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for the Behavioral and Social Sciences

Study Note 94-03

Plan for the Evaluation of Job Assistance Centers

Robert Sadacca, Dickie A. Harris, and Janice H. Laurence
Human Resources Research Organization

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Study Note 94-03

Plan for the Evaluation of Job Assistance Centers

Robert Sadacca, Dickie A. Harris, and Janice H. Laurence
Human Resources Research Organization

Organization and Personnel Resources Unit
Paul A. Gade, Chief

Manpower and Personnel Research Division
Zita M. Simutis, Director

U.S. Army Research Institute for the Behavioral and Social Sciences
5001 Eisenhower Avenue, Alexandria, Virginia 22333-5600

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PLAN FOR THE EVALUATION OF JOB ASSISTANCE CENTERS

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PLAN FOR THE EVALUATION OF JOB ASSISTANCE CENTERS

Introduction

Job Assistance Centers (JAC) provide assistance to Army service personnel, civilian employees, and their family members who are transitioning from military jobs to employment in the civilian sector. The services provided by the JAC are designed to prepare individuals for a successful job search. The centers are run under the auspices of the Army Career and Alumni Program (ACAP), which is part of the Department of Defense Transition Assistance Program. The National Defense Authorization Act of 1991 requires that the Departments of Defense, Labor, and Veterans Affairs provide job transition assistance to military and civilian personnel who would lose their jobs due to installation closures and the downsizing and consolidation of military units. The JAC program is the Army's response to that mandate.

The Department of Labor (DoL), also in response to the Congressional mandate, has established Transition Assistance Offices (TAO) near DoD installations nationwide. The JAC and TAO often serve the same Army and other DoD installations. The programs of assistance provided by the JAC and TAO, however, are designed to complement each other. The DoL program provides group seminars or classes designed to increase the general job search skills of the separating service personnel. The JAC, on the other hand, provide more individualized counseling services geared to the particular vocational experience and plans of the transitioning soldiers, Army civilians, and their family members. Among the services offered by the JAC are the Army Employers and Alumni Network (AEAN), the Defense Outplacement Referral System (DORS), the Transition Bulletin Board (TBB), the Federal Job Information Center (FJIC) files, help

in preparing resumes and cover letters, and counseling on job interviewing techniques, salary negotiations, and evaluating job offers.

Questions have been raised, however, about the cost effectiveness of maintaining the JAC program at locations where the DoL program is also available (the DoL program is not available overseas). Specifically, the added value of the JAC program to transitioning Army personnel and their family members has been questioned by the DoD Inspector General. Essentially, this evaluation of the JAC is being conducted to determine the answer to three basic questions:

How do JAC clients compare with non-JAC clients in regard to post-separation employment?

Which JAC services have the most impact on success in achieving employment?

Considering the additional costs of providing JAC services, are the added benefits derived from the program cost effective?

The first question can be answered in a number of ways, depending upon the aspect of employment/unemployment examined. Table 1 presents 13 types of program criterion or outcome measures that could be obtained in the separate samples. These measures, along with others that could be defined, would constitute the dependent variables in the planned multivariate analyses (see section on Analysis). The analyses would focus on differences in post-separation employment of recipients and non-recipients of JAC services while controlling for personal and family factors and the military job experience of the sampled individuals.

The answer to the second question, *Which JAC services have the most impact on success in achieving employment*, would also be answered through multivariate analyses. Whether or not individuals received given JAC services can be ascertained from the JAC data base and confirmed in follow-up interviews. Variables measuring receipt/nonreceipt

Table 1. Types of Program Outcome or Criterion Measures

- Time unemployed since separation
- Time between separation and first job search
- Percent of separatees drawing unemployment compensation
- Number of weeks on unemployment compensation
- Percent of separatees with full-time employment
- Annualized salary of full-time workers
- Match between position desired and position obtained
- Consistency of job with career goals
- Evaluation of job transition services received
- Helpfulness of transition services in coping with civilian life
- Satisfaction with transition services received
- Goodwill value of transition services (toward encouraging others to join Services)
- Entrance into Reserves/National Guard

of particular services can be created. The effects (direct, indirect, and total) of these measures on the outcome measures can then be ascertained within the context of model(s) that attempt to capture the interrelationships among all the variables of interest.

The third question is perhaps the most difficult to answer. Assuming that the multivariate analyses indicate that individuals who received JAC services are more successful in obtaining post-separation employment, the employment differential or program benefits obtained must be evaluated in terms of the monetary costs of providing the job assistance services. The approach planned for evaluating the cost effectiveness of the JAC services is also described in the Analysis section.

The remainder of this report focuses on the major methodological aspects of the planned evaluation. As the administration of a questionnaire will be required to collect the data needed for the evaluation, the first major task of the evaluation team will be to develop a questionnaire. At the same time the questionnaire is being developed, an approach to sampling recipients and nonrecipients of JAC services should be articulated.

