

INFORMATION TO USERS

This material was produced from a microfilm copy of the original document. While the most advanced technological means to photograph and reproduce this document have been used, the quality is heavily dependent upon the quality of the original submitted.

The following explanation of techniques is provided to help you understand markings or patterns which may appear on this reproduction.

1. The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting thru an image and duplicating adjacent pages to insure you complete continuity.
2. When an image on the film is obliterated with a large round black mark, it is an indication that the photographer suspected that the copy may have moved during exposure and thus cause a blurred image. You will find a good image of the page in the adjacent frame.
3. When a map, drawing or chart, etc., was part of the material being photographed the photographer followed a definite method in "sectioning" the material. It is customary to begin photoing at the upper left hand corner of a large sheet and to continue photoing from left to right in equal sections with a small overlap. If necessary, sectioning is continued again — beginning below the first row and continuing on until complete.
4. The majority of users indicate that the textual content is of greatest value, however, a somewhat higher quality reproduction could be made from "photographs" if essential to the understanding of the dissertation. Silver prints of "photographs" may be ordered at additional charge by writing the Order Department, giving the catalog number, title, author and specific pages you wish reproduced.
5. PLEASE NOTE: Some pages may have indistinct print. Filmed as received.

Xerox University Microfilms

300 North Zeeb Road
Ann Arbor, Michigan 48106

76-3799

NICKOLOFF, Elia George, 1941-
THE HEARING-IMPAIRED AMERICAN INDIAN IN THE VOCATIONAL
REHABILITATION PROCESS.

The University of Arizona, Ed.D., 1975
Education, vocational

Xerox University Microfilms, Ann Arbor, Michigan 48106

THE HEARING-IMPAIRED AMERICAN INDIAN
IN THE VOCATIONAL REHABILITATION PROCESS

by

Elia George Nickoloff

A Dissertation Submitted to the Faculty of the
REHABILITATION CENTER

In Partial Fulfillment of the Requirements
For the Degree of

DOCTOR OF EDUCATION

In the Graduate College

THE UNIVERSITY OF ARIZONA

1 9 7 5

THE UNIVERSITY OF ARIZONA

GRADUATE COLLEGE

I hereby recommend that this dissertation prepared under my
direction by Elia George Nickoloff
entitled The Hearing-Impaired American Indian in the Vocational
Rehabilitation Process
be accepted as fulfilling the dissertation requirement of the
degree of Doctor of Education

B. G. Johnson 7-3-75
Dissertation Director Date

After inspection of the final copy of the dissertation, the
following members of the Final Examination Committee concur in
its approval and recommend its acceptance:*

<u>J. J. Gagnier</u>	<u>7-3-75</u>
<u>Paul [unclear]</u>	<u>7-3-75</u>
<u>Robert [unclear]</u>	<u>7-3-75</u>
<u>J. W. [unclear]</u>	<u>7-3-75</u>
_____	_____

*This approval and acceptance is contingent on the candidate's adequate performance and defense of this dissertation at the final oral examination. The inclusion of this sheet bound into the library copy of the dissertation is evidence of satisfactory performance at the final examination.

STATEMENT BY AUTHOR

This dissertation has been submitted in partial fulfillment of requirements for an advanced degree at The University of Arizona and is deposited in the University Library to be made available to borrowers under rules of the Library.

Brief quotations from this dissertation are allowable without special permission, provided that accurate acknowledgment of source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the major department or the Dean of the Graduate College when in his judgment the proposed use of the material is in the interests of scholarship. In all other instances, however, permission must be obtained from the author.

SIGNED:

Elia Nikoloff

ACKNOWLEDGMENTS

This study would not have reached successful conclusion without the assistance of all my committee members. They gave me the necessary assistance and guidance and provided the encouragement which is often needed during the writing process.

The author is indebted to Norm Rash who not only assisted in acquiring approval to use the case files of the Arizona Rehabilitation Services Bureau, but he assisted in the data gathering process. Without his generous assistance, this study would not have been conducted.

A special note of thanks to Christine Feller, Nancy Dodd, and John Self. They helped type and edit the manuscript, and that was a great undertaking.

The paperwork and the process of getting working copies of the dissertation to and from my advisors was handled very well by Jere Welles. Writing a dissertation 1300 miles from Tucson creates very unique problems. Jere kept them at a minimum and her efforts are deeply appreciated.

Finally, I must thank my wife, Wilma, who has lived through this entire process with me. She has served as an editor, a typist, a counselor and an admonisher. She did her job well and without her continued moral support, I would never have had the opportunity to write a dissertation.

TABLE OF CONTENTS

	Page
LIST OF TABLES	vi
ABSTRACT	vii
I. STATEMENT OF PROBLEM	1
Purpose of the Study.	2
Limitations	3
Definitions	4
Method of Treatment	4
Screening	5
II. REVIEW OF THE LITERATURE	7
Introductory Statement.	7
Geographical Distribution	7
An Historical Perspective	8
Health.	10
Education	12
Employment and Other Related Data	14
Summary	16
III. METHOD OF PROCEDURE.	18
Procedure	18
Screening	19
Sample.	20
Instrumentation	20
Classification and Analysis of the Data	22
Preparation of the Data	23
IV. RESULTS.	24
Etiology of Hearing Impairments	24
Time in Evaluation.	34
Cost of Evaluation.	35
Cost of Training.	35

TABLE OF CONTENTS--Continued

	Page
Cost of Maintenance	36
Total Rehabilitation Expenditure.	36
Closures.	37
Occupational Information.	39
Psychological Evaluations	39
 V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	 41
Summary	41
Review of the Literature	41
Procedure.	42
Conclusions	43
Medical.	43
Demographic Data	45
The Rehabilitation Process	47
Recommendations	52
 APPENDIX A: QUESTIONNAIRE	 54
 APPENDIX B: TABULATION OF INDIAN POPULATIONS.	 56
 REFERENCES	 58

LIST OF TABLES

Table	Page
I. Etiology of Hearing Impairment Among Indians Closed by Arizona Rehabilitation Service Bureau During Fiscal Years 1970-1974.	25
II. Additional Disabilities of Hearing-Impaired Indians Closed by Arizona Rehabilitation Services Bureau During Fiscal Years 1970-1974.	27
III. Demographic Characteristics of Hearing-Impaired Indians Closed by Arizona Rehabilitation Services Bureau During Fiscal Years 1970-1974.	29
IV. Expenditure of Money and Time in the Rehabilitation Process of the Hearing Impairment Among Indians Closed by Arizona Rehabilitation Services Bureau during Fiscal Years 1970-1974.	32
V. Reasons for Closure Prior to Acceptance for Vocational Rehabilitation Services.	38

ABSTRACT

This research was conducted for the purpose of examining selected medical, educational, vocational and psychological variables relative to the hearing-impaired Native American client during the vocational rehabilitation process. Each of these variables had a direct impact as to whether or not a client could achieve successful rehabilitation closure.

To accomplish this goal a survey was conducted using case closure reports and case files of the Arizona Department of Economic Security-Rehabilitation Services Bureau from fiscal years 1970 through 1974. Approximately 25,000 case closure forms were screened. This yielded a sample of 61 American Indians with a hearing impairment who sought rehabilitation services.

A questionnaire was constructed to assist in the extraction of data from the records in an orderly manner. All of the questions were directly related to the variables mentioned above. The data were extracted and punched into computer cards and a program was written. Responses were tallied into columns of those clients who were closed rehabilitated and those who were not. The data were then placed into tables showing the etiology of hearing impairments, additional disabilities, demographic characteristics, the vocational rehabilitation process and how unsuccessful cases were closed.

The findings showed that hearing-impaired Indians with an etiology of otitis media were successfully closed more often than those who lost their hearing because of congenital conditions. Sixty-seven percent of the subjects in this sample had additional disabilities; personality disorders were the leading additional disabilities. Nearly three times as many males were referred to the Rehabilitation Services Bureau as females; males achieve successful rehabilitation more often than females. Two-thirds of the clients lived on reservations; and the mean age for the sample was 24.9 years. Sixty-four percent of the sample were never married and marriage had no effect as to successful rehabilitation. The mean level of education was 9.2 years; as education increased so did the probability of successful closure.

The study tended to indicate that the faster the client proceeded through the referral and evaluation statuses, the better his/her chances were of rehabilitation. The data were unclear about whether the amount of time spent in training would enhance successful rehabilitation. The amount of money spent in all phases of the rehabilitation process showed conflicting patterns. The chance of successful rehabilitation increased as more money was spent not only for training but for the entire rehabilitation process. However, the data were not clear regarding success in relation to the cost of evaluations. As the amount of money spent for living expenses decreased the number of successful rehabilitants increased. The major reason given for closing a case prior to acceptance for rehabilitation services was "unable to locate".

