Minnesota Studies in Vocational Rehabilitation:

VI. A Survey of the Physically Handicapped in Minnesota

Principal Investigators:

George W. England
Lloyd H. Lofquist

Survey Directors:

James H. Koplin
Stephen J. Carroll, Jr.
Allan C. Yater

Consultant:

Kenneth E. Clark

Preface

This is the sixth bulletin in the current series of Minnesota Studies in Vocational Rehabilitation. These bulletins have dealt with two major problem areas: (1) extent and magnitude of employment problems of vocationally handicapped persons, and (2) principles, policies and techniques for improved effectiveness of job placement procedures. Research underlying this series of bulletins was supported in large measure by the Office of Vocational Rehabilitation in the U. S. Department of Health, Education, and Welfare.

Support for the research study described in this bulletin was provided largely by the State of Minnesota Interim Commission on Employment of Handicapped Persons, thereby providing an excellent example of close and effective research cooperation between federal and state government agencies, and a state university.

The Interim Commission, under the chairmanship of the Honorable Mr. Curtis B. Warnke, sought to obtain facts concerning the number of handicapped persons in Minnesota, their age, sex, type of disability and employment status. Such basic facts were needed in their attempts to evaluate effectiveness of existing state laws relating to employment of handicapped persons. Available evidence proved to be inadequate, and they turned to the Industrial Relations Center for assistance.

Fortunately, the IRC was already at work on similar problems for the Office of Vocational Rehabilitation and thus had the nucleus of a trained professional staff with special interest and competence in this area. Drs. George W. England and Lloyd H. Lofquist provided leadership and supervision for the additional personnel selected for a special survey team. A research contract was signed in the middle of June and the report was completed in September of 1958. Dr. Kenneth E. Clark, Chairman of the Department of Psychology, served as special consultant to the project. Mr. Sidney Goldish, Director of the Research Department of the Minneapolis Star and Tribune, and his statewide staff of professional interviewers played a signal role in the success of the survey. The IRC Survey Directors were James H. Koplin, Stephen J. Carroll, Jr. and Allan C. Yater, graduate students in psychology and industrial relations. IRC staff members Professor Donald G. Paterson and Rene V. Dawis, and Interim Commission members Larry W. Binger of Minnesota Mining and Manufacturing Co., and Donald Savelkoul of the Minnesota (AFL-CIO) Federation of Labor, provided valuable counsel. Materials and data gathered in prior and concurrent OVR-sponsored IRC surveys greatly facilitated the survey design for the State of Minnesota project. The IRC provided administration,

general direction, facilities and a nucleus of professionally trained staff members for the supervision of the project.

It is worth repeating that the survey described in this bulletin was indeed a cooperative research venture, underscoring the role of the IRC as an agency to integrate and coordinate team research in employment and industrial relations. It provides also an outstanding example of the advantages of mutual cooperation between state and federal agencies. Experience from the OVR studies greatly facilitated the Interim Commission survey; results from the Interim Commission survey will benefit not only the citizens of Minnesota, but will be of much value in advancing the continuing basic research probes of OVR. The Industrial Relations Center has been able to continue its role as a catalytic agent in providing the public with a growing body of current knowledge and understanding of employment relations. The IRC is grateful to the Interim Commission and to OVR for their cooperation in making this bulletin possible.

HERBERT G. HENEMAN, JR.

A Survey of the Physically Handicapped in Minnesota

Summary and Implications

A survey of the physically handicapped population of Minnesota was conducted by the Industrial Relations Center of the University of Minnesota for the State Legislature's Interim Commission on the Employment of the Handicapped. The survey was completed between July 22 and August 4, 1958.

Using information obtained from interviews at 2,440 households and questionnaires completed by 523 hospitals and related institutions in Minnesota, the following estimates were made:

1. There are approximately 323,000 physically handicapped persons in Minnesota. This includes about 288,000 persons in households and about 35,000 persons in institutions (such as hospitals, special schools and nursing homes). Of those in households, 183,000 are men and 105,000 are women.

2. The three largest disability groups are orthopedic (89,000), cardiovascular (59,000), and generalized or systemic (32,000). These three groups comprise about half of all the physically handicapped in the state.

3. Approximately 40,000 handicapped persons are under 14 years of age, 200,000 are in the labor force age range of 14-64, and 77,000 are 65 and over.