Both the questionnaire and sampling approach should be developed in a timely fashion to enable a clearance package to be prepared and submitted to the Office of Management and Budget (OMB) soon after the initiation of the evaluation. The actual collection of the data and an approach to the analyses of the data are the next major methodological aspects of the evaluation described in this plan. The last section of this plan briefly describes the two reports that should be produced by the evaluation team.

Questionnaire Development

A single questionnaire with appropriate branch instructions for different types of respondents would probably be the easiest to develop, administer, and analyze. This would facilitate obtaining a fairly common set of data for most respondents. The questionnaire should build as much as possible on questionnaires that have already been developed for use with JAC service recipients, e.g., the ACAP Follow-up, Solider Exit, and Army Employer and Alumni Network (AEAN) Questionnaires. Available data concerning response distributions on the items of these earlier questionnaires should be examined before adopting the items for use in the current evaluation survey. The questionnaire length should be restricted to ensure that on the average approximately 20 minutes will be sufficient to collect the required information from the respondents.

The first draft of the questionnaire should be examined very carefully by the organization that will be responsible for its administration as well as by the COR and ACAP monitoring staff. It should be clear that the questionnaire will produce the requisite evaluative information and that it does not contain any poorly worded or superfluous items or improper branching instructions. After appropriate revisions, if any, the questionnaire should be tried out on a sample of nine soldiers, their spouses, and Army civilians who have received JAC job transition services. The questionnaire should

be administered in person so that any problems that the respondents had with the questions will be more apparent and can be explored more fully. Again, after appropriate revisions if any, the questionnaire should be administered via computer assisted telephone interviews to a sample of nine respondents. The respondents should be representative of the nine different subsamples proposed (see the Sampling Approach Section).

Besides examining the tryout data for problems with individual items, the length of time the respondents took to answer each question and the questionnaire as a whole should be carefully examined. If necessary, further revisions to the questionnaire should be made to ensure that the questionnaire can be administered in 20 minutes on the average.

The completed questionnaire, along with a statement attesting to its approval by an Institutional Review Board for Protecting Human Research Subjects, a sampling plan, a data collection plan, and an overview of the analysis should be packaged for submission for OMB clearance. The draft questionnaire should be completed in the first month of the evaluation effort, the final questionnaire and OMB approval package by the end of the second month.

Sampling Approach

Proposed Subsamples

Nine separate random subsamples are proposed. Eight of the subsamples would consist of 300 cases each, while the ninth subsample would consist of 600 cases. All sampled ex-military and Army civilian personnel will have left their military related service between 6 and 18 months prior to their selection into the samples. (The samples

should not be drawn until the OMB clearance process is almost completed.) The nine subsamples are listed below.

1. A subsample of 300 Marines. These Marines will consist of personnel who have been through the DoL program and personnel who have not. Whether they have been through the program will be determined after they are contacted. Marines who happened to use Army JAC services in addition to or in lieu of DoL services would not be excluded from the sample.
2. A subsample of 300 Air Force exservicemembers. Like the Marines, their participation in the DoL program and possibly the JAC will be determined after they are contacted.
3. A similar random subsample of 300 Navy exservicemembers.
4. A subsample of 300 Army civilian ex-employees who utilized JAC program services (according to JAC records).
5. A subsample of 300 Army civilian ex-employees who did not utilize JAC program services.
6. A subsample of 300 spouses of Army exservicemembers who utilized JAC program services (according to JAC records).
7. A subsample of 300 spouses of Army exservicemembers who did not utilize JAC program services. These spouses would be selected from the spouses of the Army exservicemembers who constitute subsamples 8 and 9 below. (It is anticipated that over 50% of the sampled Army exservicemembers will be married and that only a small proportion of their spouses will have utilized JAC program services).

8. A subsample of 300 Army exservicemembers who did not utilize JAC program services (according to JAC records).
9. A subsample of 600 Army exservicemembers who did utilize JAC program services and most likely, TAO services. (This sample is larger than the others in order to allow more accurate assessment of the impact of the separate JAC service elements on the outcome measures for Army exservicemembers.)

The nine subsamples as defined above allow comparisons between Army exservicemembers, their spouses, and civilian ex-employees who utilized JAC services and who did not utilize those services. It allows comparisons of these groups, especially the Army exservicemembers, with exservicemembers from the other Services who most likely used only TAO services, if they used any job transition services. Moreover, the size of the subsamples will permit fairly stable subpopulation estimations to be made.

The size of the subsamples will also allow the utilization in multivariate analyses of dichotomous (1/0) dummy variables that measure whether the individual case is in a particular group or not (e.g., whether the individual is an exMarine or not). The following initial set of dummy variables are proposed:

- (1) Was in the Marines
- (2) Was in the Air Force
- (3) Was in the Navy
- (4) Was in the Army
- (5) Was an Army civilian employee
- (6) Is the spouse of a soldier
- (7) Received JAC services

As the proposed multivariate analyses proceed (see Analysis section), one or more of these dichotomous variables¹ could be replaced by more comprehensive or more finely defined variables. For example, the first three variables could be combined into a single variable, Was in the Service, not Army; the seventh variable could be dropped in favor of a set of variables indicating which JAC services had been received.