Jobs found by those closed rehabilitated were in the areas of: clerical work, sales, service occupations and structural work. The data indicated that when a verbally loaded psychological evaluation was administered it lowered the intelligence score.

CHAPTER I

STATEMENT OF PROBLEM

The first attempt to deliver helping services of an organized nature to deaf persons in the United States occurred in 1817 at the American School for the Deaf at Hartford, Connecticut. This marked the first time public funds were made available for this segment of the handicapped population of the nation.

It was not until 1920, with the passage of the Smith-Fess Act that federally funded programs, specific to the rehabilitation and training of deaf persons were initiated. Thus, while the deaf population had been the recipient of services for many years, it was only in recent years that professionals in the field began to recognize the additional needs of deaf minority groups. Bowie (1971), in his review of literature relative to non-white hearing-impaired persons, concluded that some information indeed had been collected. However, his most significant finding was the paucity of available research data. Data which had been amassed were concerned primarily with hearing impairments of Black and Puerto Rican Americans. It was noticeable that hearing problems of the Native American population had not been included in the surveys or research data as reflected in a search of the literature.

Purpose of the Study

In order to provide needed rehabilitation services for Native American persons, more data were gathered and interpreted. Particular characteristics relative to the successful rehabilitants were identified for comparison with unsuccessful clients. Those variables could then form a basis for study which could be anticipated to enable more persons to benefit from rehabilitation services. A survey of the population, designed to isolate pertinent variables, was a beginning point to identify appropriate needs for provision of specific needed services.

The purpose of the study then, was to conduct a pilot survey designed to gather data focusing on selected psychological, educational, medical and vocational variables relative to the hearing-impaired Native American client during the vocational rehabilitation process. Each of those variables had a direct impact as to whether or not a client could achieve successful rehabilitation closure; however, until data were amassed for study purposes, no certainty existed as to their significance in the provision of services.

Mackey and Blanchard (1972, p. 11) gave some insight to the problem of delivering rehabilitation services to the American Indian by stating:

Much of the valuable and perceptive insights relative to the American Indian are to be found in his culture and life styles. No one can really appreciate the situation of the Native American until he realizes that Indians must live between two cultures. It must be understood that tribal customs and lifestyles will have an important

and lasting effect upon the American Indians' total functioning on the reservations or in urban areas. Helping professions must evaluate their functioning within the American Indian community and adjust their delivery of services in accordance with knowledge gained in studies.

Historically, American Indians have rejected programs and services imposed upon them by bureaucrats and do-gooders by using the defense mechanisms of withdrawal and passive-resistance. This custom was particularly strong when the Indian was first placed on the reservation. Non-Indians, in dealing with the Native Americans, are often overwhelmed when they find that even though the Indians have expressed approval of a plan, they are really resisting.

Limitations

It was not within the scope of this study to conduct sophisticated research utilizing technical statistical analysis. Rather it was to provide needed information about Native Americans who seek rehabilitation services and the effect such services tend to have relative to their way of life. These data are available to other researchers so future comparisons can be made for their use in a more in-depth analysis.

Though this survey contains health, education, rehabilitation, and employment information relating to the Indian in Arizona, caution should be exercised in an attempt to generalize these data to Indians in other parts of the country. Indians differ from one another as do members of other identified groups.

This information, however, can be used to establish criteria from which future comparisons can be made. Hearing-impaired Indians from Arizona can then be compared to their counterparts in other

regions of the country. They can also be compared with other deaf ethnic groups or with the general population.

Definitions

For the purpose of this study, a hearing-impairment is defined as such if the Rehabilitation Services Bureau accepted a referral with this condition indicated as either the primary or secondary disability. The term deafness was not used because it imposes a very specific degree of measured loss and would limit examination of all Indians with a hearing problem. The code number for hearing impairments was used for screening cases into the sample.

While filling out the application, the applicant had to designate his national origin. This was accepted as an accurate designation; the code number for the race of American Indian also was used for screening purposes. Thus, the disability of a hearing impairment and being of Indian origin were the two criteria used in obtaining the sample for this survey.

Method of Treatment

The State of Arizona was selected as the single site for gathering data due to its large Indian population. The cooperation of the Arizona Department of Economic Security-Bureau of Vocational Rehabilitation was sought through a letter asking for support in the use of their records. The Bureau of Vocational Rehabilitation gave full support and opened their records for the purpose of this survey. The only restriction placed on their use was all names be kept

confidential. This was agreed upon as there was no need for individual identification by name. Individuals could be identified by their respective case numbers for further retrieval of information if it were to become necessary.

Cases closed during fiscal years 1970 through 1974 were taken from the Arizona State Archives and delivered to a location where they were screened. The documents delivered were the Case Service Reports and the federal reporting form R-300. Both forms were used by the Bureau to report to the federal government status of cases served by that agency once the case was closed. The forms contained basic demographic data related to time in rehabilitation, amount of money spent in that effort, and personal data such as name, age, sex, address, size of family, and disability.

Screening

The screening took four days. An estimated 25,000 cases were hand screened. Two major criteria were established to assist in selecting individuals for this survey. All applicants who designated themselves as being of American Indian origin were screened into the sample. An additional screening narrowed the sample to only those with hearing impairments.

Each Case Service Report (CSR) and R-300 was reproduced so the original documents could be replaced in the Department of Economic Security file. All names were erased during the reproduction phase. Information regarding the rehabilitation of the client could still be retrieved via their case service number.

Some information needed for this study was not on the CSR or R-300 forms, so an additional step was necessary. Medical information pertaining to etiology of deafness and psychological data in the form of intelligence quotient scores could only be acquired from each individual's case file. The case service files were located in the district office from which they were provided services. With the case number in hand, each district office was visited to extract the needed data.

After completion of the data gathering phase, master sheets were constructed to extract the data from the R-300's and the Case Service Reports. Categories corresponding with questions asked in the questionnaire, found in Appendix A, kept the data in an orderly manner. Additional purposes of the master sheet were to provide assurance that no information would be excluded when the computer cards were printed and this facilitated the process of punching the IBM cards. The cards were punched, verified, and fed into a computer for analysis.

Micek and Bitter (1974) established a format for the categorization of information they gathered while conducting a survey of difficult rehabilitation clients. In this survey, they classified the data into demographic, economic, and referral source characteristics. The responses were tallied into columns including those cases closed rehabilitated and closed not rehabilitated. This format allowed for a clear view of the data relative to the various classifications. The Micek-Bitter format was adapted to the analysis and presentation of the data in this survey.

CHAPTER II

REVIEW OF THE LITERATURE

Introductory Statement

Published literature dealing directly with hearing impairments among American Indians is limited to one article. White and Nickoloff (1971) surveyed the Bell Gardens-Cudahay area of Los Angeles, California, to determine the incidence of hearing impairments of Indian residents in that area. No decisive conclusions were reached because very few hearing-impaired people were located. Of the 1,000 Indian residents in that area only seven were found to have a hearing problem, therefore, no significant projections were made.

Some literature does exist relative to the geographical distribution, health, educational and employment problems of Indians. This literature is included in the review because it is important to understanding problems of hearing-impaired Indians. This information is also significant for those people who provide social services to this population.

Geographical Distribution

Acebedo (1973) states that American Indians are one of the fastest growing minorities in the United States. The Indian population has grown from a low of 237,196 in 1900 to 827,000 in 1970.

While Indians reside in all parts of the country, they are more prominent in specific western states. Taylor (1972) provides a table showing the location of Indians and Alaskan natives. The five states with 50,000 or more Indians are Oklahoma, Arizona, California, New Mexico and Alaska (see Appendix, Table B-I). These five states account for almost one-half of the United States Indian population.

Thirteen additional states have at least 10,000 or more but less than 50,000 Indians (see Appendix, Table B-II). Therefore, eighteen states (36 percent) have 701,187 Indians or 85 percent of the total Indian population of the United States.

Arizona, due to its large Indian population and varied climate, was selected to conduct the pilot survey of hearing-impaired Indians in the vocational rehabilitation process. From a health point of view, a cold climate tends to cause more viral infections which frequently lead to middle ear infections. If not medically treated, such infections can result in hearing losses. Arizona has a colder climate in the higher elevations of the northern part of the state, whereas the southern deserts have warm weather most of the year. Such a varied climate provided an added benefit to this study for purposes of comparing its impact upon the Indian people.

An Historical Perspective

Taylor (1972) provided an account of the historical events which led to the concentration of Indians on reservations in the Western United States.

From the time the first White settlers arrived until the Civil War, the Indians were regarded as strange independent groups. They did not assimilate themselves into the White society and were moved off the land to other areas of the country thus enabled the White settlers to settle on Indian land.