*4. Disabilities were caused by illness in 60% of the cases. Employment accidents accounted for 9% of the disabilities and only 4% were caused by war injuries and/or illnesses.

*5. A large percentage of handicapped persons stated that they received no assistance from agencies such as the Division of Vocational Rehabilitation and the State Employment Service. Most of those who did receive assistance received medical, surgical, or hospital services.

*6. Over half (56%) of the handicapped population in the labor force age (14-64 years) are currently not working.

* These estimates pertain to the non-institutionalized population only.

*7. About 22,000 (21%) of the handicapped in the labor force age range who are not working are actively looking for work.

*8. Approximately 33% of the handicapped in the labor force age range who are not working have worked since their injury or illness.

The following appear to be some of the major implications of the survey findings:

1. The survey estimate of approximately 323,000 physically handicapped persons in the state of Minnesota is compelling evidence of the magnitude and importance of the problems concerning the physically handicapped.
2. A comparison of this large number of physically handicapped persons with the number of persons rehabilitated by the state each year (approximately 1,000) makes it evident that an overwhelming proportion of the handicapped population is not receiving service from the rehabilitation agencies of the state.
3. The need for rehabilitation services (including job placement) by the handicapped in Minnesota is clearly shown by the facts that over half (56%) of the handicapped population of labor force age range are currently unemployed, and about 21% of this group (22,000) are actively seeking employment.
4. It would seem desirable to increase services to the rural handicapped population, since approximately 41% (118,000) of the non-institutional handicapped live in rural areas. This geographical distribution of the handicapped suggests the need for more rehabilitation services outside of major urban centers.
5. A comparison of the age distributions of the physically handicapped in Minnesota with the total group rehabilitated by the State Division of Vocational Rehabilitation (fiscal year 1956-57) indicates the need for extending services to persons at higher age levels. Approximately 60% of the rehabilitated group were below age 30 while only 30% of the Minnesota handicapped are below age 30.
6. In view of the effect of Workmen's Compensation on employment of the physically handicapped, it is interesting to note that employment accidents are the origin of disability for only 9% of the Minnesota handicapped, 4% originated from war injuries or illness, and 60% originated from illness.

* These estimates pertain to the non-institutionalized population only.

7. Other data obtained in the survey, such as that on number of handicapped in each disability area, should be useful in estimating the extent to which the total state rehabilitation program is meeting the needs of the physically handicapped population.
8. The importance of these implications points to the necessity for establishing a continuous and active research program as an integral part of the State Division of Vocational Rehabilitation. Present provision for research by the agency is apparently limited to compilation of annual report statistics.
9. The above implications indicate that the combined services of State DVR, State Employment Service and related agencies are not meeting the needs of the physically handicapped in Minnesota. This suggests the need for expansion of the state programs, and the desirability of continuing study of the problems of the physically handicapped in Minnesota.

Introduction

The 1957 Session of the Minnesota State Legislature appointed an Interim Commission, with Representative Curtis B. Warnke as chairman, to investigate the problems of the physically handicapped population in Minnesota.[1] As a part of this total investigation, the Industrial Relations Center of the University of Minnesota, through an agreement with the Interim Commission, conducted a statewide survey to estimate the number of physically handicapped persons in the state and to study such things as the age, sex, disability distribution, and employment status of these persons. The information gained from the survey is to be used in making recommendations to the State Legislature concerning problems of the handicapped.

A review of available data on the incidence of disability in the general population revealed the inadequacy of current information on the nature and extent of illness and disability in the general and hospitalized populations. While some figures were available from local, state, and federal health records, census reports, workman's compensation commissions, and industrial and safety organizations, these were not enough to answer the questions raised by the Interim Commission.

Purposes and Scope

The survey was designed to answer the following questions:

1. How many physically handicapped[2] persons are living in Minnesota?
2. What are the major disabilities of these persons?
3. How are the handicapped distributed according to age?
4. How did these persons become handicapped?
5. What services have these persons received from agencies such as the State Employment Service, the Division of Vocational Rehabilitation, and the Veteran's Administration?

---

[1] Minnesota State Legislation. 1957 Session Laws. Senate File 1457, Chapter 829.

