A WORKING OUTLINE
FOR COST-BENEFIT ANALYSIS
OF VOCATIONAL REHABILITATION PROGRAMS

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Project for Cost Benefit Analysis and Evaluation of Rehabilitation Services

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PREFACE

The outline presented herein is the working document for guiding our cost-benefit research of rehabilitation programs project. While a theoretical cost-benefit model is adaptable for analyzing almost any set of programs, any adaptation for a particular program requires the analyst to make many special assumptions and methodological decisions peculiar to the program and the available data. The following outline attempts to spell out in detail how our study group will handle many of the assumptions and data problems necessary for estimating costs and benefits of vocational rehabilitation programs. The outline also presents the overall skeleton for the final report, and discusses particular conceptual problems in our cost-benefit research.

This outline is the end result of a long period of thinking and discussion. The assumptions and methodological approach were originally developed during the summer of 1971 by Professor Michael B. Teitz and myself and were then discussed and reworked in great detail with R.S.A. staff monitoring the project during two separate trips to Washington, D.C. The current outline reflects our review and evaluation of earlier cost-benefit research in the field of rehabilitation, many discussions with state office and field staff in the State of California Department of Rehabilitation, and the very important substantive and methodological suggestions of our R.S.A. monitors, Dr. Ronald Conley and Dr. John Noble. Dr. Noble is the Special Assistant and Director of Research and Evaluation in the Office of the Commissioner. Dr. Conley is also in the Office of the Commissioner and more importantly, is the author of several cost-benefit studies of vocational rehabilitation. His theoretical and conceptual

work has laid the foundation for all subsequent cost-benefit research on this program, and the study herein outlined builds directly on his past work. Anyone who wants seriously to understand the full scope of the following discussion should also read in conjunction with this paper:

Ronald W. Conley, The Economics of Vocational Rehabilitation (Baltimore: Johns Hopkins Press, 1965).

Ronald W. Conley, "A Benefit-Cost Analysis of the Vocational Rehabilitation Program," Journal of Human Resources, IV, No. 2 (Spring, 1969), pp. 226-252.

Ronald W. Conley, The Economics of Mental Retardation, (Baltimore: Johns Hopkins Press, forthcoming - 1972).

This outline is only slightly modified from an internal project memorandum which was issued in late October, 1971, and circulated among all participants as a summary of the tentative study approach resulting from the discussions described above. The wording is often rough and informal. There are occasionally personal references to the stance taken by Dr. Conley or Dr. Noble. These references have been left in the working paper version because they reflect the judgment and concerns of the Rehabilitation Services Administration.

R.S.A., as we understand it, anticipates using the monograph which should emerge from this study as part of its official cost-benefit estimates to Congress, O.M.B., and D/HEW. The final monograph will be a joint product of our project staff and R.S.A.

All decisions and assumptions discussed in the outline should be viewed as tentative. In some cases, the costs of implementation may prove to be too great, and our ambitious goals may have to be cut back. In other cases, data analysis or further conceptual work may suggest better approaches.

In the following discussion, I will first present the overall outline of the planned monograph. I will then discuss the conceptual

and methodological decisions concerning each chapter in more detail. An Appendix is included at the end of the outline which is taken from a second internal project memorandum discussing the various client populations for which disaggregated cost-benefit estimates might be desired in evaluating vocational rehabilitation programs.

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OVERALL REPORT STRUCTURE

The tentative structure of the final report is as follows:

Chapter I - What is Disability?

II - Scope of Rehabilitation System & R.S.A. Programs

III - Theory & Assumptions of Cost-Benefit Analysis (general theoretical chapter)

IV - Costs
- R.S.A. Program Costs
- Social Costs

V - Benefits
- Earnings
- Other Monetary Benefits
- Intangibles
- Taxpayer Benefits

VI - C/B Estimates, merge of Chapters IV,V organized by population groups
- C/B est., various definitions
- payback period est.

VII - Policy Issues

This organization may expand or fundamentally be altered when we get to the writing stage. Because of the number of groups for whom cost-benefit estimates are desired, Chapter VI may become ungainly and be broken into a number of different chapters. Also, we might ultimately decide to begin introducing data for specific disaggregated groups in Chapters IV and V.

CHAPTER I - WHAT IS DISABILITY?

This chapter will proceed roughly as follows:

A. Discussion of definitions of disability handicap. Use Cy Nagi's definitions.

B. Discussion of prevalence, incidence rates for various disabilities. How do we know how many disabled people there are? Discuss several different prevalence estimates which exist (Public Health, Social Security, etc.) and reasons for these differences, i.e., definitions of disability used, type of survey.

C. Discussion of prevalence of multiple disabilities, difficulties in defining severity of disability, implications of multiple or severe disabilities.

D. Discussion of demographic correlates of disability, also rural-urban prevalence differences, etc. Who are the disabled and where do they live?

E. Discussion of interaction between disability, IQ, and other attributes (e.g., limited education, race) to create handicaps in labor market and other social adjustments. THIS DISCUSSION REPRESENTS A MAIN EMPHASIS OF FINAL REPORT. The reader should understand after completing this section that attacking the functional handicaps posed uniquely by disability alone may be insufficient to meet the needs and achieve rehabilitation of many of the disabled population.

F. Review of studies measuring the loss of employment and earnings due to sickness and disability. Emphasis to be placed on the order of magnitude of the loss to the general economy.

CHAPTER II - PROGRAM SCOPE

This chapter would be divided into the following sections:

A. What is rehabilitation all about?

- The concept, basic approach -- as viewed from perspective of rehabilitation profession. Distinguish between rehabilitation, habilitation, and amelioration. Introduce concept of developmental disabilities.

B. What is the rehabilitation system?

1. Describe range of services needed by disabled population, making clear to show differences in needs for types of services between different types of disabilities.

2. Present description of the agencies (public and private) which attempt to meet the needs of the disabled population. Broad overview (est. 5 pp.).

3. Detailed discussion of R.S.A. program -- range of services, philosophy, allied and supported institutions, eligibility criteria. STRESS for R.S.A. (1) rehab counselor as broker, and (2) concept of tailoring services to client, rather than to jobs and employer's needs (as with U.S.E.S.) -- fundamental rehab philosophy. This second concept involves as well the belief that the rehab plan is mutually conceived by the counselor and client. We insisted that if the data suggested that the rehab philosophy was only partially adhered to in practice, we would take notice of such deviations. Conley agreed that we might qualify or cite reservations in the report about the current performance of the rehab system -- as long as such criticisms were expressed in a constructive, positive manner.

4. Describe description for other (non R.S.A.) institutions on eligibility criteria, range of services offered, and number and types of people served.