As the United States grew, the demand for land and furs increased resulting in a decrease of fur bearing animals. The Indian moved out, usually further west, and the White settlers quickly homesteaded the open land. The Federal Government sent envoys to talk to the Indians about the abundance of game further west. In addition, frequently the agents offered firearms, woolen garments, kegs of brandy, glass necklaces and other articles to induce the Indians to move out of the area. If the Indians hesitated, they were informed that the United States Government would not have the power to protect them if they remained. The Indians were, therefore, consistently relocated to new areas. The White settlers moved further west onto "Indian lands" and territorial disputes became an increasing problem. As a result, the United States Government established reservations primarily in the Mountain and Southwestern States. This isolated the Indians and assimilation was severely hampered.

Arizona is a Southwestern state with a large Indian population. Weaver (1974) estimated a total of 109,091 Indians living on twenty-three reservations throughout Arizona, which encompass approximately 19,665,000 acres. This data differs slightly from the 1970 census, previously mentioned; however, the state's percentage of Indian

population is among the highest in the United States. A large population of Indians is concentrated on reservations located in rural areas, where living conditions are substandard and adequate health care is frequently difficult to obtain. This lack often results in a hearing impairment to the individual.

Health

Indians in the United States suffer from a number of health problems. Steiner (1968) notes that the infant mortality rate among reservation Indians in the United States is 53.7 deaths per 1,000 live births which is more than twice the rate (25 deaths per 1,000 live births) in the general population. Of Indian infants who do survive birth, it is estimated that 500 of every 1,700 born die of preventable diseases before they are a year old. Nationwide, the life expectancy of an Indian is forty-three; in areas such as Alaska and Arizona, the life expectancy is between thirty and thirty-five. This low life expectancy may partially be attributed to the high infant mortality rate. Diseases virtually unknown elsewhere in the country, are of epidemic proportions on isolated reservations. In particular, meningitis, rubella and otitis media are prevalent among Indians and auditory disturbances are common sequela from each of these.

Weaver (1974) documents the prevalence of a number of serious diseases among Indians in Arizona; one of the most common is otitis media. If kept in check through medication or surgery, cases of otitis media will usually not develop into a sensori-neural hearing loss. When the disease is untreated however, damage to the auditory mechanism

can be severe. Where damage does occur, the ossicular chain is affected, and moderate hearing loss will result. When, this disease is left unchecked, meningitis can occur, causing a severe sensori-neural loss which results in a severe hearing loss. Indians, particularly reservation Indians, may not obtain adequate health care, resulting in cases of otitis media being undiagnosed and untreated.

Jaffe (1967) conducted a study on the incidence of ear diseases among Navaho Indians. He found chronic suppurative otitis media to be a major health problem on the Navaho reservation. In screening 2,000 school children from ages five to seventeen, central perforation (of the tympanic membrane) was found in 4.2 percent of the cases. Thirty percent with a central perforation had supperation at the time of examination and seventeen percent of the students had had previous bilateral perforations of the tympanic membranes. Overall, in Jaffe's study, 4.8 percent of the Indian children studied had chronic otitis media; these children were compared to a study in Pittsburg of non-Indians where the incidence of chronic otitis media was 0.5 percent.

Johnson (1966), in a survey of students in five boarding schools within a fifty mile radius of Gallup, New Mexico, found the incidence of chronic otitis media to be 6.4 percent. These results were slightly higher than Jaffe's findings.

Zonis (1968) found in a survey of Indians under his care at the Phoenix Area Health Services Office, 81 percent of the Indians with chronic otitis media were under the age of twenty-five. He followed up his survey with on-site otological examinations of 93 percent

of the population living in the Canyon Day community, an Indian village in Arizona. His findings revealed 64 percent of those with chronic otitis media were under the age of twenty-five. He concluded that 8.3 percent of the total population have chronic otitis media. Even though Zonis did not identify the percentage of those who were in school, the assumption can be made that many were students. The incidence of hearing loss can be assumed to be extensive among United States Indians both on and off the reservations.

Education

A mild hearing loss can affect a child's academic achievement, having a direct affect on future training and employment. Newby (1964) stated that any child with a hearing impairment almost always has some degree of language handicap. This, combined with life circumstances, directly affects the educational level of Indian students. Cahn (1969) provided demographic information indicating that home conditions of the Indian child were less conducive to educational attainment than his White counterpart. He further indicated in 1969, 40,000 Navahos--nearly a third of the entire tribe--were functional illiterates in English. The average educational level for all Indians under federal supervision is five school years with the dropout rate for the Indian child being twice the national average. Indian children scored consistently lower than White children at every grade level, in both verbal and non-verbal skills, according to national tests administered in 1965. The longer the Indian child stays in school, the further behind he falls. More than one out of five Indian males (22.3 percent)

have less than five years of schooling. Students who are deaf score lower on standardized achievement tests; this is especially true when tests have a high verbal loading, such as the verbal portion of the Weschler Intelligence Tests.

A hearing-impaired Indian child is faced with three different languages--his native Indian language at home, English in public, and English and manual communications while at school. This leads to confusion for the student and causes a decreased ability to learn.

Weaver (1974) also stated that after the child has reached age twelve, many Indian parents feel the child is old enough to make his own decisions and set his own course. Many Indian children, unlike most Americans, do not experience the constant encouragement from parents to achieve in school; parents' attitudes carry over to the hearing-impaired child and have a direct bearing on the child's success in school. The lack of encouragement by parents added to the confusion of having to deal with three different languages certainly creates situations frustrating to a student, causing him/her eventually to drop out of school.

Kelly (1967) conducted a study on 5,850 school-age children in Southern Arizona. He found that Indian children usually enter school at least one year later than most children and continue to lag behind in later years. Of the Indian student population age 16 to 18, 86 percent were at least one year behind; many were held back in the primary grades (1-3).

Bass (1969) found the dropout rate for Indians in Arizona to be 35 percent. This figure differs from a United States Senate subcommittee report which established the dropout rate of Indians to be 50 percent. These two figures are both high when compared to the dropout rate of students from the general population which was set at 29 percent.

In summary, an Indian child who has a hearing impairment is often forced to deal with three different languages. He generally begins school later, and is frequently held back in school, especially at the primary level. Of ten students who enter school, three to five never finish. The language deficit brought on by a hearing impairment can only compound the difficulties faced by a person once in the Vocational Rehabilitation process.

School achievement has a direct relationship to employment. Many jobs require the minimum of a high school education as a qualification for an entry level position. A high school diploma is generally a requirement to further training, especially if the training leads to professional occupations. The lack of education is definitely a variable which must be considered when future employment is contemplated.

Employment and Other Related Data

Figures obtained from the Bureau of Indian Affairs have indicated a range of unemployment from 12 to 74 percent, with an average of approximately 40 percent. During the winter season in some areas of the United States, the unemployment rate reaches 90 percent.

Weaver (1974) obtained statistics from the Arizona State Employment Services; figures showed that a large proportion of Indians were not in the labor force.

Statistics for 1969 showed a labor force participation rate of only 40 percent for five sample reservations; this is compared to 60 percent of the nation as a whole. Many Indians, helped by family ties and responsibilities, prefer to stay on the reservations where jobs are limited. The lower participation rate of Indians in the labor force adds greater weight to the unemployment statistics.

The United States Senate, Subcommittee on Education (1969, pt. 1:130), because of its concern, established a subcommittee to investigate the relationships of Indians to the larger society. This investigation, chaired by Robert Kennedy, was conducted in the field in August of 1967. A brief summary of their findings are as follows:

1. The average Indian's annual income is \$1,500--75 percent below the national average.
2. The unemployment rate is ten times higher than the national average.
3. The death rate of Indian children is twice as high as the national average.
4. The average Indian lives ten years less than the average non-Indian.

These figures are dismal and when the disability of a hearing impairment is considered the situation appears critical.

Other demographic data further describes the current conditions of the American Indian. Mackey and Blanchard (1972, p. 16) indicated that 71 percent of the Indian arrests were alcohol related. Juvenile

delinquency rates among Indians were several times higher than the national rural average. In a state where five percent of the people were Indians, 34 percent of the prison population was Indian. Suicide rates among Indians were generally five times higher than the national average. These statistics further point out serious inadequacies in dealing with Indians. One might suspect that the high dropout rate of school age adolescents contribute to the above figures.

The picture, as it is presented in the literature, is not a pleasant one. The lack of health care, education, and excessive high unemployment among the Indian population is even more critical when projected to the hearing-impaired Indian.