[2] The "physically handicapped" individual is defined in Public Law 565 (Vocational Rehabilitation Amendments of 1954) as "any individual who is under a physical or mental disability which constitutes a substantial handicap to employment, but which is of such a nature that vocational rehabilitation may reasonably be expected to render him fit to engage in a remunerative occupation." (Sec. 11b) In the implementation of the law by public agencies, "physical or mental disability" has come to include emotional disabilities, that is, mental illness. In this report, "physically handicapped" will be used to refer collectively to the physically handicapped (such as orthopedics, amputees, cardiacs, tuberculosis patients, and the cerebral palsied), the mentally handicapped (mentally retarded), and the emotionally handicapped (those suffering from mental illness).

6. What is the employment status of the handicapped?
7. Do the unemployed handicapped persons want employment and feel that they could be employed?
8. Have the unemployed handicapped persons been employed since becoming handicapped?

To answer these questions, two related statewide surveys were conducted. One survey covered a random sample of households in Minnesota for the purpose of estimating the number of physically disabled persons by type of disability and age in the general non-institutionalized population. The second survey covered every hospital, institution, nursing home and boarding-care home in Minnesota. An estimate of the number of physically handicapped persons would be incomplete without this second survey, since a significant number of handicapped individuals are in hospitals and related institutions. This report discusses the methods used in carrying out these statewide surveys and presents the major findings.

Method

Household Survey: The household survey utilized a questionnaire developed in previous studies of the physically handicapped in Minneapolis and St. Paul.[3] It had been developed by the Industrial Relations Center vocational rehabilitation project staff and was known to be an effective instrument for obtaining information concerning the characteristics of physically handicapped individuals. Only slight modifications were needed to adapt the questionnaire to this study. Other information collected in over a year of Industrial Relations Center research also proved useful to this study. It was found, for example, that the best way to collect accurate comprehensive data on the handicapped population was to conduct an interview survey of a random sample of the general population.[4] This bears out similar findings of the National Health Survey of 1935-36.[5]

After careful consideration of the questions to be answered, the questionnaire was modified to include specific items necessary for this study. The questionnaire was then pretested by members of the research staff in different socio-economic areas within the city of Minneapolis. The pretesting indicated that the interview questionnaire would provide answers

[3] *Minnesota Studies in Vocational Rehabilitation: V. Methodological Problems in Rehabilitation Research*, IRC Bulletin 25, December 1958.

[4] *Op. cit.*

[5] U. S. Federal Security Agency, Public Health Service, Division of Public Health Methods. The national health survey: 1935-1936. *Publ. Hlth. Bibliogr. Ser.*, 1951, 85, No. 5.

to questions the survey was trying to answer. It also indicated that this information could be coded reliably and analyzed efficiently. Pretest findings resulted in further refinements of the questionnaire.[6]

Detailed interview instructions were prepared and tested by the research staff. These instructions were designed to insure proper use of the questionnaire by each interviewer.

The survey data were collected between July 22 and August 4, 1958 by a staff of professional interviewers employed and trained for the Minnesota Poll studies.[7] The time limits within which this project had to be completed made it impossible to hire a new group of interviewers and conduct training sessions.

A total of 2,440 households throughout the state were interviewed. These households included 940 rural households and 1,500 urban households. The sampling procedure utilized by the Minnesota Poll in its surveys was made available to the Industrial Relations Center for this project. It was modified to increase the number of interviews conducted in each area. The sample was designed to be representative of all households in the state with respect to population density and geographic location. A more detailed discussion of the sampling procedure can be found in Appendix A-1.

Institutional Survey: A complete list of all licensed[8] hospitals (both general and specialized), institutions, special schools, nursing homes, and boarding care homes in Minnesota as of May 1, 1958, was obtained from the Minnesota Department of Health.[9] This list was supplemented by the addition of the names of all public specialized institutions and schools concerned with confinement and training under the control of the Minnesota Department of Welfare and all Federal Hospitals within the borders of Minnesota. A check of this list against all hospitals and boarding-care or nursing homes listed in the Minneapolis and St. Paul telephone directories resulted in the addition of only one institution, a boarding-care home.

A questionnaire[10] was designed to identify by type of disability and age all persons who were handicapped and currently hospitalized or insti-

[6] See Appendix C for a copy of the household survey questionnaire.

[7] The Minnesota Poll is a continuing survey by the Research Department of the Minneapolis Star and Tribune.