The sampling plan should be completed by the end of the second month of the evaluation effort.

Service Member Sampling

The Defense Manpower Data Center (DMDC) Active Duty Military Loss Files (ADMLF) and the DoD Separation Address Files (SAF) can be used to draw random samples of Army, Navy, Air Force, and Marine personnel. Data are stored in the ADMLF on a quarterly basis by fiscal year. Among the personal items of information stored are SSN, name, sex, date of birth, education level, AFQT percentile score, marital status, number of dependents, and home of record. The military-related items of information include date of separation, months of service at separation, primary and duty occupation, pay grade, and time in grade at separation, and reenlistment eligibility code for enlisted personnel.

The SAF covers a similar population to that of the ADMLF. In addition it provides a mailing address for each separatee. Omitted from the file are personnel who separated due to death, retirement, or reenlistment, personnel who have re-joined the active or reserve military service; and personnel who are not eligible for reenlistment. As

¹ Care must be exercised in the utilization of these dummy variables to avoid having any one variable in an analysis completely determined by the remaining dummy variables.

the mailing addresses in the SAF may not be current, the Equifax National Change of Address File can be used to obtain more up-to-date addresses for separatees who have recently moved.

Army Civilian Sampling

The Army Civilian Personnel System (ACPERS), which is maintained by the Civilian Personnel Systems Directorate, can be used to extract a random sample of Army civilian employees who recently left the Army. The date the employee left Army employment (whether voluntarily, through a Reduction-in-Force [RIF], or to retire) can be used to help establish the sampling window. Once the sample has been selected (through use of the last SSN digits), the ACPERS files can be used to obtain employee addresses, specific and major occupation codes, date of birth, pay grade/level, race/national origin, sex, and information about training, special skills, education and tenure.

JAC User Sampling

The JAC maintains a data base containing the name SSN, MOS, and other information including types of transition services received for all recipients of the program services. This data base can be used to obtain the requisite random samples of soldiers, spouses, and Army civilians who received JAC services between 6 and 18 months prior to their selection in the samples. By comparing the JAC data file with the DMDC and ACPERS files, a determination can be made of which soldiers and Army civilians did not use the JAC prior to transitioning out of their Army jobs. Comparison of the JAC files with the other files will also allow determination of the sizes of the subpopulations involved.

Sampling Weights

The sampling weights for the individuals in the sampled groups will differ as a function of the ratio of the population and sample sizes in the strata from which they are drawn. These original sampling weights should be adjusted for non-responses or missing respondents. If some extreme sampling weights are produced in a given stratum by the non-response adjustments, the largest and smallest weights should be trimmed (replaced by the largest and smallest remaining non-extreme weights) in order to reduce the variance of the survey population estimates.

The subsamples should be drawn when final OMB clearance is imminent. The sampling weights should be derived when the data collection is completed (approximately four months after receipt of OMB clearance).

Data Collection

Data Collection Facilities

Data not available on the automated DMDC, ACPERS, and JAC files will be collected through the use of the developed questionnaire administered by computer assisted telephone interviews (CATI). The telephone research centers from which the calls are made should be located in different time zones to facilitate contacting respondents during "prime time" (3:00 p.m. to 8:00 p.m.). The centers should use a common CATI system and share the same schedules, database, and computing facilities.

To facilitate dialing selected telephone numbers, the CATI system should contain an auto-dialer. Call-backs should be handled by a scheduling system that is updated on-line when calls do/do not go through. If a busy telephone is reached, a callback should be automatically rescheduled for a later time. Call-backs should be as extensive as required to achieve an overall response rate of 75 percent.

The current interviewer instructions, questions, and response options should be presented on an automated screen, with questions clearly distinguished from instructions and coding options. When multiple questions are put on a single screen, each question should have a separate input field associated with it. Interviewers should be able to enter responses directly onto the screen and into the data base. Every keystroke entered through the keyboard should also be entered into an audit trail file which stores the data in case the interview is prematurely terminated and later restarted. The audit trail file will also prevent data loss in the event of computer failure.

Out-of-range responses and inconsistent or implausible responses (based on responses to previous questions) should be identified on-line so that the interviewer can make further queries during the interview. The CATI system should allow on-line correction of information received and, if necessary, rebranching to a corrected path.

The CATI system should also allow non-intrusive interview supervision and observation of conversations. During the first week(s) of monitoring, the interviewers should be given immediate feedback on any incorrect techniques used in gaining cooperation, asking questions, or recording responses. Common problems that arise across interviewers should be identified and further training given if warranted.

Interviewer Training

The interviewers should at all times be aware that they are representing the U.S. Army in the conduct of an important survey. Although none of the questions asked will be of a highly personal nature, some of the questions may touch on sensitive areas for particular respondents (e.g., post-separation employment questions for unemployed ex-servicemembers). Gaining rapport with the respondents and assuring them that their

responses are completely confidential will be vital to obtaining complete and accurate data. Only highly skilled interviewers should be used.

