers from Hennepin County completed Form 1s. It was possible to obtain the necessary information from existig computer files for Ramsey County participants from the Form RCW 123's. Participants from both counties completed Form 2s for those cases selected for the study from their current open cases in their caseloads. After the forms were completed they were collected by members of the project staff for review and edit. The forms were checked for completion, consistency among related items, and for content "correctness". The forms were then forwarded to the Unco, Washington, D.C. project staff for project staff for processing. The forms were coded onto 80 column format sheets for keypunching. When the forms were coded there was continuous quality control eidting. When the cards came back from keypunch, they were forwarded to the programming department for the Interim Turnaround Document Program. The initial roster of cases listed by caseworker by county was then produced. The roster was reviewed by project staff and returned for any corrections and changes necessary and resubmitted. It was then given a final review and mailed to Minnesota project staff for review and distribution.

The Initial Turnaround Document Program. All initial Form 2's produce the first set of turn around documents. The information from Form 2s formed File 2. The information coded in by the participating social workers on the Initial Turnaround Document produced Files 3 (for Time unit and contact information by service and barrier) and 4 (monthly status information on the condition of life and barriers as well as case

closing information). Subsequent Turnaround documents were produced by merging Files 2 and 4 in the Monthly Turnaround Document Program.

Initial Turnaround Document. The Initial Turnaround Document printed the following information for each social worker:

Condition of Life at Assessment

Last Name of Client
Case ID
Family Member Number

The social workers coded all service activity given to clients during a one month period measured in 15 minute modules of time and number of contacts as well as an assessment of the client's condition of life and the status of the identified barriers at the end of the month. If a case closed, the reason and month of closing were recorded. The documents were collected at the beginning of the next month by the Minnesota project office for review and edit and forwarded to the Washington, D. C. project office for processing in the same manner as Form 2s described above.

Monthly Turnaround Documents. The monthly Turnaround Documents were coded and processed in the same manner as the Initial Turnaround Document with the updated information supplied from the previous Turnaround Document going in to Files 3 and 4. The Initial Turnaround Document was used for coding for two months. When the first one was submitted at the end of the first recording month of the project, a duplicate was retained by the social workers for recording of the next months activities. The information that was updated by the social workers in coding the initial Turnaround Document was reflected in the third month's Turnaround Document. Submission,

collection and processing of the data took one month, therefore the turnaround documents reflected the composition and the condition of the social workers caseload as of the end of the month prior to the just finished recording month. (Information coded on a December Turnaround Document would appear in updated form on the February Turnaround Document.) The worker retained a carbon copy of their completed Turnaround Document as reference for coding in the next month.

As new cases opened, Form 2s were submitted and merged with the existing Files 2 and 4 and the new client names appeared on the social worker's Turnaround Documents. As cases closed and this information was recorded on File 4, the names of the clients for whom services had ended were dropped from the Turnaround Document.

The changes made in the content of the Turnaround Document are detailed in Appendix B. . In addition to the program changes made to accommodate new fields or revisions of existing fields of information, there were program changes to facilitate faster and smoother procedural changes. It would be desirable to have faster turnaround for this type of document to facilitate accurate non-conflicting recording of monthly activity.

Roster of Closed Cases. At the end of the study period a roster of each social worker's cases that had closed during the study period was produced. This roster listed the following information:

Condition of Life at Assessment
Condition of Life at Closing
Barriers and Barrier Status at Closing
Reason for Case Closing
Month of Case Closing
Client Last Name

Case ID
Family Member Number

This information was then reviewed by each social worker reporting closed cases and all information in these fields was updated.

Closed Case Interviews - File 5. In addition to the review and update of data existing on Files 2 and 4, the social workers were interviewed for a subjective assessment of all clients for whom services had ended and the case was closed. This interview is described elsewhere. The information from the questionnaires used in the interviews was placed on File 5.

Analytic Data File. The analytic data file was produced from information contained on all files -- 1, 2, 3, 4, and 5. Those fields of information to be considered in the analysis of the data were extracted singly or in combination with other related fields to produce data in the most feasible form for analysis. The data from this file was then used in the analysis.

Work Volume. The numbers of forms submitted by the workers were as follows:

	Hennepin Form 1	Hennepin Form 2	Ramsey Form 2
Start	449	566	
New	102	128	
Reopen	5	7	
Subtotal	556	701	
Add information	0	3	
Correct information	2	25	
Subtotal	2	28	
New plan	0	3	
New desired goal	0	7	
Subtotal	0	10	
Close	0	12	
Total forms submitted	558	751	

Processing Time. The coding of the Form 3s returned by the social workers required 1 hour 45 minutes per form. The time required for keypunching and verifying averaged 54 minutes per form.

protection,,(service-specific outcomes); and (3) social workers' judgments. The service-generic approach was found to be acceptable for Employment Services cases but for no other kind of service. The service-specific approach, requiring a separate set of categories for each service that is being evaluated, seems adequate for gross kinds of analysis in the other four kinds of service where it was tried. (See pages 3-22 through 3-28.)

Cost Measurement

The cost of worker-provided services was estimated by requiring each social worker to report the amount of time that he spent in client and collateral contacts pertaining to each case in the study. The worker's salary was then weighted with factors representing various kinds of overhead, so that the cost of his work per hour of contact time could be determined. This rate, which averaged $46 for the 30 participating social workers, represented the cost of an hour of contact time along with an appropriate share of non-contact time. (See pages 4-19 to 4-22 and 5-25 to 5-28.) The workers spent 36 percent of their time in contacts with clients or collaterals, or in traveling to make field visits. (The cost of specific services is reported in Table 5.11.)

Cost-Effectiveness Comparison

The only noteworthy cost-effectiveness finding was that cases in which there was agreement on goals between worker and client fare better than those in which such agreement was absent. (See pages 5-3 and 5-4.)

Utilization-Related Matters

In the interests of credibility, validity of data, and feasibility of data-collection method, project staff made an extensive, continuing effort to involve the participating social workers in the development and refinement of the data-collection system. We are convinced subjectively that this approach is "the only way to go." (See pages 4-13 to 4-17.)

END