[8] Hospitals and related institutions in Minnesota are licensed under the provisions of Sections 144.50 to 144.58, inclusive, Minnesota Statutes. These statutes cover all places in which "any accommodation is maintained, furnished, or offered for the hospitalization of the sick or injured or for maternity care of more than one woman within a period of six months or for care of three or more aged or infirm persons requiring or receiving chronic or convalescent care."

[9] Minnesota Department of Health. *Minnesota directory of licensed hospitals and related institutions, 1958.* Minneapolis: University of Minnesota, 1958.

[10] See Appendix C for a copy of the institutional survey questionnaire.

tutionalized in Minnesota. In developing the questionnaire, consultations were held with the directors and medical personnel of several of the larger hospitals and institutions in Minneapolis to determine the best method to use in classifying patients as handicapped and to see what terminology was most common and understandable to hospital personnel. A complete description of questionnaire design and methodology can be found in Appendix A-2.

Questionnaires were mailed to each of the 641 hospitals, special institutions and schools, nursing and boarding-care homes on the survey list.[11] Hospitals and institutions with capacities of over 150 beds were informed that additional questionnaires were available for use in each ward or at each nursing station if this procedure was preferred.

At the end of a two-week period, a follow-up postcard was sent to non-responding institutions. A follow-up letter was sent to non-respondents at the end of three weeks.

Results

Each of the questions raised by the Interim Commission is treated separately in the discussion that follows.

Final estimates from the sample of households were computed by applying a multiplier to the sample frequencies to make estimates for all households in the state. These estimates were further adjusted upwards by thirty per cent to correct for those handicapped persons in the household sample who were not identified. This thirty per cent adjustment was derived from previous Industrial Relations Center research which showed that, in a survey such as this, about thirty per cent of the actual number of handicapped individuals present in a particular sample will not be reported.[12]

Figures from the survey of hospitals and related institutions were adjusted to account for the unreturned questionnaires. Questionnaires that were usable for analysis were received from about 82% of the hospitals and related institutions in Minnesota. These had, however, 91% of the available hospital and institutional beds.

Technical procedures such as those used in estimating for the whole population from the sample are discussed in Appendix A-1 for the household survey and Appendix A-2 for the institutional survey. A detailed

[11] Seven maternity homes with a total bed capacity of 17 beds were not sent questionnaires.

[12] *Minnesota Studies in Vocational Rehabilitation: V. Methodological Problems in Rehabilitation Research*, IRC Bulletin 25, December 1958.

supplement to the results section is presented in tabular form in Appendix B.

1. **How many physically handicapped persons are currently living in Minnesota?**

2. **What are the major disabilities of these persons?**

Table 1 presents the answers to these questions based upon the best estimates from the survey data. Column 1 gives the sample frequencies for each type of disability. These are the number of handicapped persons in each disability category found in the household survey. These sample frequencies are expanded to estimates for the total state population in column 2, and adjusted to correct for the unidentified handicapped persons in column 3. The institutionalized handicapped, corrected to account for all hospitals and related institutions in Minnesota, are given in column 4. These are added to the adjusted estimates in column 3 to give a total estimate of the number of physically handicapped persons currently living in Minnesota in each disability category in column 5.

Table 1

Estimated number of handicapped persons in the state of Minnesota for each type of disability

Disability	Sample (1) N	Estimate for Entire State (2) From Sample	(3) Adjusted[a]	(4) Institutionalized[b]	(5) Total[c]
Orthopedic	158	61,200	87,430	1,760	89,000
Cardiovascular	99	38,340	54,770	4,530	59,000
Generalized or systemic	54	20,900	29,860	2,560	32,000
Neurological	45	17,430	24,910	1,510	26,000
Visual	31	12,000	17,150	820	18,000
Respiratory	29	11,240	16,060	1,150	17,000
Neuropsychiatric	25	9,690	13,840	12,260	26,000
Gastro-intestinal	20	7,750	11,070	610	12,000
Hearing	18	6,960	9,950	740	11,000
Mental retardation	15	5,810	8,300	6,590	15,000
Genito-urinary	5	1,940	2,770	610	3,000
Skin and allergy	4	1,550	2,220	190	2,000
Speech	2	770	1,100	160	1,000
Miscellaneous	16	6,200	8,840	1,530	12,000
Total	521	201,780	288,270	35,020	323,000

[a] All figures increased 30% to correct for unidentified handicapped persons.