Summary

Chapter two focused on the review of the literature relevant to this survey. The literature showed that the majority of American Indians live on reservations where the infant mortality rate is twice the national average. Those children who did survive began their education later, received an inferior education, dropped out of school more frequently, and had a juvenile delinquency rate several times higher than the national rural average.

Indians living on reservations had a higher rate of health problems, some of which created the disability of a hearing impairment. Otitis media and meningitis were two contributing factors and were listed among those most frequently occurring.

Unemployment on Indian reservations ranged from 12 to 74 percent, with an average of approximately 40 percent. This is ten times higher

than the national average. Fewer jobs existed on reservations and many Indians chose not to leave for the purpose of employment.

CHAPTER III

METHOD OF PROCEDURE

This chapter describes the procedure used in the collection and analysis of the data. It covers four major topics, the procedure of collecting the data, the method used in screening cases into the sample, a discussion of the sample, and how the data was analyzed.

Procedure

Cooperation of the Arizona Department of Economic Security-Rehabilitation Services Bureau was sought through a letter asking for support in the use of client records. The Rehabilitation Services Bureau (RSB) gave full support and immediately opened their records for the purpose of conducting this survey. The only restriction placed on the use of the records was that all names be kept confidential. This was agreed upon as there was no need for individual identification by name.

Cases closed during fiscal years 1970 through 1974 were taken from the State Archives and delivered to a location where they were screened. The documents delivered were the Case Service Report (CSR) and the federal form R-300. Information from both forms lent themselves to computerization; however, the CSR provided more precise data in terms of amount of dollars spent in various phases of the rehabilitation process and number of reported disabilities. Information from

fiscal year 1974 was the only data computerized because of time and cost considerations; all cases were hand screened.

Screening

Although an accurate count was not made, an estimated 25,000 CSR and form R-300's were reviewed. Two major criteria were established to assist in selecting individuals for this survey. All referrals who designated themselves as being of Indian origin were screened into the sample. An additional screening narrowed the sample to only those with hearing impairments listed as a primary or secondary disability. A total of sixty-one subjects met both criteria and were identified as the sample in this study.

Some information necessary for this study was not available on the CSR or R-300 forms, therefore, an additional step was required. Medical data pertaining to etiology of deafness and psychological information providing intelligence quotient scores was acquired from each individual's case service file. The case service files were located in the district office. Consequently, the client's identification number and the district office code number were taken from the closure forms. Each office which had served hearing-impaired Indians was visited; case files were located and examined. All available medical and psychological data gathered by the counselors was extracted for use in this study. There were occasions when the case process did not proceed to the point where medical and psychological data was collected. There were also instances where the case file could not be

located. This was noted and the sample size was adjusted when that particular part of the data was described.

Sample

The sample consisted of sixty-one American Indians whose cases were closed by DES-RSB during fiscal years 1970 through 1974; this constituted the entire population of American Indians closed during that period of time. It contained 44 males and 17 females whose ages ranged from 15 to 57 years. Five cases were screened into the sample from fiscal year 1970, twelve cases came from fiscal 1971, ten came from 1972, nine came from 1973, and twenty-five cases came from fiscal year 1974. The five year time span was selected for two reasons: (1) It was believed that a time span of that length would yield a sample size large enough to reveal outstanding characteristics of this population; and (2) A decision was made during the screening that prior to fiscal year 1970 would yield few, if any, additional cases for inclusion in the sample.

Instrumentation

A large amount of data were made available by the procedures described above. Consequently, a format was established to categorize data into a manageable form.

This format, shown in Appendix A provided direction for the data analysis. Each of the 23 questions had a unique purpose; combined, they directed an inquiry into particular health, psychological, demographic, educational, and employment variables. In addition, information

pertaining specifically to the vocational rehabilitation process was sought.

Questions one and two required answers to health and disabling conditions among Indians served by vocational rehabilitation. These answers provided information about the etiology of hearing impairment, age of onset, and additional disabling conditions.

Questions three through seven gathered basic demographic data. The information included who made application for rehabilitation services, the sex of the applicant, years of education, income at time of referral, size of the family and the number of dependents.

Questions eight through seventeen focused on the vocational rehabilitation process. Data from this category was broken into more definite areas such as: referral sources, length of time in both the referral and applicant stages, the length of time in evaluation and training, and the amount of money spent in each category.

Questions 18 and 19 pertained to intelligence scores and the method by which these scores were attained. Questions 20 through 22 provided data on how cases were closed. The final question asked specifically, "What types of employment do hearing-impaired Indians find?". For example, is employment skilled, semi-skilled, professional, are there opportunities for jobs at all?

Information from the entire group of questions was sufficient to provide basic knowledge of the Indian in the vocational rehabilitation process. It also served to provide a foundation from which future studies can be made. Finally, the data gained through this line of

inquiry constituted a beginning in the search for a deeper understanding of the hearing-impaired American Indian.

Classification and Analysis of the Data

The data were placed into intervals whenever possible to facilitate interpretation and dichotomized only when a yes or no response was required. Minium (1970) gave reasons for grouping data. He stated that when the range of scores are widespread, grouping allows for a more meaningful understanding of the data. Minium went on to say that with grouping, computation of the data are easier, it smoothes out irregularities in the distribution frequencies and permits the frequency distribution to be represented graphically. Minium did point out that there are disadvantages to grouping. The greatest disadvantage is that information is lost because one cannot definitely say all the scores are evenly dispersed throughout an established interval. Another point made by Minium was that raw scores do not always result in a unique set of grouped scores. The amount of information gained will depend upon the size of the group interval. As the group interval becomes larger, it will yield less specific information about individuals.

Micek and Bitter (1974) established a format for the categorization of information gathered while conducting a survey of difficult rehabilitation clients. In this survey they classified their data into demographic, economic and referral source characteristics. They then tallied the responses into columns showing those rehabilitated and those not rehabilitated. This format allowed for a clear view of data falling into the various classifications.

The Micek, Bitter format was readily adapted to the analysis and presentation of the data in this survey. It was expanded to include the additional information sought in this survey.

Preparation of the Data

Master sheets were constructed to extract the data from the R-300's and Case Service Reports. Categories were written to correspond with the questions asked in the demographic survey. Data were then extracted and placed into the appropriate categories. The purpose of using the master sheet was to include as much data as possible and to insure no information was excluded when computer cards were punched; in addition this facilitated the process of punching the IBM cards. The cards were punched and verified at the Eastern Montana College Computer Center, Billings, Montana. Nine programs were then written and the cards were fed into an IBM 360-20 computer. The first program loaded the disk file; the eight subsequent programs analyzed and tabulated the disk file. The disks were stored at the EMC Computer Center for future reference.

CHAPTER IV

RESULTS

The purpose of this study was to provide data of a demographic nature for use by rehabilitation personnel in their work with hearing-impaired American Indians. The study concentrated on the vocational rehabilitation process; factors such as general demographic information, educational attainment, health, and employment conditions were included. Data pertaining to intelligence scores and types of employment found by those closed rehabilitated were gathered and has been presented in this chapter.

Results found in the analysis of the data have been presented in the form of tables whenever possible. A discussion follows each table including appropriate percentages, range of scores, and the mean scores used to describe the data.

The order of presentation of the tables will follow the same order established by the questionnaire found in Appendix A.

Etiology of Hearing Impairments

In Table I the etiology of hearing impairments is presented. The etiology was provided in 48 of the 61 cases. This represented 79 percent of the sample.

TABLE I

Etiology of Hearing Impairment Among Indians Closed by Arizona Rehabilitation Service Bureau During Fiscal Years 1970-74*

<u>Etiology</u>	<u>n</u>	<u>%</u>	<u>Rehabilitated</u>	<u>Not Rehabilitated</u>
Congenital	12	25	2	10
Otitis Media	10	21	5	5
Infection	7	15	2	5
Meningitis	1	2	1	0
Trauma	3	6	0	3
Unknown	13	27	3	10
Other	2	4	1	1
	<u>n =48</u>	<u>100%</u>	<u>14</u>	<u>34</u>

*The Etiology of Deafness was provided in 48 of the 61 closed cases.

Congenital conditions were found to be the leading cause of hearing impairments among the sample group; of the etiologies reported, 25 percent were born with this condition. Seventeen percent of those with congenital hearing impairments were closed rehabilitated.

The second leading cause of hearing impairments was otitis media. Twenty-one percent of the sample were hearing-impaired due to otitis media; 50 percent of this group was closed rehabilitated. Otitis Media is frequently caused by a viral infection; when the infection is not medically treated it will result in a hearing loss. Thirty-six percent of the sample had hearing losses due to otitis media and infection, which is the third leading cause of hearing impairments.