C. Population served by the Rehabilitation System and R.S.A.

1. Present summary statistics on the total numbers of people served by disability by R.S.A. and by other institutions in the system.

2. Present data also, where available, on dollars spent and types of services delivered.

D. Unmet Need

- Estimate unmet need in population, by comparing population served to earlier estimates of prevalence rates. Cite both survey findings (e.g., Wood County) and ballpark national estimates. Distinguish between prevalence and need/eligibility for rehabilitation services.

NOTE: Among the themes to be stressed in the chapter are (1) how eligibility criteria determine who can be served, (2) how the numbers eligible change with the addition of new groups as in recent years, e.g., addicts, culturally deprived, and (3) the differing needs of newly-declared eligible groups from the traditional client focus of R.S.A. and the rehab system.

CHAPTER III - THEORETICAL COST-BENEFIT DISCUSSION

A. Give Reader Overview of Our Understanding of Our C/B Model.

1. Reasons why we seek to estimate C/B.

2. General theory and outline of our model.

3. What are proper and improper policy and management uses of C/B, with special reference to rehab services.

B. How This Study Differs from Previous C/B Studies.

- Discussion and critique of C/B analysis as applied in

1. Rehab services

2. Manpower training

3. Health and education

C. Critical Assumptions of This Study

1. More detailed presentation of our model and assumptions at each point. This presentation may borrow heavily from Conley's theoretical section in his MR study.

2. Discussion of our data sources: surveys and R-300 program data.

D. Some Comments on the Style of Presentation in Subsequent Chapters.

1. In discussing each of the cost components above, we will distinguish between program and general social costs, and between GNP and taxpayer costs. This will also be true of benefits. In the cost chapter, however, there is virtually a 1:1 relationship between program costs and taxpayer costs. The chief omission is <u>maintenance payments</u> made to clients by the agency/state during

the rehab process for the express purpose of allowing the client to complete the process. These payments should be subtracted from case service and overhead costs in allocating costs for a GNP C/B model because they represent transfer payments. The payments should be included in program costs when calculating the taxpayer's payback period.

2. In discussing each of the above costs components, we will try to present cost data for rehab clients as a group and for disability populations where possible. The purpose in this chapter will be to show variation in costs depending upon the population. Having presented the data initially in this chapter, we will then be able to cite the data again in Chapter VI on C/B estimates, without having to go into extended elaboration of data sources and concepts. This basic approach will also be followed with Chapter V on benefits.

3. We may well want to insert additional material into the benefits and costs chapters, or into the program scope chapter which describes the client's experience during the rehab process and after. Such material would primarily be based on survey studies, and we would want to document carefully the sources for our information and conclusions. Alternatively, this kind of information might also go into Chapter VII on policy.

4. Throughout the study we want to obtain "legitimacy" for our assumptions and conclusions by citing other studies. Our documentation and footnoting is thus an important part of our study.

5. Conley's goal for this C/B study is to create a model which R.S.A. can require all subsequent studies to follow, and which might also influence C/B studies in other SRS areas besides rehab.

CHAPTER IV - COSTS

A. Variable R.S.A. Costs

1. The standard C/B practice here is to measure case service costs for the particular client or disability group served. The source data is the R-300 data form. We will be calculating means for the disability populations we wish to analyze (along with Standard deviations). Because of the number of successful rehabs (c. 200,000 clients), we may not always be able to work directly with individual data.

2. Problem: We have reason to believe that the costs of clients whose cases are closed in the last three months of the fiscal year are understated. Bills come in after June 30 and after client records are filed by the states with R.S.A. R.S.A.'s Statistics Division denies this, but our contacts with the State of California Rehab Department and apparently informal contacts made by Noble and Conley with other large state programs confirm this bias. How do we handle this? We could compute means for clients whose cases are closed in the first six or nine months of the fiscal years, and assume that these costs would also apply to client cases closed later in the year. This appears to be a reasonable assumption unless state agencies rush to close more difficult, time-consuming cases as June 30th approaches.

B. Fixed R.S.A. Program Costs

- Basically we will estimate non-case service R.S.A. costs in a manner similar to Conley's Journal of Human Resources article. Note that fixed costs include also the case service costs for clients who were not successfully rehabilitated, i.e., 28 and 30 closures.

1. The most significant conceptual problem is how to allocate administrative and personnel costs when dealing with disaggregated client populations. It is clear that every client does not require an equal overhead cost. Yet that is how non-case service costs have usually been allocated. Several new approaches seem viable:

   (a) Allocating fixed costs according to relative case service costs.

   (b) Allocating fixed costs according to length of time "in process." It would thus be assumed that a client who required 14 months for rehabilitation would require more counselor time and overhead expense than a client who required only 6 months.

   (c) Allocating fixed costs according to survey data on number of hours spent or visits made to counselors. Noble believes that there is detailed data on counselor time usage somewhere. Conley and I are skeptical. There is some ABT data on time spent with counselors, but the sample can only be generalized to all disabilities combined because of the small sample size.

   However we allocate fixed costs, Conley would prefer that we constrain our estimates so that the sum of disaggregated allocations equalled total program costs. Such a constraint is only feasible, of course, when dealing with mutually exclusive and exhaustive disability classifications.

   After much persuasion, Conley agreed that we might experiment with regression estimates of costs. In the current C/B report, however, he would prefer that we use mean costs calculated from the 100% R-300 data. If regression estimates appeared to be reasonable and stable, we might use them in any future estimates for R.S.A.

2. We will handle the allocation of R&D and training costs by assuming that the benefits of such expenditures are fully realized within five years of expenditure. We will use straight-line depreciation. NOTE: if the pattern of most of the 1960s still holds, i.e., that R&D expenditures are a constant proportion of total program costs, this 5-year depreciation assumption is irrelevant. We could simply cost off all R&D expenditures in the year made, as Conley did in his JHR article. We need first, however, to see if R&D expenditures in the late sixties and early seventies were indeed a constant proportion of total program costs.

C. Program Carry-over Costs

- This problem described at length in Conley's VR book affects only total program costs. We will not worry about changing client mix from year to year.

- We will follow the treatment used by Conley in his earlier studies, simply adjusting to use program carry-over data for 1969 and 1970.

D. Foregone Earnings of Clients During Rehab Process

1. We will refer reader to later discussion in Benefits Chapter (V.B.1) of recent survey data on differences in the measurement of pre-rehab earnings depending on whether one measures previous week, previous 3-month, or previous year earnings. Our discussion will follow but update Conley's discussion in his JHR article.

2. Unlike the JHR estimate, however, our estimate of pre-acceptance earnings will tentatively be based on R-300 (previous week) earnings. This decision may well be reversed as we look at data, however.