During training, the interviewers should be taught to distinguish readily between instructions and questions to be read to the respondent. The interviewers should be thoroughly familiar with the questionnaire items and the branching instructions. The interviewers should know the difference between hard range edits that set absolute upper and lower limits of allowable responses, and soft range checks that should trigger queries concerning implausible (but not impossible) responses. They should also be thoroughly familiar with the procedures for reporting calls ending in refusal or in some problem status so that there will be a permanent record of circumstances surrounding the call and valuable contact related tips in case another interviewer is assigned to call back the respondent.

Data collection should be completed within four months after the receipt of OMB clearance for the questionnaire.

Analyses

A three-phase multivariate analysis is planned to answer the first two evaluation questions (see page 2). The question answers would essentially be found in the statistical significance of variables representing JAC/nonJAC clients and the various JAC services in equations capturing the interrelationships of these variables with measures of servicemembers' personal characteristics, service employment experience, and post-separation employment. The approach planned to answer the third basic evaluation question, *Are the benefits derived from the JAC program cost effective*, is discussed after the description of the planned multivariate analyses.

Multivariate Analyses

The first phase of the multivariate analysis will concentrate on the selection of variables within the framework of a relatively simplified overall model (see Figure 1). The analyses would be conducted on 60% of the servicemember sample and would involve the full set of initial variables. Hierarchical multiple regression analyses would be used to identify the variables that account for substantial proportions of the program outcome measures (see Table 1). In the second phase, which would also be conducted on the 60% servicemember subsample, the reduced set of variables would be incorporated into one or more LISREL (Linear Structural RELations) models and the degree to which the model(s) fit the data assessed. If necessary, changes in the model(s) will be made to improve the fit. In the third phase, the final model(s) will be tested using the 40% servicemember subsample. In addition, direct group comparisons will be made to supplement the modelling results. Each of these analytic phases is described in more detail below.

Phase I. Figure 1 presents the initial model that would be used in the process of reducing the number of variables and formulating less simplified models to explain the variance of the outcome measures across servicemembers. The proposed initial causal model hypothesizes direct effects or linkages between Personal and Family Characteristics (e.g., gender, AFQT percentile, age, marital status, number of dependents) and the outcome measures. Personal and Family Characteristics are also hypothesized to have indirect effects on the Outcome Measures through their impact on Service Employment Experience (e.g., rank, military occupational skills, time in service, location when separated, type of separation) and Job Assistance Services provided or used (e.g., AEAN, DORS, TBB, FJIC, and Resume Writer). Service Employment

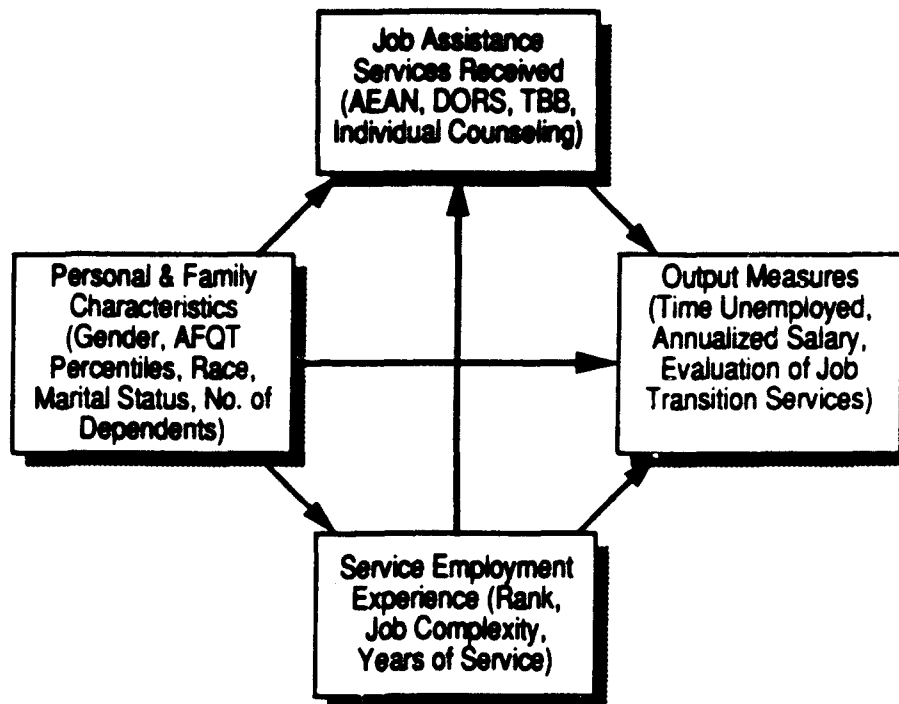


Figure 1. Initial Simplified Model

Experience variables, in turn, are hypothesized to have a direct impact on the outcome measures as well as an indirect effect on the Outcome Measures through their impact on the Job Assistance Services used. Finally, the model hypothesizes that the Job Assistance Services provided directly impact the Outcome Measures. Note that the model does not specify any causal relationships among variables within the sets of variables, comprising the measures of Personal and Family Characteristics, Service Employment Experience, and the Job Assistance Services. (Such causal relationships may be hypothesized in later models).