Many hearing-impaired people are unaware of the initial etiology. Twenty-seven percent of the sample were hearing-impaired by causes which were unknown. This is not uncommon when causes of deafness are sought. Many physicians, when making a diagnosis of a hearing impairment, cannot trace the cause to a known factor. Twenty-three percent of the cases who became hearing-impaired by an unknown etiology were closed rehabilitated.

Etiologies of "trauma" and "other" accounted for 10 percent of the reported cases. Specific causes were not given in the case file. Of this group, one person was closed rehabilitated.

Additional disabilities were reported in 41 of 61 cases. This was 67 percent of the sample population. Table II shows what the additional disabilities were and the percentage of each.

TABLE II

Additional Disabilities of Hearing-Impaired Indians
Closed by Arizona Rehabilitation Services Bureau
During Fiscal Years 1970-1974*

	n	%	Rehabili- tated	Not Rehabili- tated
Visual Disabilities	2	5	1	1
Orthopedic Disabilities	8	20	4	4
Mental Retardation	5	12	2	3
Personality Disorders	13	32	2	11
Alcoholism	3	7	1	2
Tuberculosis	3	7	1	2
Cardiac Disabilities	3	7	1	2
Other	4	10	2	2
	<u>n= 41</u>	<u>100%</u>	<u>14</u>	<u>27</u>

*Additional disabilities were found in 41 of the 61 closed cases.

Personality disorders accounted for the highest percentage of secondary disabilities. Thirty-two percent of the sample were diagnosed in this manner and of that group, 15 percent were successfully closed.

Orthopedic disabilities were the second leading additional disabling condition accounting for 20 percent of the sample. Fifty percent of the clients with this additional problem were closed rehabilitated.

The third leading additional disability was mental retardation. Five clients had this diagnosis and of the five, two were closed in employment.

Visual disabilities, alcoholism, tuberculosis, and cardiac disabilities were listed as known causes of additional disabilities. This group accounted for 26 percent of the sample. Of this group, 36 percent were successful closures.

Ten percent of the sample had secondary disabilities listed as "other" which means no definite diagnosis was made. Of the four people in this category, two were closed in employment.

Table III presents data pertaining to demographic characteristics of hearing-impaired Indians closed by RSB during fiscal years 1970 through 1974.

TABLE III

Demographic Characteristics of Hearing-Impaired
Indians Closed by Arizona Rehabilitation Services
Bureau During Fiscal Years 1970-1974

Demographic	n	%	Rehabili- tated	Not Rehabili- tated
Sex				
Male	44	72	14	30
Female	17	28	4	13
Residence				
Rural	15	25	4	11
Urban	6	10	1	5
Reservation	40	66	13	27
Age				
0-24	42	69	14	28
25-49	16	26	3	13
50 or More	3	5	1	2
Marital Status				
Married	15	25	5	10
Widowed	0	0	0	0
Divorced	1	2	0	1
Separated	1	2	0	1
Never Married	39	64	13	26
Unknown	5	8	0	0
Education				
Less than 9 Years	23	38	5	18
9 - 12	28	46	8	20
More than 12	2	3	2	0
Unknown	8	13	3	5
Number of Dependents				
None	41	67	13	28
1 - 2	9	15	2	7
3 or More	11	18	3	8
On Welfare at Referral				
Yes	11	18	3	8
No	50	82	15	35

The sample included 44 males and 17 females. Fourteen (32 percent) of the males were closed rehabilitated as opposed to four (24 percent) of the females.

Sixty-six percent of the sample lived on Indian reservations, 25 percent lived in rural areas and 10 percent lived in urban areas. In this group the cases that were closed rehabilitated included: 33 percent of those living on reservations, 27 percent living in rural areas and 17 percent living in urban areas.

Ages of the sample ranged from a low of 15 to a high of 58, with the mean age being 24.6 years. Forty-two individuals (69 percent) were below the age of 24. Sixteen people (26 percent) were in the age range of 25 to 49 years, and three (five percent) were above the age of 49. In this group the closed rehabilitated cases included: 33 percent below 24 years of age, 17 percent between 25 and 49, and 33 percent 50 years or older.

Sixty-four percent of the cases were never married. One person was separated and one person was divorced; combined, they comprised four percent of the sample. Twenty-five percent of this group was married. Exactly one-third of those who were never married and those who were married were closed rehabilitated. Neither the divorced or separated clients was successfully closed.

Years of education reported by the sample ranged from zero to 13 with the mean of 9.2. On eight occasions, years of education were not reported. Twenty-three individuals (38 percent of the sample) reported less than 9 years of schooling. Twenty-eight people

(46 percent) had from nine to twelve years of education and two people had more than 12 years of education. Of those with less than nine years of education, 22 percent were closed in employment. For those with nine to twelve years of schooling, 29 percent were closed rehabilitated and 100 percent of the two individuals with more than 12 years of education were successfully closed. Three of eight people (38 percent) whose education was not reported were closed rehabilitated.

No dependents were reported by 41 people (67 percent), nine (15 percent) reported one to two dependents, and 11 (18 percent) reported three or more dependents. The range for dependents was from 0 to 12 with a mean of 4.5. Successful closure was reported by 32 percent of those without dependents, 22 percent of those with from one to two dependents, and 27 percent with three or more dependents.

Fifty clients (80 percent) were not on welfare at the time of referral. Eleven clients (18 percent) were receiving welfare benefits. Twenty-seven percent of those on welfare were closed in employment whereas 30 percent of those not on welfare were closed rehabilitated.

Table IV presents data relative to the Native American in the vocational rehabilitation process. The table focuses on referral sources, amount of time spent in referral, evaluation and training statuses, dollars spent in each of the statuses and how cases were closed by the rehabilitation counselors.

TABLE IV

Expenditure of Money and Time in the Rehabilitation Process
of the Hearing Impairment Among Indians Closed by Arizona
Rehabilitation Services Bureau During Fiscal Years 1970-74

Characteristics	n	%	Rehabili- tated	Not Rehabili- tated
Referral Source				
Educational Institutions	18	30	10	8
Hospitals & Sanatoriums	6	10	0	6
Public & Private Organizations	19	31	5	14
Individuals	9	15	1	8
Health Organizations	2	3	0	2
Welfare	7	11	2	5
Time in Referral				
3 Mos. or Less	39	64	13	26
4 to 6 Mos.	6	10	2	4
7 to 12 Mos.	10	16	0	10
13 to 18 Mos.	3	5	1	2
More than 18 Mos.	3	5	2	1
Time in Evaluation				
3 Mos. or Less	26	43	6	20
4 to 6 Mos.	12	20	4	8
7 to 12 Mos.	15	25	5	10
More than 12 Mos.	5	8	2	3
Cost of Evaluation				
Less than \$100.00	41	67	8	33
\$100.00 to \$500.00	13	21	7	6
More than \$500.00	7	11	3	4
Time in Training				
6 Mos. or Less	42	69	6	36
7 to 12 Mos.	4	7	3	1
12 to 24 Mos.	2	3	1	1
25 to 36 Mos.	7	11	4	3
More than 36 Mos.	6	10	4	2
Cost of Training				
Less than \$100.00	37	61	3	34
\$100.00 to \$500.00	8	13	4	4
More than \$500.00	16	26	11	5

Referrals of clients to the Rehabilitation Services Bureau came from two major sources: first, was Educational Institutions such as high schools, colleges, universities, trade schools and schools for the physically or mentally handicapped; and secondly, were Public and Private Institutions such as the State Employment Office, Social Security Disability Insurance, Workman's Compensation, and the Selective Service System. These accounted for 61 percent of the referrals to vocational rehabilitation, providing 30 to 31 percent respectively. Referrals by individuals accounted for 15 percent, welfare 11 percent, hospitals and sanitariums 10 percent, health organizations, which included rehabilitation facilities, public health nurses, and community mental health centers accounted for three percent.

Of the 18 cases referred by Educational Institutions, 56 percent of the cases were closed rehabilitated. Twenty-six percent of the referrals from Public and Private Organization and 28 percent of the welfare referrals were successfully closed. One of the nine (11 percent) referred by individuals was closed in employment.

Sixty-four percent of the clients referred to vocational rehabilitation were in referral status less than three months. Ten percent remained in this status from four to six months, 16 percent from seven to 12 months, five percent from 13 to 18 months and five percent more than 18 months. The length of time in referral status for closed rehabilitated cases included: 33 percent less than three months, 33 percent from four to six months, none from seven to 11 months, 33 percent from 13 to 18 months and 66 percent for more than

18 months. The time spent in referral status ranged from a low of zero months to a high to 22 months. The mean time in referral was 4.1 months.