   (a) For clients who had earnings at acceptance, we will use the mean earnings of those in the disability group with earnings to approximate their earnings potential.

(b) The problem with this approach is handling clients with zero previous earnings according to the R-300 form. Such clients comprise about 75% of the total clientele of R.S.A. Clearly, many of these clients do not have zero earnings potentials during the rehab process. We will assume for this group that individuals who spend a long time in the rehab process had zero earnings potential at acceptance, but that the potential of individuals who spend a shorter time in process can be approximated by either (1) the mean earnings at acceptance of those clients with earnings, or (2) the median earnings for all clients. We did not decide what would constitute a "long" and "short" time in-process. Perhaps the median time in process would be the best dividing line.

E. Costs for Services Which are Borne by Other Agencies

1. The definition which we will use and whatever other survey data may exist of costs borne by other agencies which should be included in the C/B estimate is as follows: any cost which is incurred by the individual or other agencies as an express part of his rehabilitation plan is a cost attributable to the rehab program. Costs which are incurred to sustain the individual's survival and comfort, and which would probably be incurred whether or not a rehabilitation plan existed, are not costs which should be attributable to the rehabilitation program.

2. As in Conley's JHR article, we will estimate the value of these services by using the average cost paid by the rehab agency when it provides the service itself.

3. We will attempt to measure services not recorded on the R-300 form, by using estimates from ABT's survey data.

F. Costs for Services Which are Borne by the Individual and His Family

1. See definition used in Section E.

2. The only data sources on such costs are the ABT survey and perhaps some other surveys not currently known to Noble and Conley. Such data is probably not appropriate for disaggregation. We will adjust upwards the costs for all clients using the survey data.

G. Repeater Costs

1. The treatment of this cost remains a source of disagreement between Conley and myself. Conley wants to treat repeater costs as a program cost; I want to treat them as a negative benefit. Conley wants to use double the costs of repeaters to allow for past repeaters and future repeaters; I perceive only a need to allow for the costs of future repeaters. My logic is essentially that past costs are sunk costs not amenable to current policy control or manipulation. Conley agrees with this critique, but wants to measure C/B from the perspective not of the current year's program, but rather from the perspective of the current year's clients. What is the social cost of rehabilitating these clients, assuming a rehab program had <u>never</u> existed? I argue that if Conley wants to include past costs, he should also include past benefits for consistency. Unfortunately, he agrees to this criticism of his past work and wants us to include estimates of past benefits and non-R.S.A. costs, an inclusion which I believe to be empirically impossible.

2. In any event, we need to obtain estimates, using R-300 and survey data, of repeat rates by disability/age/sex groups if possible.

CHAPTER V - BENEFITS

A. Attributing Benefits to Rehab Services -- The Control Group Problem

1. A critical question is obviously that of the use of control group data to measure what would have happened to the client had he never received rehab services. Past C/B studies have made two types of errors:

   (a) Using no control group and attributing all of the client's measured gain in earnings to the rehab program.

   (b) Using an invalid control group and thus grossly underestimating the gain in earnings due to rehab. Thus, the ARF study used follow-up data for combined 28 and 30 closures (but dominated by cases closed before plan), and concluded that 60% of the earnings gains experienced by rehabilitated clients (26 closures) would have occurred even without rehab services.

2. Our procedure will be to look at survey data on control groups and particularly data from the National Analyst and ABT studies on cases unsuccessfully closed after plan (28 closures). The latter clients, in the opinion of Conley and myself, most closely approximate the 26 closures in terms of severity of disability. In any case, control group data will also be stratified by age/sex/race/education, wherever possible, before being used to decrease the gain in client earnings attributable to rehab services.

   (a) Conley and I agree that there is no perfect control group for 26 closures. The only way to obtain such a group would be to match clients prior to acceptance in terms of demographic and severity of disability characteristics, and then to deny rehab services to the control group. Such a denial of services (even if disguised in

the form of a placebo) is politically and socially unacceptable. (In short, the truly scientific research design for evaluation is not really feasible with social service programs.)

(b) Follow-up data on clients whose cases were closed as unsuccessful after acceptance is also misleading, even when stratified for demographic and disability characteristics. Clients whose cases are closed before plan are usually clients whose disability was much less severe than those clients whose cases are closed after plan, whether successfully or unsuccessfully. The former usually are clients who find jobs on their own shortly after acceptance and before receiving rehab services. Using their job experiences after closure as control group adjustments would grossly understate the extent to which the gain in earnings of rehabilitated clients was due to rehab services. (See studies of Job Corps participants for an analogous situation, e.g., Glennan's RAND study.) On the other hand, using clients whose cases were unsuccessfully closed after plan -- such as we are proposing for this C/B study -- is also misleading. Such clients are probably somewhat more severely disabled than the 26 closures; indeed this is probably why, in part, their cases cannot be successfully closed. Using such clients (28 closures) as a control group probably somewhat overstates the gain in earnings attributable to rehab services. Conley and I both believe that the degree of distortion is much less with the 28 closures than with the 30 closures. Also, the distortion with 28 closures as a control group works <u>in favor</u> of the rehab program -- a desirable methodological attribute in R.S.A.'s self-interested judgment.

3. This use of 28 closures as a control group will also be applied to all benefits discussed in this chapter, not just earnings. Unfortunately, there will be probably little follow-up data on

28 closures (or other types of control groups) on non-earnings benefits. The ABT survey goes after some other benefits for 28 closures, but the sample is very small. National Analysts and most follow-up studies which collected any data on clients other than 26 closures focused exclusively on earnings.

4. Similarly, in attributing benefits to rehab services, we will be trying to collect before- and after-data for all kinds of benefits. Survey data will often be lacking, however.

B. Paid Employment Earnings

1. Estimating Increase in Earnings Capability

(a) The fundamental approach here will be to measure the difference between client earnings at acceptance and closure, and to project this earnings gain over the client's lifetime using the adjustments described below. In the discussion, we will raise again the problem of the time period prior to acceptance over which client earnings are measured. We will cite survey and agency data showing how the estimate of pre-rehab earnings differs depending on the definition of the time period. However, in the official C/B estimates, we will use week-prior estimates of pre-rehab earnings, because this is the only time period for which we have detailed, disaggregated data. In the sensitivity analysis in Chapter VI, we shall report the results of using alternative time period definitions, but these results will not be used in the official estimate. Again, this decision to use week-prior earnings data may be changed after looking at the data.

(b) We will measure earnings at acceptance and closure by taking means of R-300 data for the client populations of concern.

(c) In calculating annual earnings at acceptance and closure from R-300 reported earnings/week, we will assume that clients work 52 weeks per year. This assumption recognizes that paid vacations are a part of salary compensation.