[b] Adjusted to include non-responding institutions.

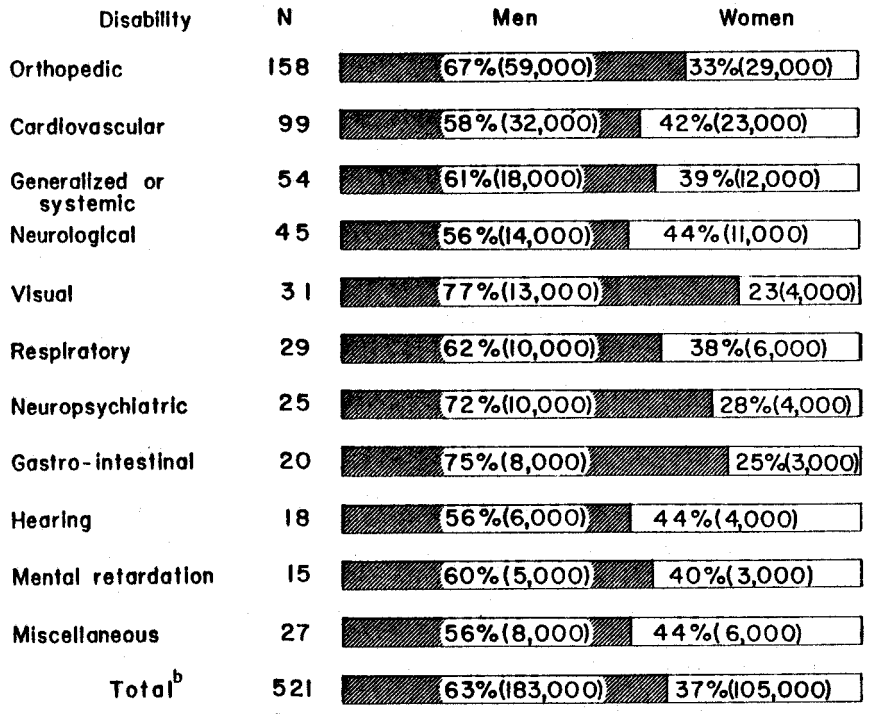
[c] Rounded to the nearest thousand.

It can be seen from Table 1 that there are an estimated 323,000 handicapped in Minnesota. This is approximately 10% of the total population of Minnesota. If it is desired to exclude the institutionalized population from this number, there are approximately 288,000 handicapped persons in the state. To this figure should be attached a possible error of plus or minus 46,000.[13] Much more confidence can be placed in the *unadjusted* estimates of the handicapped based only on the household survey. This total is 201,780 plus or minus 1,200.

Estimates of the number of handicapped persons in each disability category in columns 3 and 5 should be accepted with caution. The thirty

Figure 1

Percentage and estimated number of handicapped persons by sex for each disability[a]



[a] Does not include the institutionalized population.

[b] Numerical estimates are based on adjusted household estimates for each disability category rounded to the nearest thousand.

[13] See Appendix A-1 for a technical discussion of the accuracy of estimates.

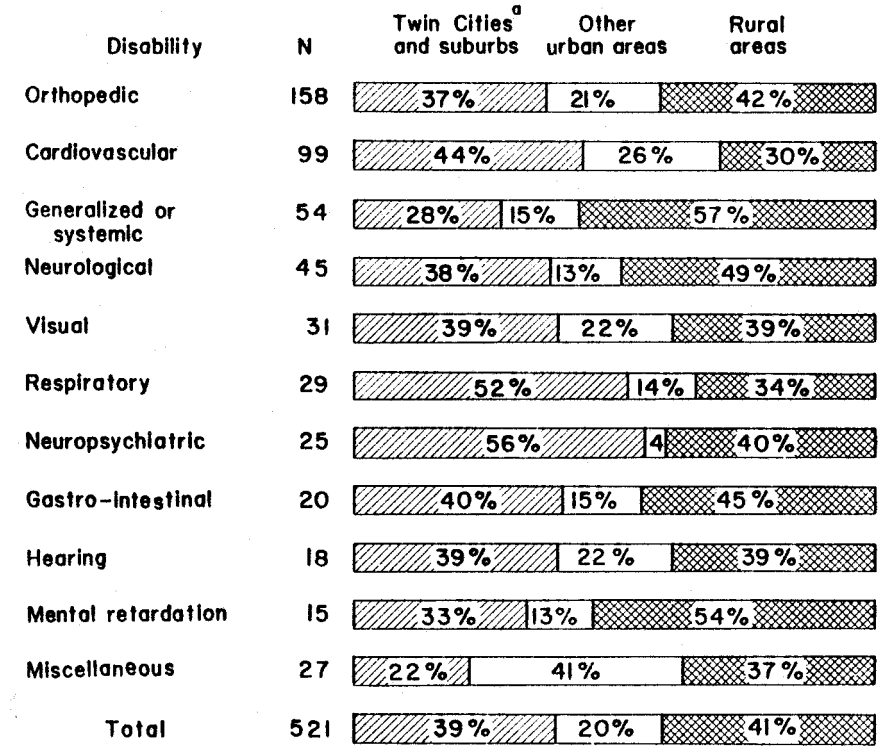
per cent adjustment to correct for unidentified handicapped persons was applied equally across all disability categories. However, the proportions of identified handicapped persons may not be the same in each disability category.