Time in Evaluation

Forty-four of the clients (72 percent) referred to the RSB received some form of evaluation. Seventeen people (28 percent) were closed prior to the initiation of the evaluation process. Nine referrals received less than three months of evaluation. Twelve people were evaluated from four to six months, 15 from seven to 12 months, and five were evaluated more than twelve months.

Twenty-three percent of those with less than three months of evaluation were successfully closed. One-third of those evaluated from four to six months and seven to 12 months were closed in employment. Forty-percent with more than 12 months evaluation were successfully closed.

Time in evaluation ranged from zero to 25 months. The mean time in evaluation was 6.1 months for the entire sample, but when determining the mean for only those who received evaluation it increased to 8.4 months.

Twenty-six clients (43 percent) received training. Time in training ranged from a low of one month to a high of 62 months. The mean time in training, for those who received it, was 23 months. The mean time in training for the entire sample was 9.8 months. Forty-two people (69 percent) received less than six months of training. Four (7 percent) received from seven to 12 months, two (3 percent) from

12 to 24 months, seven (11 percent) from 25 to 36 months and six (10 percent) received more than 36 months of training.

Fourteen percent with less than six months of training were closed rehabilitated. For those with from seven to 12 months of training, 75 percent were successfully closed. Fifty percent from 12 to 24 months, 57 percent from 25 to 36 months and 66 percent with more than 36 months of training were closed in employment. Of the 26 clients who were provided training, 69 percent were considered rehabilitated.

Cost of Evaluation

Evaluations for the five year period cost the RSB \$10,740 for 31 clients. The mean amount spent in evaluation for the entire sample was \$176.00 per client; the mean cost was \$346.00 for clients who actually went through evaluation. The range was from zero to \$2,259.00.

Sixty-seven percent of the sample had less than \$100.00 spent for evaluation, 21 percent had evaluations costing from \$100.00 to \$500.00 and 11 percent had more than \$500.00 spent for their evaluation. Twenty percent with \$100.00 or less spent on evaluations were closed rehabilitated. For those from \$100.00 to \$500.00 spent on evaluations 54 percent were closed in employment. Forty-three percent of those whose evaluations cost more than \$500.00 were successfully closed.

Cost of Training

The cost of training for the five year period was \$31,555.00. The range of training costs, for those who received it, was from a low of \$240.00 to a high of \$4,751.00, with a mean cost of \$1,214.00. For

the entire sample the mean cost of training was \$517.00. For the entire sample, eight percent of those with training costs of less than \$100.00 were successfully closed. Fifty percent of those with training costs ranging from \$100.00 to \$500.00 were closed rehabilitated and 69 percent of those with \$500.00 or more spent for training were close in employment.

Cost of Maintenance

Fourteen clients received maintenance during the rehabilitation process. Three people (five percent) were granted less than \$100.00, four people (seven percent) received from \$100.00 to \$500.00, and seven people (11 percent) received more than \$500.00 maintenance. Forty-seven people (77 percent) received no maintenance.

Of the 50 clients who received less than \$100.00 maintenance, 17 (25 percent) were closed in employment. One person (25 percent) whose maintenance ranged from \$100.00 to \$500.00 was successfully closed and 57 percent of those whose maintenance was more than \$500.00 were closed rehabilitated.

Eighteen hearing-impaired Native Americans were closed in employment from fiscal years 1970 through 1974. Weekly income from employment ranged from \$55.00 to \$298.00 with the mean salary of \$103.00.

Total Rehabilitation Expenditure

The entire cost of all rehabilitation services to hearing-impaired clients for the five year period included in this survey was \$60,914.00. Evaluations cost \$10,740.00, training expenses were \$35,355.00, and maintenance expense of \$14,819.00 was paid. The mean

expenditure was \$999.00 per client. Evaluations cost an average of \$176.00, training expenses averaged \$580.00 per client, and maintenance average \$243.00 per client. For those who were closed rehabilitated, the average cost per client was \$3,384.00.

Closures

Thirty individuals were closed prior to being accepted for vocational rehabilitation services. This accounted for nearly one-half of the sample (49 percent). Eighteen people (30 percent) were successfully rehabilitated and closed in employment. Twelve individuals (20 percent) completed their rehabilitation plan, but did not enter employment and one person was accepted for rehabilitation services but was closed prior to the initiation of the rehabilitation plan. Thirty cases (49 percent) were closed prior to acceptance for rehabilitation services. The reasons for closure shown in Table V were given on only 24 of these cases.

TABLE V

Reasons for Closure Prior to Acceptance
for Vocational Rehabilitation Services

	n
Unable to Locate	12
Handicap Too Severe	1
Refused Further Services	3
Failure to Cooperate	3
No Disabling Condition	0
No Vocational Handicap	3
Other	<u>2</u>
	n= 24

Twelve people were closed because the counselor was unable to locate the client, one due to the death of the client. Three were closed because the client refused further services, three because the client failed to cooperate with the counselor, three clients had no vocational handicap and two cases were closed for "other" reasons. One client was institutionalized and was closed prior to acceptance for services because of the severity of the handicap.

Tables were not constructed for the last two topics--Occupational Information and Psychological Evaluations--because by doing so it would not clarify to any degree the information being presented. In addition, the number of subjects available for inclusion into the data were minimal.

Occupational Information

The RSB used the Dictionary of Occupational Titles (DOT) to categorize specific jobs into occupational categories. The DOT lists eight major categories. Jobs found by those closed rehabilitated fell into five of the eight major areas. Two clients were employed in professional and technical positions. Five clients worked in clerical and sales, four people in service occupations, such as janitor work, and four people did bench work which involved radio and television repair and silversmithing. Finally, three clients were employed in structural work, such as welding, painting houses and carpentry. None of the clients worked in farm, fishing or forestry industries.

Psychological Evaluations

Intelligence scores were reported for 23 people or 38 percent of the 61 cases in this sample. The Weschler Adult Intelligence Scales were used as the measuring instrument in 19 of the 23 cases. The Weschler Intelligence Scale for Children (WISC) was used once and the Army Beta was used on three occasions.

Intelligence quotients ranged from a low of 67 to a high of 120. The mean of all scores reported was 94. Scores derived from the WAIS were reported in three different ways. On seven occasions the verbal and performance sections were used to provide a full scale score. The performance section was used in nine instances and scores were reported with no information on how they were derived.

The mean intelligence, by using the full scale was 81. Ninety-seven was the mean intelligence score when only the performance section

was used. A mean was derived from scores reported on the verbal section only, this resulted in a mean verbal score of 71.

A mean IQ resulting from use of the Army Beta was 99 and the WISC produced a score of 94, but no indication was given as to how the score was derived.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study was initiated in order to provide research data in two specific areas of interest. The first purpose was to conduct a pilot survey. This necessitated a design to gather data on selected medical, educational, psychological and vocational variables related to the hearing impaired Native American client, during the vocational rehabilitation process. Each of the variables have a direct impact on successful rehabilitation closure.

The second purpose of this study was to generate literature regarding the hearing-impaired Indian as a recipient of vocational rehabilitation services. It is anticipated that the data produced by this study will enable additional research to be designed to place more controls on future studies.

Review of the Literature

The initial review of the literature produced only one article which related directly to the major problem examined in this study. Therefore, the review was expanded to include educational, medical, psychological and occupational information.

The literature indicated that the majority of American Indians live on reservations where the infant mortality rate is twice the

the national average. Those children who survive tend to begin their education later, receive an inferior education, drop out of school more often, and have a juvenile delinquency rate several times higher than the national average. In addition, Indians living on reservations have a higher rate of health problems, some which create the disability of a hearing impairment. Otitis media and meningitis are two contributing factors and are listed among those which occur most frequently.

Unemployment on Indian reservations ranges from 12 to 74 percent, with an average of 40 percent. Fewer jobs are available to persons on reservations. Frequently, Indians choose not to leave for the purpose of employment creating a dismal vocational picture.

Procedure

Sixty-one cases closed by the Arizona Rehabilitation Services Bureau were screened into the sample for purposes of the study. The subjects were identified as being of Indian origin and had been diagnosed as having a hearing impairment.

A questionnaire was designed for use in extracting information from the records in an orderly manner. The questions related directly to the variables referred to previously. The data were punched into computer cards and programs were written. The programs enabled the raw data to be organized into intervals whenever possible and dichotomized when a yes or no response was required. The data were then divided into medical, educational, psychological and rehabilitation variables. Each variable was sub-divided into categories of rehabilitated and not rehabilitated. This information was then placed into

tables showing the etiology of hearing impairments, additional disabling conditions, demographic characteristics, data relating to the vocational rehabilitation process and how unsuccessful cases were closed.

As a result of using interval data, the cells in some of the categories have a small number of cases. Consequently, when percentages were computed large differences resulted.