2. Earnings -- Lifetime Projection

(a) We will follow the innovative procedures of Conley's MR book where he projects earnings on the basis of lifetime profiles, rather than simple extrapolations into the future of the earnings at the time of case closure. This technique/innovation is especially important in the case of young clients. The 21-year old rehabilitant always has low earnings at closure, not simply because he is disabled, but even more importantly because he is a young person entering the labor market with little human capital acquired via on-the-job experience. The standard C/B approach of extrapolating earnings at closure indefinitely into the future does not recognize the normal gain in earnings which accrues to a worker as he gains experience. The approach thus discriminates against young people (and indeed most C/B rehab studies have concluded that DVR should serve older people to maximize returns).

(b) In order to follow this procedure, we need to collect data for the normal population on earnings for different age/sex/race/education groups. This data can then be used to assemble a lifetime earnings profile for sex/race/education groups. We will then assume that the ratio of the client's earnings at closure (as measured with R-300 data) to the mean earnings of his age/sex/race/education cohort in the normal population will remain constant over the rest of his life. The increases and decreases in the earnings of his cohort over its lifetime can then be applied to the client's earnings as he/she ages.

(c) Clearly, particular disability groups may have unique earnings profiles. (E.G., from Conley's book -- young mental retardates have higher mean incomes than their normal peers in their age/sex/race cohort.) We hope that these unique deviations from the normal cohort's profile can be minimized (1) by stratifying the cohorts also by education (thus recognizing, for example, that the reason for the previously cited MR finding is that young MRs are often holding jobs, while their normal population counterparts are still in school), and (2) by introducing mortality rates which are more specific to the disability population. However, if in the review of the literature and surveys of particular disability groups, we discover strange patterns or quirks in earnings experience, labor force participation rates, etc., we will adjust the life-time earnings profile used for the particular disability group on an incremental, ad hoc basis to reflect these discoveries.

3. Earnings -- Adjustment for Dropping Out of Labor Force or Unemployment Following Case Closure

(a) We will include as benefits the earnings of these individuals during the period after closure prior to dropping out of the labor force.

(b) We will use survey data (especially National Analysts, ABT) to measure shifts in employment status which occur after case closure for 26 closures. Thus, if 20% of 26 closures become unemployed two years after closure, we will reduce the number of people for whom we estimate lifetime earnings equivalently. Unfortunately, most follow-up data is at most for only three years after case closure. We will thus <u>assume</u> that unemployment and declines in labor force participation which are unique to the disability population will have become apparent within three years after closure. We will look to the normal population's experience to estimate

changes in labor force participation after the end of three years. That is, we will collect data on labor force participation for the normal population to assemble lifetime profiles, and we will adjust the lifetime earnings profiles to reflect changes in labor force participation.

(c) It could be argued that recognizing that rehabilitated clients may become unemployed a year later is inconsistent with our projection of life-time earnings. We will assume that clients who stay employed after three years are now part of the normal work force (i.e., truly rehabilitated); their disability simply reduces their productivity and thus their earnings. In operational terms, this means that we first adjust for labor force dropouts on the basis of follow-up survey data, and only then project lifetime earnings.

4. Earnings -- Adjustments for Secular Gains in Productivity

(a) We will use survey data to determine the gain in productivity the first two years after case closure. This gain represents the immediate return to all workers newly entering the labor force from acquiring some on-the-job experience. Our survey follow-up data (National Analyst primarily) does not go beyond three years.

(b) After three years, we will use a general productivity adjustment for each year based on a long-term trend rate in the national economy, e.g., the 20-year rate.

-This procedure will slightly overstate gains because the increase in wages the first few years after closure is a composite of (1) the secular national productivity trend for the years in which the data was collected -- a trend rate which was considerably below the 20-year trend rate because we were experiencing the 1968-70 recession, (2) a gain in productivity coming from an initial acquisition of job experience -- a gain

usually experienced in the normal population in the 20s age group, and (3) that gain in productivity which is probably normal for anyone in a particular age/sex/race/education group as they age and gain more experience. Since we are adjusting earnings upward anyway to reflect #3 via our lifetime earnings profile for projection, we are in some ways double-counting in our use of survey data to give a productivity adjustment factor for the first few years after closure.

5. Earnings -- Adjustments for Differential Mortality Rates

   (a) Conley agrees that we will probably not be able to find disability-specific mortality rates. We will, however, try to find such rates. We will direct special attention to private life insurance companies, the most likely repository of such data which previously has not been touched. Also, in reviewing literature on disability populations of interest, we will look for any information suggesting that the particular disability population has mortality rates which differ significantly from disability groups in general. Our measure of mortality rates for disability groups in general will be the data from the Railroad Disabled Employee Retirement Fund, the source used by Conley in his earlier work and the only data he was able to locate after much search. We will update the RR Fund data to 1969/70.

      (i) For MRs, we will use the mortality rates developed in Conley's book.

      (ii) Conley is also interested in trying to obtain mortality data for drug addicts and alcoholics, disability groups who are not well represented in the RR Fund disabled groups.

   (b) Assuming that we can't find disability-specific mortality rates, our procedure will be as follows. We will seek out age/sex/race/(and if possible) education strata

mortality rates for the normal population. We will adjust these rates downward using the age-specific RR Fund rates. Where survey data exists suggesting that a particular disability group has better or worse mortality rates than other disabilities, we may make ad hoc adjustments of the RR Fund rates to reflect this information. Generally, however, we will ward off criticism of our inability to obtain disability-specific rates by engaging in sensitivity analysis in Chapter VI of the mortality rates used. (NOTE: When dealing with clients under age 35 or so, the final C/B estimate is not affected by mortality assumptions because discounting greatly reduces the value of three or four years of earnings 30 years into the future.)

(c) Some disability populations of interest yield problems because the defining characteristic of the population is not disability per se. Thus, in the case of public assistance clients, many of whom are nonwhite, poverty should make mortality rates even worse than for the disabled population as a whole. Somehow we need to conceive an adjustment upward of the normal population's mortality rates to reflect the impact both of poverty and disability. At the same time, an adjustment which straightforwardly sums the effects of disability (measured by RR Fund rates) and poverty (measured by nonwhite normal population mortality rates?) is too extreme, since clearly the poverty effect partially includes the disability effect. Suggestions are in order.

6. Earnings -- Special Problem: Avoidance of Loss of Earnings

(a) A major conceptual problem which arises with some disability clients, particularly alcoholics, is that the function of rehab services is not to increase earnings, but rather to prevent the loss of earnings which might occur as the disability became worse. Other examples of such clients include cardiac cases, possibly addicts.