Figure 1 gives the percentage of males and females in each disability category and presents the estimated number of males and females in the state for each type of disability. Data presented apply only to the non-institutionalized handicapped population.

Figure 2 gives the percentage of handicapped persons in each geographic location by type of disability and presents the estimated number of handicapped individuals in each of these geographic locations. The data given are on non-institutionalized handicapped persons only.

Figure 2

Geographic percentage distribution by disability



[a] Includes Minneapolis–St. Paul and surrounding metropolitan area. Other urban areas include all other cities and towns with population of 2,500 or more. Rural areas include towns and villages with population of less than 2,500, and rural farm and rural non-farm homes.

3. How is the handicapped population distributed by age?

Table 2 presents three age categories for the handicapped population: persons under 14 who have not yet reached labor force age, those in the 14 to 64 age group who constitute the labor force age range, and the over 64 age group made up of those persons who have reached retirement age.

Table 2

Estimated number of handicapped persons in the state of Minnesota by age

Age	Sample (1) N	Estimate for Entire State (2) From Sample	(3) Adjusted[a]	(4) Institutionalized[b]	(5) Total[c]
Under 14	69	26,720	38,170	1,860	40,000
14-64	333	128,980	184,260	16,410	200,000
65 and over	109	42,210	60,310	16,750	77,000
No age reported	10	3,870	5,530	.....	6,000
Total	521	201,780	288,270	35,020	323,000

[a] All figures increased 30% to correct for unidentified handicapped persons.

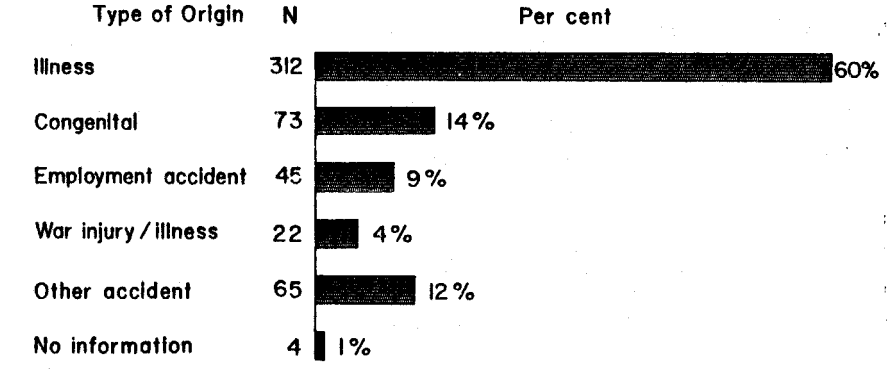
[b] Adjusted to include non-responding institutions.

[c] Rounded to the nearest thousand.

For the questions which follow (Nos. 4 through 8), the data presented were derived from the household survey, and therefore pertain only to the non-institutionalized handicapped population.

Figure 3

Percentage distribution of origin of handicap



4. How did these persons become handicapped?

Figure 3 indicates that illness accounts for the disabilities of 60% of the total number of non-institutionalized handicapped persons.

Table 3 presents this same information in more detail by type of disability. These percentages are applicable to all handicapped individuals in the state. Since the numbers on which the percentages are based are smaller than in Figure 3 due to the finer breakdown, more caution must be exercised in interpreting them.