The analyses of the initial model will be conducted through hierarchical analyses of variable sets. The variables that are considered exogenous in the model (the Personal and Family Characteristics) would be inputted into a multiple regression equation first, followed by the Service Employment History variables, and the measures of the Job

Assistance Services provided. By examining and statistically testing the resultant increase in R^2 after each variable set is introduced, one can determine the added explanatory power of each variable set. By examining the significance levels and changes in the equation regression coefficients, one can determine the total, direct, and indirect effects of the individual variables on the outcome measure or dependent variable (see Cohen and Cohen, 1983).

The model would be run separately for each of the outcome measures (see Table 1). Variables entering into the equations significantly will be identified and incorporated into later less simplified models. The rationale of each of the outcome measures as well as the intercorrelations among the outcome measures will also be examined to determine whether some outcome measures, e.g., evaluation of job transition services received, should be considered in the model(s) to be causally related to other outcome measures, e.g., time unemployed since separation.

Perhaps the most difficult measures to obtain in applying the model(s) will be those that describe the military (and civilian) jobs of the sampled servicemembers. Military occupation is obviously an important factor to keep in mind when evaluating the transition from the military to the civilian sector. For example, Mangum and Ball (1989) found greater transfer of training for technical military jobs than general military training or combat type assignments. Thus, if occupation is not measured and controlled for there is the possibility of erroneously concluding that one transition program is less effective than another. Fortunately, there are a number of job taxonomies that permit comparisons across military service jobs.

The Department of Labor's Dictionary of Occupational Titles (DOT) together with the results of the military Occupational Crosscode Project enable not only cross-

service comparisons at the job level but also permit groupings on the basis of various job characteristics. DoD has equated military (enlisted and officer) and civilian jobs on the basis of job analytic criteria including tasks performed, machines and tools used, and output and results achieved (the DMDC crosscode and Crosswalk Files). Once military jobs are assigned a DOT code, they can be grouped according to occupation types or on more abstract or psychological dimensions such as complexity. For example, using Fine's worker function ratings contained in the DOT, complexity groups could be formed. The DOT also contains ratings regarding training time, aptitudes, temperaments and interests, and physical demands and environmental conditions. Cross-service job comparisons could be made on the basis of the cluster they fall into on the basis of their factor scores on the above types of DOT job ratings. Finally, should the linkage to the DOT be unwarranted, cross-service job comparisons could precede on the basis of the DoD Occupational Conversion Manual (1991). Enlisted jobs can be categorized into 10 areas, 68 groups, and 160 subgroups. Officer jobs can be categorized into 9 occupational areas and 66 occupational groups. It is possible to aggregate jobs to an even higher level, if necessary, by combining occupational areas into broader categories such as combat arms, technical, and other. However, such a high level of aggregation may cause one to overlook potentially important job dimensions.

The same kinds of variables used to measure the military job experience of the servicemember can be used to measure the kind of job the servicemember has either obtained or is aspiring to obtain. A similarity index or distance function could be used to assess the congruence of the service and civilian occupations.

Phase II. After selecting the variables, one or more structural equation models will be constructed that reflect the evaluation team's notions about the variable

interrelationships. The model(s) will imply a particular pattern of correlations among the variables. Comparison of the model's correlation matrix with the sample correlation matrix will give an indication of how well the model accounts for the data--the greater the correspondence, the better the model explains (i.e., "fits") the data. Such an assessment of model fit can be conducted using the LISREL software package (version 7; Joreskog & Sorbom, 1989). Although the coefficients for the path model could be estimated using traditional path analytic methods, these methods do not provide indexes of fit based upon the observed and fitted correlation matrices.² Indexes of fit include the goodness-of-fit index which generally ranges between zero and one (although negative values are possible), larger values being associated with good models; and a chi-square statistic, which is better described as a "badness-of-fit" measure--if significant, it means there are significant differences between the model's estimated correlation matrix and the observed sample correlation matrix.

In addition to estimates of the model's path coefficients (the direct effects), indirect and total effects, coefficients of determination (both for variables and the system of equations), fit statistics, and modification indexes will be requested. These values are given for each parameter that has not been estimated in the model (i.e., for each path coefficient equal to zero). The modification index represents the minimum reduction in the chi-square statistic that is expected if the fixed parameter in question is freed (i.e., estimated). Large modification indexes suggest relationships in the data the current model does not explain. Modifications should be made to the model only if justified on theoretical grounds. In addition, the altered models should be fit to data from a new

² See Mulaik, James, Van Alstine, Bennett, Lind, & Stillwell, 1989, for an evaluation of goodness-of-fit indices for LISREL models.

sample (i.e., cross-validated) to rule out the possibility that the modifications were due to chance fluctuations in the original sample (MacCullum, 1986). (This will be done in the next phase of the analysis.)