To the best of Conley's and my knowledge, no C/B analyst has coped with this conceptual problem. (The state of California for example assumes for its alcoholics, 90% of whom are employed at acceptance, that earnings in the absence of rehab services would be zero.)

(b) To handle these kinds of clients, Conley and I agreed on the following assumptions:

(i) If a client stays on the same job (measured by no change in earnings/week), we will assume that VR services were essential for maintenance of the client's productivity and that his earnings potential in the absence of services was zero. That is, we assume in such cases that the client would have lost his job and not been able to obtain another, in the absence of DVR's intervention.

(ii) If a client changes jobs and upgrades his former position (again measured by earnings), we will assume that the upgrading was due to rehab. We will measure earnings potential without rehab by earnings at acceptance. Clearly, assumption #1 strongly is biased in favor of the worth of rehab services while assumption #2 is strongly biased against rehab given the reality of the kinds of clients with which we are working.

(iii) We will apply these assumptions only in those client cases where there is reason to believe that the function of rehab was to prevent the loss of earnings.

(c) We need to engage in some discussions with the state of California to discover to what kinds of disabilities they think such a situation pertains. It is clear that we will try this approach with alcoholics. A second

criteria for determining whether a client falls into this group might be his earnings at acceptance. If those earnings were high (e.g., more than one S.D. above the mean for clients employed at acceptance), we might assume that the client's application for services was motivated more by a desire to prevent loss of earnings than to increase earnings.

7. Negative Earnings Benefit -- Cost Required After Closure to Sustain Employment

   (a) Such costs may be borne by the individual or by other agencies. Costs borne by R.S.A. are assumed to be represented in repeater costs (Section G). NOTE: These are costs which are not incurred as part of the rehabilitation plan, but rather as costs necessary to maintain the status existing at the time of case closure. Such costs may include journey-to-work costs, expenditures for child care and housekeeping as the client leaves his/her house to hold a job, health care and counseling, etc.

   (b) The only data that exists here is the ABT study and perhaps various surveys currently unknown to Conley and Noble.

   (c) These costs, along with repeater costs abcve (Section G) should be discounted to present value -- an omission by Conley in his earlier work.

8. Assumptions about Displacement of Other "Normal Citizens" from Jobs via the Rehabilitation of Handicapped Clients

   (a) We are assuming the maintenance of a full employment economy in our official C/B estimates. It is not the mandate of R.S.A. to provide for full employment. Rather its public mandate is to prepare handicapped clients for successful participation in the competitive labor market.

(b) In our separate project analyses, however, we may engage in estimating the true C/B of the rehab project given the reality of less-than-full employment macroeconomic policies on the part of the Administration.

C. Homemaking Services and Child Care

1. Since 10-20% of the nation's 26 closures are women closed into homemaker services who are currently afforded zero value in C/B studies, one of the inoperative innovations of this study is to try to impute some value to homemaking services. Two basic theoretical approaches are available:

(a) Valuing a homemaker's services at replacement costs. What would it cost to engage a maid to do housekeeping? What is the cost of putting children in day care centers which would provide child care? How can one distinguish between the babysitting and educational functions of child care, whether performed by a homemaker or a day care center? If homemaking services are measured in terms of hours worked, how can one measure productivity of those hours? Are some homemakers more efficient than others in getting a fixed amount of work done?

(b) Valuing a homemaker's services at opportunity costs. What does a woman forego in terms of employment opportunities by choosing to become a homemaker? What would her earnings be in the labor market? This opportunity cost approach yields only a minimum value of the homemaker's services. The assumption is that a woman will not choose to become a homemaker unless the value of her services to the family is at least equal to and preferably greater than the income which she could earn if she were employed. Employment income must be measured in net terms, of course. An employed mother of six may have to subtract payments made to day care centers for taking care of her children during her work hours.

NOTE: The opportunity cost approach results in a decreasing value to a woman's homemaking services the more children she has -- a blatantly absurd assumption.

-In his MR book, Conley states that valuing a homemaker's services by either replacement cost (using only a domestic maid's services) or by opportunity cost (using mean earnings for age/race strata for women) yields the same value.

2. We shall present a series of alternative calculations of the value of a homemaker's services in the report. Conley and I have not yet decided which we shall finally accept.

   (a) Estimate domestic maid wages, e.g., valuing homemaker services narrowly defined as housekeeping. This approach yields a minimum estimate of value.

   (b) Add to (a) an allowance for each child, based on average or median costs for day care centers. Conley notes that in Washington D.C. such costs average $23-30 per child.

   (c) Value all services at the mean earnings for women in the appropriate age/race/education strata. We might also drop the race stratification to recognize that nonwhite women suffer severe discrimination in a labor market which understates their true productivity. (NOTE: I argued with Noble and Conley that we should drop the race stratification throughout the C/B study on the basis of this argument, but they disagree on the grounds that agency outsiders will demand such a stratification.)

   (d) Add to technique (c) plus a further adjustment for the number of children similar to (b). This calculation, which represents a maximum estimate, is based on the logic that a woman will quit the labor market simply on the basis of the value of her housekeeping services and perhaps the need to care for her first child.

Subsequent children represent economies of scale in terms of her homemaking services. Thus, an adjustment is only made for each child after the first child. (NOTE: This approach is consistent with the observation that the labor force participation of women declines from ages 25 to 45, and then begins to rise again after age 45. As the woman ages (25-45), she foregoes less income by not working. If she entered the labor force, her net earnings would be much less than her wage, because she would have to pay for child care. After age 45, the children are usually either gone from the household or the oldest children are capable of caring for the youngest children. Thus, the mother can re-enter the labor force.

3. Having made a selection from among the above valuations of a homemaker's services, it will also be necessary to adjust for changes in homemaker status after closure. We will assume that 26 closures who become unemployed for reasons other than a worsening of disability after closure revert to productive homemaker services. This can be partially checked by survey data exploring changes in the employment situation of other family members. We can only infer a productive increment to GNP via homemaker services if (a) another family member enters the labor force, or (b) the client is the lone member of the household of working age. Similarly, we will recognize an increase in direct wage earnings for clients successfully closed in homemaker status who subsequently take jobs. The National Analyst and ABT data are principal data sources for this adjustment.

D. Unpaid Work

1. It is reasonable that individuals who hold jobs often do additional work of GNP-productive value "after-hours." The Survey Research Center, in one of the few efforts to measure the hours devoted to unpaid work, estimated that individuals work

an average of 7 hours/week. Conley believes that this is a gross underestimate. He uses 10 hours/week in the MR book, an estimate based solely on his own observation and judgment. We agreed that for the official C/B estimate, we would use the SRC estimate so that we could increase the "legitimacy" of our innovation. C/B studies in the past have consistently ignored unpaid work. However, we would attempt to gather SRC estimates for stratified age/sex/race/education groups as possible.