Table 3

Percentage distribution of origin of handicap by disability

Disability	N	Origin of Handicap					
		Employment Accident	Illness	Congenital	War Injury or Illness	Other Accident	Don't Know
		%	%	%	%	%	%
Orthopedic	158	23	32	11	6	28	0
Cardiovascular	99	1	88	7	2	1	1
Generalized or systemic	54	2	88	6	2	2	0
Neurological	45	0	69	18	0	11	2
Visual	31	16	35	26	0	23	0
Respiratory	29	0	90	3	7	0	0
Neuropsychiatric	25	0	68	8	8	12	4
Gastro-intestinal	20	5	75	5	15	0	0
Hearing	18	0	39	39	10	6	6
Mental retardation	15	0	20	80	0	0	0
Miscellaneous	27	4	55	26	4	11	0
Total	521	9	59	14	4	13	1

5. What services have the handicapped received from agencies such as the Division of Vocational Rehabilitation, the State Employment Service, and the Veterans Administration?

Table 4 gives the percentages of handicapped persons who have received various types of services from the agencies listed. The table shows that a large percentage of the handicapped population received no aid from these agencies. For example: 82% of the handicapped population received no aid from the Division of Vocational Rehabilitation, 85% received no aid from the State Employment Service, and 80% received no aid from the Veterans Hospital.

Table 4

Percentages of the handicapped population receiving various services from the agencies listed[a]

Type of Assistance Received	Agencies				
	DVR	ES	Veterans Hospital	VA Other Than Hospitals	Other Agencies[b]
	%	%	%	%	%
No response to question about this agency	11	12	12	13	8
No assistance received	82	85	80	83	57
Medical, surgical or hospital service	2	1	7	2	22
Counseling and guidance	2	0	1	1	5
Training for a job	2	0	0	1	2
Planning for a job	1	0	0	0	1
Assistance in finding a job	1	1	0	0	1
Physical or occupational therapy	0	0	1	0	7
Other types of assistance	1	0	0	1	8

[a] Based on a random sample of households in Minnesota only.

[b] Includes agencies such as University Hospitals, Gillette Hospital, local and city hospitals.

Note: Figures do not add up to 100% due to the rounding off of percentages and because some handicapped persons received more than one type of assistance from a particular agency.

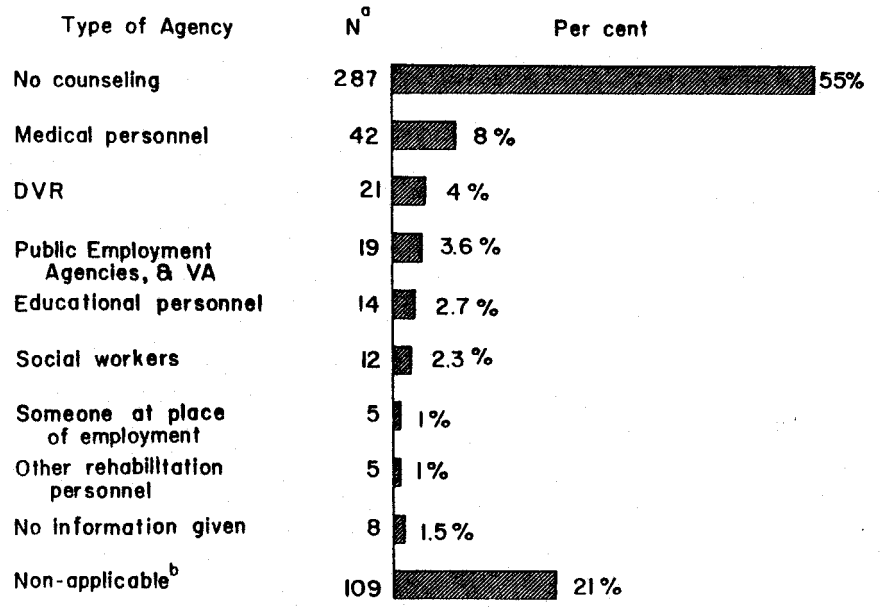
The percentages of handicapped persons receiving a particular type of service from a particular agency should be interpreted with caution since the sample frequencies on which the percentages are based are relatively small. Much greater confidence can be placed in the percentages dealing with the "no assistance received" category because the corresponding sample frequencies are much larger. It should also be noted that the data in Table 4 are based upon the *recollections* of the interviewees and *not* on agency records.