Phase III. After the third and final LISREL analysis on the 60% sample, the developed model(s) will be run on the 40% random sample. The goodness-of-fit indexes obtained on this independent sample will be compared with those obtained on the 60% sample. The direct, indirect, and total effects of the variables on individual readiness in both samples will also be compared. The LISREL model(s) will then be run on the total sample to obtain more stable estimates of the model variable effects.

Analysis of variance will be used to compare the means of the dependent variables of the various groups of servicemembers, Army civilians, and spouses. Analyses of covariance will also be used to compare the mean values of these groups when controlling for differences in selected personal characteristics and job experience of the group members. The covariates used will be variables appearing in the final LISREL model(s).

Cost-Benefit and Cost-Effectiveness Analysis

There is no objective, scientific way of making decisions, nor is it likely that there ever will be. However, use of the techniques developed by decision theory, cost-benefit, and cost-effectiveness analysis can provide the decision maker with a useful framework and language for describing and discussing the effectiveness of Job Assistance Centers in helping soldiers and Department of the Army civilians leaving their military jobs to locate new jobs. These techniques can help clarify the existence of alternatives, decision points, gaps in information, and value judgments concerning trade-offs.

Traditional cost-benefit analysis is an application of economics that has been used to analyze various kinds of decisions, particularly large investments in public goods. Decision theory, although in some ways closely related to cost-benefit analysis, has developed as a separate discipline. It differs from cost-benefit analysis in its emphasis on tracing through the consequences of each of a series of sequential decisions, in its substitution of the values of the decision-maker for market prices, and in its use of probability theory to deal with the problem of uncertainty. For reasons explained below, traditional cost-benefit analysis has not been very useful in making decisions about services such as Job Assistance Centers. The analytical tools of decision theory do provide a useful way of assembling or displaying information, but should not be relied on to make the final decision. If for no other reason, decision theory is limited because executives will simply not take time to assign quantitative values to the varied elements that enter into any particular decision.

Cost-benefit analysis is not a rule or formula which would make the decision or predetermine the choice for the decision-maker. Rather, it refers to the systematic analysis and evaluation of alternative courses of action drawing upon the analytical tools and insights provided by economics and decision theory. It is a framework and a set of procedures to help organize the available information, display trade-offs, and point out uncertainties. In this way, cost-benefit analysis can be a valuable aid; but it does not dictate choices, nor does it replace the ultimate authority and responsibility of the decision-maker.

The following sections: (1) describe the limitations of a "cost-benefit" framework for evaluating the costs and benefits of the Job Assistance Center services, (2) discuss the

ways in which analysis can assist in making responsible decisions, and (3) outline a "cost-effectiveness" methodology for evaluating the Army's Job Assistance Centers.

Limits of Cost-Benefit Analysis

The most important and pervasive limitation of cost-benefit analysis is the role of values (Campbell, 1988; Cascio, 1989; Goldstein, 1991). Many of the factors that are likely to be most significant in a decision concerning the Job Assistance Centers cannot be measured in common terms (such as dollars) that are agreeable to all concerned parties. Different individuals place different values on output measures such as percent full time employment, weeks of unemployment compensation, and total time unemployed after separation. Thus, an analysis that assigns a quantitative value to one or more of these factors is necessarily subjective and, to some degree, arbitrary.

The primary way in which analysis can simplify decisions is by reducing the relevant factors to numbers that can be added, subtracted, and compared. The only unit generally considered feasible for doing this is the dollar, but the use of dollar values poses a great many problems.

Many factors cannot be satisfactorily expressed in dollar terms because they involve important values on which there is no agreement. Some factors, such as time unemployed after separation or percent full time employment, are difficult or impossible to express in dollar terms, even apart from the value question, because they are not traded in the market . . . or thought about in monetary units.

A major difficulty with using market prices is that the definition of benefits and costs differ, depending on the vantage point adopted. The benefits and costs for a particular subgroup may be different from the benefits and costs for the group

considered as a whole. This difficulty arises from the broader problem of the distribution of benefits and costs.

The way benefits and costs are distributed through time and across different segments of the population is crucial in many program decisions, but quantification, conversion to dollar terms, and aggregation often obscure important distributional considerations. It is difficult to compare benefits and costs from multiple vantage points. The function of the decision maker is to weigh the impact of a decision on numerous groups; so it follows that even when the benefits or costs can all be stated in common dollar units, they may not be additive.

The distribution of benefits and costs over time poses even greater difficulties. In traditional cost-benefit analysis, the value of future benefits and costs is reduced by using a discount rate. One justification for using a discount rate is that resources invested to yield future benefits cannot be used now for present benefits; thus the discount rate reflects the opportunity cost of postponing benefits, just as interest earned on savings accounts compensates for the postponement of spending. The use of discount rates has been the subject of much dispute in traditional cost-benefit analysis.

A characteristic of most decisions is that the full consequences of the decision are impossible to predict with any certainty at the time the decision is made. Also, the economic data used to analyze economic impacts are typically old (i.e., not representative of the immediate situation) by the time they are processed into usable form, and their reliability declines rapidly thereafter. The use of uncertain data adds a significant subjective element to any analysis.