2. The value of these hours of unpaid work would be determined by the earnings/week of the client. We would assume that the productivity of the individual in unpaid work was akin to his productivity in labor market employment -- a most tenuous assumption.

3. If we finally select approach 2(c) of V.C. above for valuing the worth of homemaker services, we will still place a value on unpaid work. That value would be equal to the mean earnings of the appropriate sex demographic strata minus taxes (assume 25% tax rate).

E. Savings in Medical and Custodial Costs Incurred by the Client

1. Clients, in the absence of rehab services, often bear personal expenses for medical and nursing care, housekeeping services (because the client is incapable of performing such functions and other household members are preoccupied with being bread-winners), child care services, etc. The improvement in the client's functional capability as a result of rehab services can reduce these expenditures. Assuming the maintenance of a full employment economy, these savings represent an addition to GNP, since the resources hitherto consumed in these activities are now freed for other productive uses.

2. The only source of data for such savings are the ABT study and various surveys/studies currently unknown to Conley and Noble. We will attempt to estimate the magnitude of such savings on the basis of such special studies. We will obtain estimates

for specific disability groups where feasible. More likely, we will only be able to obtain overall estimates for all disability groups combined (e.g., ABT).

F. Changes in the Labor Force Participation and Homemaking Activities of Other Family Members (usually negative benefits)

1. It is possible that the entry of a disabled client into an employment or homemaking situation, made possible by rehab services, is offset by a corresponding change in the behavior of another family member. For example, a male disabled client can obtain a job and thus his wife drops out of the labor force to take care of the home; e.g., a woman/man is rehabilitated so that she/he can take care of the house, thus freeing a mother/sister/child to take a job.

2. The only sources of data on such changes in the family situation are surveys, especially ABT. Even the ABT survey will yield no knowledge on the magnitude of changes in earnings of family members. We will simply try to measure the frequency of such shifts in the family situation, relying both on surveys of disabled 26 closures and upon information on changes in family labor force participation for the normal population (e.g., Bowen-Finnegan's study of the economics of labor force participation). Whatever adjustments we make in the official C/B estimate must await the outcome of this review of surveys and studies of the disabled and normal populations. The adjustments which are made will probably be ad hoc.

G. Savings in Medical and Custodial/Institutional Costs Incurred by the State

1. Akin conceptually to V.D, except that the costs are incurred by the state (taxpayers) rather than the client himself.

2. Data here will come primarily from published state data on institutional costs. We will use average costs per institutionalized individual within broad programs to approximate the cost saved for particular rehabilitated clients.

3. The main kinds of clients of concern for this type of benefit are the mentally ill, the mentally retarded, the public offender, the drug addict, and the severely disabled.

H. Reductions in Public Assistance Payments for Clients

1. This item represents a negative benefit for clients but a positive benefit for taxpayers. The item would be discussed in the report, but would explicitly not be included in the GNP C/B estimate, since the item is simply a change in transfer payments.

2. We would measure the change in P.A. receipts by using R-300 data for each client group, and then adjusting our estimate of the change with follow-up data from the National Analysts and ABT studies.

3. If possible, we would include in the GNP C/B model an estimate of the savings in administrative costs to society of removing someone from the welfare rolls. It could be argued, however, that there is much unmet demand for welfare payments in the society by eligible citizens. Any removals from the welfare rolls would immediately be replaced by other deserving eligible citizens who currently are refused payments because of lack of money. Also, there are clearly economies of scale in the processing of checks so that the marginal savings from the removal of citizens from the welfare rolls are significantly less than the average administrative costs.

I. Discount Rates for Present Value Calculations

1. All benefits and costs will be reduced to present value based upon the beginning of the fiscal year. Thus, we will assume that costs are expended in the beginning of the year rather than during the course of the year. And we will assume that the earnings of the client at closure are received only at the end of the fiscal year and thus should be discounted. These assumptions seem reasonable, since the average length of time in process for a client is slightly over 12 months.

2. We will also discount future tax earnings in the payback period model.

3. Conley and I agreed that we would generate estimates for three different discount rates: 0% (the normal bureaucratic approach anathema to economists), 7% (the yield on long-term government bonds in 1970 and the rate used by Conley in his MR book), and finally that discount rate which is currently recommended for use by OMB (the Office of Management and Budget in the Executive Office of the President) for use by government agencies. Conley will determine what the OMB-recommended rate is. We anticipate that it will be between 0 and 7%. We will probably use the OMB discount rate for the single "official" R.S.A. C/B estimate rather than the 7% rate.

J. Psychic Benefits Resulting from Rehabilitation

1. Such benefits include (a) improvements in the client's functional capability for non-earnings-related activities -- e.g., recreation, transportation, learning to speak or read; (b) improving the family situation for siblings and parents of the client via reducing the demands and psychic pressures upon the family of caring for the client; (c) improving the quality of child care of which the client is capable; (d) satisfying the needs of each individual member of the general society for insurance against the handicaps created by physical or mental disability midstream in life; (e) enhancing the sense of humanitarian contribution, justice, etc. for the general society. Factors (a) and (b) recognize that the presence of a disabled person within the family can create severe pressures upon all family members and impede the development of siblings as well as the client. Factor (d) represents an insurance option for each member of society against the problems stemming from disability for <u>either</u> his/herself personally <u>or</u> for family members or dependents.

2. These nonmonetary benefits will be described in the report, with citations from various opinion surveys and portions of the general literature. Such benefits will not appear formally

in the C/B estimates. Case studies and anecdotal material might also be used to illustrate these benefits and to impress the reader with the significant though non-quantifiable (in market dollar terms) value of these benefits.

K. Taxpayer Benefits, But Not GNP Benefits

1. In calculating taxpayers' payback period, other benefits emerge which are improperly included in a C/B estimate using GNP accounts. (Yet most C/B estimates for rehab have erroneously included them.) Such benefits include primarily savings in transfer payments. Also, for the payback period, the full client gain in earnings is irrelevant; all that matters is the increase in taxes which results from such a gain in earnings.

2. Taxes on Earnings

   (a) We will use either (1) the average of state taxes plus Federal taxes, or (2) state-specific tax rates, depending on the ease of collection. Relevant state taxes include all those which apply to an increase in client income: income, sales, property.

   (b) We want to collect tax rates reflecting number of dependents.

   (c) In the payback period calculations, we will discount future tax earnings and savings in costs to present value in contrast to normal practice (e.g., state of California rehab agency).