Conclusions

During the presentation of the data all the variables were given consideration. Some of them, medical, psychological, vocational and educational have greater significance than others in that they were related to successful rehabilitation outcome. Therefore, they were examined in greater detail.

Caution must be exercised in making generalizations based on the data presented in the tables in Chapter IV. As the result of using interval data, some categories contain a small number of cases, consequently a small numerical difference may result in a large percentage when the numbers are converted.

Medical

Relative to the known etiologies, congenital conditions were the leading causes of hearing impairments. Twenty-five percent of the people in the sample became hearing-impaired because of a birth defect. Otitis media was the second leading cause, accounting for 21 percent of the sample. It should be noted, however, that otitis media results from viral infections. Thus, by including otitis media with the third

leading cause--infections--36 percent of the sample became hearing-impaired because of illnesses. Twenty-seven percent of the sample lost their hearing for unknown reasons while meningitis, trauma and "other reasons" accounted for 12 percent of the sample. Contrary to the literature review, meningitis was not found to be a leading cause of hearing impairments. It is important to note that successful closure was attained by only 17 percent of those where the etiology was a congenital condition. Fifty percent of the people who lost their hearing because of otitis media were closed rehabilitated. However, when those who lost their hearing due to otitis media are combined with those who lost their hearing because of infections, the success rate is lowered to 41 percent. The data indicated a wide discrepancy as to causation of deafness and successful rehabilitation which invites further investigation.

Additional disabilities were reported in 41 of 61 cases or 67 percent of the sample population. One of these disabilities was personality disorders which accounted for the highest percentage of secondary disabilities. Thirty-two percent of the sample were diagnosed with this problem. Of the group so identified, 15 percent were successfully closed.

Orthopedic disabilities were the second leading additional disability accounting for 20 percent of the sample. Fifty percent of the clients with this additional problem were closed rehabilitated.

The third leading additional disability was that of mental retardation. Five clients were diagnosed as mentally retarded and two or 40 percent were closed in employment.

Visual disabilities, alcoholism, tuberculosis, and cardiac disabilities were also listed as known causes of additional disabilities. This group accounted for 26 percent of the sample. Of the 26 percent, 36 percent were successful closures.

Ten percent of the sample had secondary disabilities listed as "other" therefore, no definite diagnosis was made. Of the four people in this category, two were closed in employment.

The classification of a personality disorder is based upon White middle class norms; Indians with unusual behavior can easily be erroneously labelled. Indians are culturally different, frequently behave according to their own standards and therefore do not fit into the typical norm. A good example of this is the use of psychological testing to diagnose mental retardation. Each time the verbal portion of the WAIS or WISC was used, it depressed the intelligence score. The result was that the individuals tested did not meet the verbal standard established by the dominant culture and consequently were labelled as being retarded.

Demographic Data

Nearly three times as many males (72 percent) were referred to the RSB as females (28 percent). Males were successfully closed more often than females; 32 percent of the males were closed rehabilitated as opposed to 24 percent of the females.

The majority of the clients (66 percent) lived on Indian reservations. Twenty-five percent resided in rural areas and 10 percent in

urban areas. Of the people who were successfully closed, 33 percent lived on reservations. A total of 27 percent lived in rural areas, and 17 percent were from homes in urban areas.

Sixty-nine percent of the sample fell below the age of 24 years. Twenty-six percent were 25 to 49 years and five percent were 50 years old or above. Thirty-three percent of those below the age of 24 years, 17 percent of those between 25 and 49, and 33 percent of those whose ages were 50 years or more were closed rehabilitated.

Thirty-nine people (64 percent) were never married. One person was divorced and one person was separated; they accounted for four percent of the sample. Fifteen people or 25 percent of the sample were married. Thirty-three percent of each of two groups, those who were married and those who were never married, were closed in employment. Successful closure was not achieved by clients who were divorced or separated.

Twenty-three clients (32 percent) were indicated as having less than nine years of education. Twenty-eight individuals (46 percent) had from nine to 12 years of education, and two people (3 percent) had completed more than 12 years of schooling. The educational level of eight clients (13 percent) was not reported. Of the clients closed in employment, 22 percent had less than nine years of education, 29 percent had from nine to 12 years, and 100 percent of the two clients with more than 12 years of education were employed. Thirty-eight percent of those whose educational level was not reported were rehabilitated.

Sixty-seven percent of the people in the sample reported no dependents. Fifteen percent reported one to two dependents, and 18

percent reported three or more dependents. Successful rehabilitation closure was reached by 32 percent of those without dependents, 22 percent of those from one to two dependents and 27 percent of those with three or more dependents.

Eighty-two percent of the people in the sample were not on welfare when they were referred to the RSB, while 18 percent were receiving welfare benefits. Twenty-seven percent of clients receiving welfare were closed rehabilitated; 30 percent of the clients not on welfare were closed rehabilitated.

This data indicated more males than females were referred for rehabilitation and a greater percentage of males were successfully closed. Most of the clients referred were from reservations or rural areas, however, the district offices from which counselors worked were located in urban areas.

The Indians being served were relatively young and they accounted for most of the rehabilitants. Well over one-half of the cases (64 percent) were never married, therefore, marriage was not a criteria for successful closure. Education showed a positive correlation to rehabilitation success; the more education, the greater chance of employment.

Most of the Indians in the sample were not on welfare; only 18 percent were receiving welfare benefits. However, none of the referrals reported an income at the time the referral was made.

The Rehabilitation Process

Educational Institutions and Public and Private Agencies accounted for 61 percent of the referrals. Fifteen percent of the

referrals were made by individuals, the Department of Welfare made 11 percent, hospitals and sanitoriums referred 10 percent and health organizations accounted for three percent of the referrals.

Fifty-six percent of those clients referred by Educational Institutions were closed rehabilitated. Referrals from Public and Private Institutions accounted for 26 percent of the successful closures. This was followed by Department of Welfare referrals (28 percent) and by referrals made by individuals (11 percent).

Thirty-nine clients (64 percent) remained in referral status less than three months, 6 clients (10 percent) from four to six months, 10 clients (16 percent) from seven to 12 months, three clients (five percent) from 13 to 18 months and three clients (5 percent) longer than 18 months. Of those who were closed rehabilitated, 33 percent were in referral status less than three months, 33 percent from four to six months, none from seven to 12 months, 33 percent from 13 to 18 months and 66 percent longer than 18 months.

Forty-four clients (72 percent) referred to the RSB were evaluated as to vocational potential. Nine clients were in evaluation less than three months, 12 people were evaluated from four to six months, 15 from seven to 12 months and five clients for more than 12 months. Closed rehabilitated clients included: 23 percent in evaluation less than three months, 33 percent who were evaluated from four to six months and seven to 12 months and 40 percent with more than 12 months evaluation.

Forty-four clients were evaluated, however money was spent for evaluations of only 31 people. Eight clients (20 percent) were

rehabilitated with less than \$100.00 spent on evaluations for each of them. Seven of 13 clients (54 percent) with evaluation costs from \$100.00 to \$500.00 were closed in employment. Three of the seven clients with evaluation cost in excess of \$500.00 were successfully closed.

Funds were utilized for vocational evaluations for only 31 persons, although a total of 44 clients were indicated as having received evaluative services.

Forty-two people (69 percent) received less than six months of training. Four clients (seven percent) received from seven to 12 months, two people (three percent) from 12 to 24 months, seven clients (11 percent) from 25 to 36 months and six persons (10 percent) were trained for more than 36 months.

Successful rehabilitation closure was achieved by 14 percent with less than six months of training, 75 percent with from seven to 12 months, 50 percent from 12 to 24 months preparation, 57 percent of those with from 25 to 36 months and 66 percent with more than 36 months of training.

Eight percent of those clients with less than \$100.00 spent for training were closed in employment. Fifty percent of the clients with training costs from \$100.00 to \$500.00 were rehabilitated and 69 percent of those with training costs of \$500.00 or more were successfully closed.

Seventy-seven percent of the sample received no maintenance during the rehabilitation process. Fourteen clients received financial support: three people (five percent) were provided with less than

\$100.00; four clients (seven percent) received from \$100.00 to \$500.00; and seven individuals (11 percent) were provided with more than \$500.00 in maintenance.

Twenty-five percent of the clients receiving less than \$100.00 maintenance were rehabilitated. One client (25 percent) with maintenance expenses from \$100.00 to \$500.00 was rehabilitated and 16 people (57 percent) with more than \$500.00 in maintenance were employed.

The data showed, as the amount of money spent for an individual's rehabilitation increased, so did his chances of successful closure. Only three percent of those clients whose total rehabilitation expenditures were less than \$100.00 were closed employed. Seventeen percent of the sample whose expenditures ranged from \$100.00 to \$500.00 were rehabilitated, and 62 percent of the people whose rehabilitation expenditures exceeded \$500.00 achieved employment.