Uses of Cost-Benefit Analysis

The discussion of the limitations of cost-benefit analysis is important so as to dispel exaggerated ideas about what such analysis can do, and to emphasize the types of problems that surround any attempt at formal analysis of costs and benefits. But it should be remembered that the relevant baseline against which analytical methods must be judged is not some ideal system of value-free mathematics, but rather the intuitive, ad hoc, unsystematic, and often frantic methods now used. Compared to the latter, methods of cost-benefit analysis, using techniques and concepts adopted from economics and decision theory, represent a significant advance.

Cost-Effectiveness versus Cost-Benefit Analysis

The cost-effectiveness criterion suggests that the job assistance program (i.e., Job Assistance Centers or DoL's Transition Assistance Program) chosen should be the one that meets the desired output goals (e.g., reduced unemployment compensation) at the lowest cost. In comparing transition program alternatives (e.g., Army vs DoL) the desired output goal or measure is held constant. It is assumed that this goal can be met by each alternative at some cost, even if this cost is very large. The job transition alternatives are then compared based on their costs.

The cost-benefit formulation implies that both costs and transition service performance would vary among the alternatives. This is not undesirable, in principle. The overall criterion for evaluating alternatives in the cost-benefit instance would be to choose the transition alternative for which the difference between the value of the transition service performance produced by the alternative and its cost are the greatest.

A particularly difficult problem in the analysis of job transition programs is estimating the benefits of different programs (i.e., Army Job Assistance Centers) for

increasing the ease of job transition for soldiers and Department of the Army civilians. This class of problem is one that Harris, et al. (1991) considered in the context of developing a cost-performance tradeoff model for helping to estimate entry standards for recruits.

The cost-effectiveness framework is a subset of the more general cost-benefit analysis. A cost-effectiveness approach allows the analysts to circumvent the issue of placing an explicit dollar value on the output of the job transition program (i.e., percent full time employment, weeks of unemployment compensation, etc.). An overall criterion for evaluating transition programs within a cost-effectiveness framework is to choose that job transition program which meets overall performance goals for soldiers and Department of the Army civilians at the lowest total cost. Hence, the assumption is that overall job transition goals can be met, at some cost, by all the job transition program alternatives, and that the alternatives will be compared based on costs. These costs include both fixed and variable job transition program costs. The next section presents an overview of the basic process to be followed in applying the cost-effectiveness framework to job transition program evaluation. The process is summarized in terms of the approximate sequence of events followed in carrying out a cost-effectiveness analysis (Sticha et al., 1988; Sticha et al., 1990).

Cost-Effectiveness Analysis

A cost-effectiveness analysis is conducted in the phases shown in Figure 2. Each phase consists of a sequence of events and activities carried out to plan and conduct the cost-effectiveness analysis. The phases are summarized in the sequence they occur below.