   (d) We shall handle income other than earnings (which thus raises the marginal tax rate for progressive income tax structures such as the Federal structure) by using survey data on the differences between total income and earnings.

3. Public Assistance Payments

   (a) We will want to collect data (1) by state or (2) by the average national cost for payments made to various PA categories, e.g., ATD, AFDC.

   (b) We also will adjust estimates of savings in PA payments for the number of dependents.

   (c) Finally, we will try to adjust on the basis of survey data (especially National Analyst, ABT) for changes in level of PA funds received after case closure.

4. Other Transfer Payments, e.g., Social Security, Workman's Compensation

   -To the extent we can obtain mean data for the payments received by the disabled for the above programs (like J.1., relying primarily upon R-300 data), we will recognize savings in transfer payments in such programs as taxpayer benefits.

5. Savings in Institutional Costs

   -See Section V.G. This benefit occurs in both the GNP and taxpayer accounts.

6. In our payback period calculations, unlike most such studies, we will recognize costs incurred by other non-Rehab agencies as costs of the rehab program.

Chapter VI - COST-BENEFIT ESTIMATES

- In this chapter, we will merge the various cost and benefit estimates of Chapters IV and V to present overall C/B estimates for various disability populations of interest. For the groups of interest, see the Appendix on populations for which we will estimate C/B.

- We will also perform sensitivity tests for key assumptions and data based on survey findings to show the sensitivity of our final C/B estimate to our assumptions. Such analysis will focus primarily upon C/B estimates for all disability groups combined, but analyses will also be made of particularly controversial assumptions/parameters used for particular disability groups.

- This chapter will put forward, after the sensitivity tests, a single C/B estimate for each population which will represent the official baseline estimate for that population thereafter. At the current time, Conley believes that that estimate will be based on a full social accounting of costs and benefits.

CHAPTER VII - POLICY IMPLICATIONS

- To quote Conley, "anything goes" in this section. We can try to be very speculative in commenting on ideal revisions of policies and programs. Conley's MR book provides a good example of what can go into such a section.

- Among the issues we currently anticipate discussing are: (1) the limitations of cost-benefit analysis; (2) the role of consumers in improving future program evaluation; (3) the role of sheltered workshops in future rehabilitation programs; (4) the relative efficiency of alternative job creation, job placement, and education and training strategies for achieving rehabilitation.

APPENDIX

Selecting Client Sub-populations for Disaggregated C/B Estimates

During the September trip to Washington, Conley, Noble and I spent several hours discussing for which population groups we wanted disaggregated cost-benefit estimates. As the discussion proceeded, it became clear that Conley and Noble would ideally like disaggregation so fine that we could end up with 500+ groups. They agreed, however, that so large a number of estimates would be too expensive to run and that the lengthy presentation in a final report would lose many readers in any event; thus, it would be necessary to decide in advance which age/income categories, etc. were of interest. Noble wanted to define our population groups using formal analytical methods, like the AID techniques (Automatic Interaction Detection) of analysis of variance. Conley thought that such an approach would be expensive and yield little of value; instead we should stick to characteristics which had operational meaning in terms of the agency's routine decisions or which conformed to divisions used by other programs (e.g., D/Labor) with which we would like to compare the rehab program. I sided with Conley, but pushed strongly for focusing on client groups which were currently the focus of agency priorities or the target of pending policy decisions. At the end of the discussions, we had agreed upon the following:

1. We would <u>a priori</u> define key population groups of interest using Conley's and my approach (See Below) so that research could proceed. We would also outline for further consideration some small-scale experimental approaches with AID to see whether that approach would yield breakdowns of population groups which were significantly different from our <u>a priori</u> classifications. In particular, we would consider focusing AID techniques upon age, income at acceptance, education, and disability. The dependent variable would be

income at closure. We agreed that with characteristics for which we had only nominal or ordinal data (e.g., disability, education), AID might not be feasible. We would consider whether factor analysis would yield good groupings of disabilities for C/B analysis, but were not committed to such an approach.

2. In our empirical work, we would attempt estimates for many more disaggregated populations than we would report in the final book. Thus, if the C/B results for women were similar regardless of education, we might present C/B estimates for women as a homogeneous group, rather than presenting separate estimates for each sex/education group. Our reasoning for this decision was two-fold. First, we didn't want to lose the reader of the final report amidst a myriad of statistics. Second, we knew in advance that we would not be able to find key data for many of the highly disaggregated groups, especially if stratified by disability, e.g., mortality rates, non-agency borne costs, life-time earnings profiles, etc.

Listed below are those population characteristics for which we <u>ideally</u> would like to have C/B estimates. These are the characteristics which should guide the collection of data on earnings, labor force participation rates, mortality, etc.

A. <u>Overview</u>

Conley and Noble agreed that they would like us to strive for C/B estimates for select disability groups and for the overall client population stratifying by age, sex, race, and education. They conceded that it might be impossible to stratify by education, given our innovative approach of linking client earnings to life-time profiles for the normal population, because of lack of detailed data for the normal non-disabled population.

They wanted us to examine the patterns of earnings by various demographic strata within disabilities, but agreed that we would not be able to generate C/B estimates for all strata within disabilities, if only for want of data. We would try to note major variations in mortality, earnings, etc., by strata like sex and race, but any adaptations of estimates would be on a heuristic basis. Our final presentation would be more verbal, stating qualifications of our findings, rather than presenting separate estimates per se.

They were also interested in estimates for a number of other population characteristics, but again did not believe it necessary to use such characteristics as stratifications within disability. Thus, they were interested in C/B estimates for clients with different family sizes (number of dependents), but did not believe that the C/B estimates by family size would vary that much across disability.

Finally, they agreed strongly with our position that the interaction between disabilities and certain other characteristics (e.g., black, low education, very old and young) should be a major focus of the study. For such groups with compound handicaps in the job market, we might present separate estimates.

B. Classifications of Demographic Characteristics

The following are the key demographic breakdowns of the client population which we will use in the disaggregated cost-benefit estimates. These characteristics define the population at acceptance for services. We did not consider how to handle young people who are closed while still students or for whom the provision of formal education is the chief rehab service given. For such individuals, we would probably want a more detailed educational classification at closure (e.g., college degree, some graduate education) in order to relate the individual's earnings expectations over time to the appropriate normal population.