Eighteen people (30 percent) were employed and receiving wages at closure. Forty-three people had no earnings when their cases were closed by the state agency; these were either closed prior to acceptance or did not complete their rehabilitation plan.

Thirty people (49 percent) were closed prior to being accepted for rehabilitation services; within the sample, eighteen clients (30 percent) achieved successful closure. Twelve clients (20 percent) were accepted for rehabilitation and a plan of services was written; however, they did not complete their plan. One client (one percent) was accepted for services but did not continue with the agency to have a plan of services developed.

The reasons cases were closed prior to acceptance were given for 24 of the 30 cases. The counselor could not locate twelve people (40 percent), one person's (three percent) disability was too severe and 9 people (30 percent) either refused services or had no disabling condition which constituted a vocational handicap.

For those clients who were closed in employment, 2 clients (11 percent) found jobs in professional and technical areas, five clients (28 percent) worked in clerical and sales, four people (22 percent) worked in service occupations and three people (17 percent) did structural work.

Psychological evaluations are verbally loaded when used to determine the intelligence of hearing-impaired Indians. First, their culture does not require a sophistication in the English language and secondly, due to their hearing impairment, there is a disadvantage when verbal instructions are presented or questions are asked orally.

Education showed a positive relationship to successful rehabilitation, therefore, one would expect a higher rate of rehabilitation from those referred by Educational Institutions. Clients referred from Public and Private Organizations whose function is to provide vocational placement have a higher probability of successful closure. The number of clients referred from other sources was so small that conclusions cannot be drawn from the data at hand.

The study indicated that the faster a person proceeded through the referral and evaluation statuses, the better his chances were of rehabilitation. This was true with clients in the referral status,

but was not the case in the evaluation process. The data were unclear regarding the amount of time in training; there was no definite pattern to draw the conclusion that more training enhanced successful rehabilitation for the people in this sample.

The amount of money spent in all phases of the rehabilitation process showed conflicting patterns. The chances of successful rehabilitation increased as more money was spent for training and for the entire rehabilitation process. However, the data were not clear regarding success in relation to cost of evaluations. Interestingly, as the amount spent for maintenance decreased, the number of successful rehabilitants increased.

Recommendations

Ideas for additional research were generated as a result of this study. Further examination of suggested topics would provide needed information, as well as increase understanding of the hearing-impaired Native American.

The first recommendation relates to the etiology of hearing impairments. Clients who lost their hearing because of otitis media achieved successful rehabilitation more often than those who lost their hearing due to congenital conditions. A correlational study could be conducted using the variables of etiology and successful rehabilitation.

The second recommendation relates to additional disabilities. It seems that a high percentage of the subjects in this study had additional disabilities. A study could be made to determine whether this sample was unique or if the frequency of additional disabilities were similar to the general population.

The third, fourth and fifth recommendations pertain to the rehabilitation agency and do not require further research. First, professionals who are trained to work with the deaf should also receive training regarding the Native American cultures. Personnel who understand the culture of the people he is providing services to, will provide better services. Secondly, this study revealed a high number of additional disabilities in the sample. Agency personnel trained to work with the deaf must also have more than superficial knowledge of other disabling conditions. Finally, consideration should be given to opening field offices in locations more accessible to the client seeking services. Personnel who are readily available to clients will have less closures for the reason of "unable to locate".

The sixth recommendation is to conduct a study correlating the time in referral and evaluation, the time in training, and the amount of money spent for rehabilitation. This study indicated some trends in each of these areas, but no definite conclusions can be drawn from the data.

The seventh and final recommendation is related to psychological evaluations administered to the hearing-impaired Indian. Research should be conducted to learn whether there is an additional disadvantage to those Indians who have a hearing impairment when they are tested with an instrument which has a high verbal loading.

APPENDIX A

QUESTIONNAIRE

1. What are the causes of hearing impairments among Indians served?
2. What are the additional disabilities if they are reported?
3. Number of years of school completed at time of referral?
4. What is the average age of Indians who are referred?
5. What is the marital status of the referrals?
6. If married, what is the size of the family?
7. What is the average income at referral?
8. What are the referral sources of Indians to Vocational Rehabilitation?
9. How many months elapsed between the referral being made and an application being signed?
10. How much time is used to complete the evaluation process?
11. How long, in months, does it take the hearing-impaired Indian to complete the evaluation process?
12. What is the average length of time in training if it is provided?
13. Does the hearing-impaired Indian receive welfare benefits at the time of referral?
14. What is the average cost of evaluations?
15. What is the average cost of training?
16. Once employed, what is the average monthly salary of the hearing-impaired Indian?
17. What is the average cost of the entire rehabilitation process?

18. What kinds of psychological evaluations are given?
19. What is the average intelligence for those who have had a psychological evaluation?
20. For the Indian applicants closed prior to acceptance, what is the frequency of their being closed for reasons of "uncooperative", "unable to locate", or "not feasible for services"?
21. What percentage of hearing-impaired Indians do not complete a rehabilitation plan after it has been initiated?
22. What percentage of Indians fail to initiate an accepted plan?
23. What kinds of employment do hearing-impaired Indians find?

APPENDIX B
 TABULATION OF INDIAN POPULATIONS
 Table B-I
 States With 50,000 or More Indians

State	Indian Population	Percent of Total State Population
Oklahoma -----	97,731	----- 3.8
Arizona -----	95,812	----- 5.4
California -----	91,018	----- 0.5
New Mexico -----	72,788	----- 7.2
Alaska -----	51,528	----- 17.0
	-----	-----
Total -----	408,877	----- 1.6

Table B-II

States With 10,000 But Less Than 50,000 or More Indians

State	Indian Population	Percent of Total State Population
North Carolina	43,487	.86
Washington	33,386	.98
South Dakota	32,365	4.86
New York	28,330	.16
Montana	27,130	3.91
Minnesota	23,128	.60
Wisconsin	18,924	.43
Texas	18,132	.16
Michigan	16,854	.19
North Dakota	14,360	2.33
Oregon	13,510	.65
Illinois	11,413	.10
Utah	11,273	1.06
Total	292,292	

REFERENCES

- Acebedo, Leon. The Search for Identity. Unpublished master's theses, University of California at San Diego, 1973.
- Bass, Willard. The American Indian High School Graduate. Albuquerque Southwestern Cooperative Education Laboratory Incorporated, 1969.
- Bowie, Frank. Non-White Deaf Persons: Educational, Psychological, and Occupational Considerations. American Annals of the Deaf. June, 1971, pp. 357-361.
- Cahn, Edgar S. Our Brother's Keeper: The Indian in White America. New York: The World Publishing Company, 1969.
- Kelly, W. K. A Study of Southern Arizona School Age Children, 1966-67. Tucson Bureau of Ethnic Research, University of Arizona, 1967.
- Jaffe, Burton F. The Incidence of Ear Disease in the Navajo Indians. Paper read before the American Medical Association Convention. June, 1967.
- Johnson, Ronald L. Chronic Otitis Media in School Age Navajo Indians. Paper read before the Clinical Society and Commission Officers Association of the U.S. Public Health Service. Baltimore, Maryland, May, 1966.
- Mackey, J. and Blanchard, E. The American Indian, The Black American, The Mexican-American, The Puerto Rican. Washington, D.C.: National Rehabilitation Association, 1972.
- Micek, Leo and Bitter, James. Service Delivery Approaches for Difficult Rehabilitation Clients, Rehabilitation Literature. 1974, 35, pp. 258-271.
- Minium, E. W. Statistical Reasoning in Psychology and Education. New York: John Wiley and Sons, Inc., 1970.
- Newby, Hayes A. Audiology. New York: Meredith Publishing Company, 1964.

- Steiner, Stan. The New Indians. New York: Dell Publishing Co., Inc.: 1968.
- Taylor, T. W. The States and Their Indian Citizens. Washington, D. C.: U.S. Government Printing Office, 1972.
- United States Senate, Hearings Before the Subcommittee on Indian Education, 90th Congress, Washington, D. C., 1969.
- Weaver, Thomas. Indians of Arizona. Tucson: The University of Arizona Press, 1974.
- White, Jack and Nickoloff, Elia. The Hearing-Impaired Indian in Los Angeles - Where Is He? A Survey of Hearing-Impaired Indians in the Bell Gardens-Cudahy Area of Los Angeles. Unpublished master's theses, San Fernando Valley State College, 1971.
- Zonis, Richard D. Chronic Otitis Media in the Southwestern American Indian. Archives of Otolaryngology. 1968, 88, pp. 40-45.