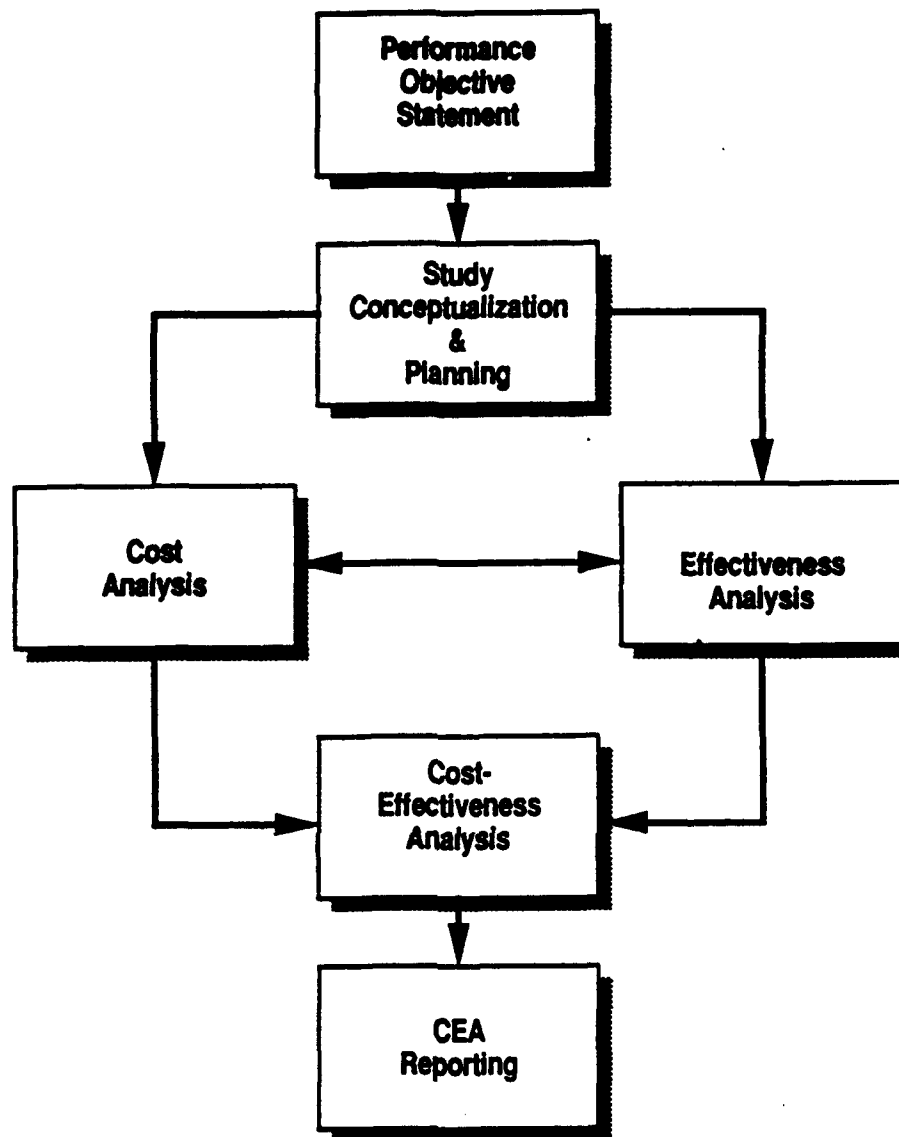


Figure 2. Cost-Effectiveness Analysis Phases

The first step in a cost-effectiveness analysis is to state the performance objective(s) to be attained by the job transition programs to be compared. Next is study conceptualization and planning. This phase is carried out in seven steps as follows: (1) delineate the job transition program issue in question; (2) specify tasks to be accomplished; (3) develop assumptions and constraints; (4) determine usage patterns and job transition scenarios to specify where and how job transition services are to be

employed; (5) develop essential elements of analysis to answer cost-effectiveness analysis objectives; (6) determine alternative job transition programs to be compared in the cost-effectiveness analysis; and (7) develop task assignments for activities required to perform the cost-effectiveness analysis. These steps provide inputs into portions of the study plan applicable to planning effectiveness analysis and cost analysis.

The effectiveness analysis phase is performance assessment-oriented and is planned and conducted in close coordination and in parallel with the cost analysis phase. The purpose of this phase is to determine the relative effectiveness of the job transition programs being compared in terms of how well each mediates attainment of desired performance objectives. This phase is carried out in two parts. Part 1 consists of performing those activities required in the planning of the effectiveness assessment and developing inputs to the cost-effectiveness analysis study plan. Part 2 involves actual conduct of the effectiveness assessment, to include methodology development and the analysis of the data. This phase is closely coordinated with the cost analysis phase, because the effectiveness analysis should be planned and conducted in such a way as to identify, develop, and provide program costs for use in the cost analysis to obviate duplication of effort.

The cost analysis phase is conducted in parallel with and is closely coordinated with the effectiveness analysis phase to assure that cost estimates of programs are valid and reliable. This means that cost methodology must be developed with full awareness of the characteristics of the job transition programs to be compared so that these analyses are relevant and the effectiveness assessment effort can be tasked to develop and to provide appropriate cost data to the cost analysis efforts. Furthermore, the objectives of the cost-effectiveness analysis shape the orientation of the cost analysis.

The cost analysis phase involves developing cost methodology, determining cost data requirements, identifying cost data sources, obtaining cost data, performing cost data analysis, and determining the cost of each job transition program alternative.

In the cost-effectiveness phase the results of the cost analysis and effectiveness analysis are brought together. The objective of this phase is to integrate quantitative and qualitative data concerning the alternatives and to provide a solid analytical basis for the decision maker to make a decision concerning the alternatives. This is accomplished by deriving sets of quantitative relationships describing relative costs, relative effectiveness, relative worth, relative efficiency, parameter dominance relationships, and relative benefits of the transition program alternatives being compared. Analysis of these relationships provides a basis for rank ordering the job transition program alternatives in terms of their relative effectiveness in attaining the performance objectives and the cost and resources required to attain these objectives. These results will be the basis of recommendations presented to the decision makers.

The analysis of the data from the 60% sample should be completed within five months after receipt of OMB questionnaire clearance. All analyses should be completed within seven months after receipt of OMB clearance.

Preliminary and Final Reports

A preliminary report based on the results of the analyses of the 60% subsample should be prepared. This report should concentrate on the presentation of information most relevant to answering the basic JAC evaluation questions. However, the tentative nature of the findings should be stressed. This report should be examined closely by the project COR and ACAP monitoring staff to make sure that further types of analyses and data tables are not warranted in their opinion.

A final report, which would describe the purpose, methodology, and final results of the evaluation as well as any conclusions and recommendations of the authors, should also be prepared. Briefing charts highlighting major methodological aspects and results of the evaluation should also be made. Sufficient time should be allowed for COR, peer, and ACAP review of the final report and briefing charts.

The preliminary report should be completed within six months after receipt of OMB questionnaire clearance. The final report should be completed within eight months after receipt of OMB clearance.

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