Race - White
Nonwhite

Sex - Male
Female

Age - LT 20 years old
20-24
25-44
45-59
GT 59

Education - LT 8 years
8 years - LT high school graduate
High school graduate, but no further education
Some formal education beyond high school (not necessarily a B.A.)
Some vocational training in addition to formal education, prior to acceptance

C. Selection of Disability Groups for Analysis

We agreed that we would first categorize disabilities to form an exhaustive set. Membership in one category would preclude membership in another category. At our suggestion, Noble and Conley agreed to use the categories for which data is routinely published by the state of California:

Physical
Mental Illness (psychoses, neuroses)
Mentally Retarded
- within this group, we would break into further subcategories by IQ, following Conley's treatment in his MR book and using his C/B estimates

Alcoholics
Sensory
- within this group, California also estimates C/B for five separate subgroups
    1. Legally blind
    2. Other visual impairments
    3. Deaf -- unable to talk
    4. Deaf -- able to talk
    5. Other hearing impairments

Behavioral
- within this group, California also estimates C/B for two subgroups
    1. Drug addicts
    2. Other (including public offenders and any nondisabled disadvantaged)

This classification may emerge as being too broad and aggregated. If this proves true, we would switch to the classifications of disability which state agencies are required to use when reporting financial data to R.S.A. Several agencies (e.g., Florida, Texas) use these classifications when reporting program performance data within the state program.

Disability	R-300 Code
Visually Impaired	120-149
Deaf	200-219
Hard of Hearing	220-229
Amputation and Orthopedics	300-449
Mentally Ill	500-510
Behavioral Disorders	522
Alcoholism	520
Drug Addiction	521
Mental Retardation	530-534
Epilepsy	630
Heart Disease	640-649
Speech Impairement	680-689
Digestive System Disorders	660-669
Neoplasms	600-609
Allergic-Endocrine	610-619
Metabolic-Blood	620-629
Nervous System	639
Respiratory	650-659
Genital Urinary	670
All Other	690-699

Next, at our suggestion, Noble and Conley agreed that estimates would be desirable for four different, overlapping types of clients within each of the above disability populations -- if feasible in terms of the data and resources available for analysis.

1. Those for whom the prime disability reported on the R-300 form was a disability placing them within the group above. This characteristic is the only basis for classifying clients, which puts them into exhaustive and non-overlapping groups.

2. Within each client sub-population grouped by prime disability, two further sub-groups must be considered in cost-benefit analysis.

(a) Those for whom the prime disability is the only reported disability.

(b) Those who also have a reported secondary disability. Quite apart from the accuracy of the R-300 form, most clients (c. 80%) have multiple disabilities. The prime disability is not that meaningful therefore for judging the nature of the handicaps with which rehab services must cope.

3. Those who are multiply disabled and for whom at least one of the reported disabilities is the disability which classified them in the above exhaustive and non-overlapping disability groups above. This group clearly overlaps with other groups. For example, a person whose prime disability was legal blindness but who also was reported as mentally retarded would appear within both the blindness and MR disability group estimates.

Our explicit concern for this last group (#3) is based on the premise that the data reported on the R-300 prime form on disability may not be very reliable. Our investigation of how counselors use the R-300 form strongly suggests that the reported prime disability may often not be the true prime disability generating the critical handicaps at which rehab services must be directed. Counselors (1) may not recognize at the time of referral the prime disability of the client, (2) may want to conceal the true prime disability because supervisors would otherwise judge the client as an unlikely prospect for rehabilitation and thus refuse services and/or (3) may want to cater to the priorities for services expressed by the supervisor and state, and thus -- where clients suffer multiple disabilities -- report as prime disability that disability which classifies the client as having priority for treatment. Conley and Noble agreed that it would be too ambitious to attempt C/B estimates for specific combinations of disabilities, e.g., the blind retarded as contrasted to the blind-deaf or blind alcoholics.

D. Other Populations of Policy or Program Significance

In addition to the above disability classifications, which conform to routine program definitions, Noble and Conley agreed that we would like to do C/B estimates for various client populations of current policy importance or program significance. The availability of resources was very unclear, however. The following client populations were cited as of interest. It is unlikely that we would be able to run estimates for more than the PA recipient group.

1. Source of Support at Acceptance

   a. Public assistance
   b. Social Security
   c. Other transfer programs -- public (e.g., Workman's Comp. Veterans Admin)
   d. Other (e.g., family, personal savings, private insurance)

2. Degree of Disability

   a. Severely disabled
   b. Other

      NOTE: A major problem here is that no one, repeat, no one has an operational definition of severely disabled. R.S.A. was highly impressed by the conceptual work (Pence, Mueller, et. al.) being done in California, but even that work still is far from producing operational definitions, at least definitions for which current R-300 data can be used. We agreed that Berkeley would survey the various proposed definitions. If we did not believe that a sound operational definition existed, we might simply focus on particular disabilities which everyone agreed to be very severe. In other words, we'd look at particular sub-groups within, but not exhausting the severely disabled. Examples might include:

      a1. legally blind
      a2. paraplegics (spinal injuries as an overall group is too broad -- some such injuries are conceded to be "easy cases.")

3. Expanding Programs

   a. Public Offenders
   b. Spanish surname clients
   c. Income at acceptance

Other disability groups previously cited above would have qualified independently in terms of these criteria of policy importance addicts, alcoholics, the blind, the deaf, MRs.

E. Other Characteristics of Interest

Noble and Conley also specified additional characteristics for classifying the population, for which they would like C/B to be estimated. Having seen the estimates, we would then decide whether to include the estimates in the final report. The characteristics would in no way, however, be used to further stratify the client populations defined earlier. Again, whether we could respond to R.S.A.'s desires would depend on the resources remaining after other analyses.

1. Marital status - married at acceptance
   divorced
   separated
   not married, widowed
   never married

2. Number of dependents
   - sub-classifications not discussed

3. Income at acceptance
   - Noble was anxious to have this stratified by age and sex, but no commitment was made.

4. Previous work history
   - no discussion of whether R-300 data existed, or which measures might be used.

5. Receipt of services from workshops or facilities
   - yes
   no

6. Ethnicity - Spanish surname

There was also much interest in looking at the variance of C/B across space. Noble was particularly interested in rural-urban differences. The R-300 data is not directly helpful here, unless we could determine with exogeneous information whether a particular VR reporting district was in an urban or rural area. Such determination is clearly very expensive and time-consuming, and probably technically impossible since reporting districts may not always conform to a single political jurisdiction or even a grouping of jurisdictions. Similarly, Conley and Noble were interested in differences by states and regions. Because of costs in analyzing R-300 data and because normal population data at best may be obtainable only on a regional basis, all agreed that C/B by regions was the most we could hope for at this time. I noted, however, that the Berkeley Project -- independently of the C/B study -- was analyzing productivity differences among states. I suggested that perhaps spatial variations might be more feasibly handled in such a productivity study rather than in the C/B study, which as already designed, would overwhelm the reader with statistics. Noble and Conley agreed.