Figure 4 presents the percentage of handicapped persons who talked with a counselor about the best kind of work for them. It also shows the persons or agencies with whom handicapped persons discussed this subject. It should be noted that the questionnaire did not specify talking with a *professional* counselor. Also, the term *vocational counseling* was not used in the questionnaire since the question was designed to determine all sources from which handicapped persons have received any information about the best kind of work for them.

Figure 4 shows that 55% of the handicapped individuals have not received counseling about the best work for them. This amounts to about 159,000 non-institutionalized handicapped persons.

Figure 4

Percentage distribution of handicapped persons who have received counseling from agencies or counselors about the best kind of work for them



[a] One person listed two types of agencies.

[b] Includes children under 14 and housewives who have never entered the labor force.

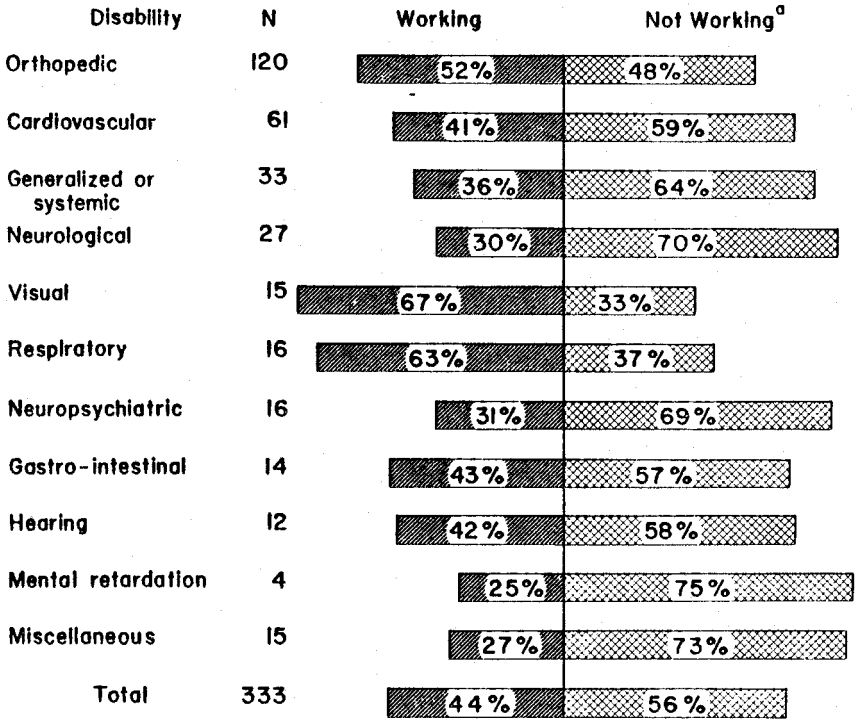
6. What is the current employment status of the handicapped population?[14]

Figure 5 presents the percentages of the handicapped who are employed and the percentage who are not working by type of disability. Fifty-six per cent of the handicapped persons between 14 and 64 are not working. This percentage drops to 32% of the handicapped persons between 14 and 64 if housewives and students who have never worked are excluded. Percentages for each disability category should be interpreted with caution since some of the sample frequencies from which the percentages were computed are relatively small.

[14] All data on employment characteristics of the handicapped were computed only on those handicapped persons between 14 and 64 years of age, this being the labor force age group.

Figure 5

Percentage distribution of current employment status of handicapped persons of labor force age (14 to 64 years) by disability



[a] Includes 80 housewives and students who have never been employed.

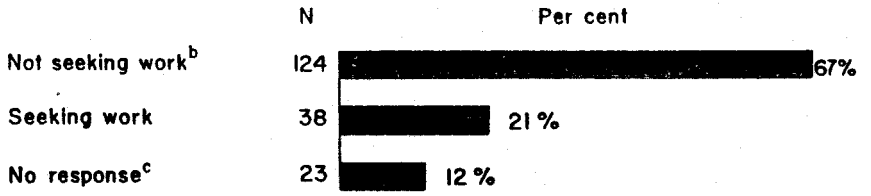
7. Do the unemployed handicapped persons want employment and feel that they could be employed?

This question is answered on the basis of whether or not the handicapped persons who are not working are seeking work.[15] It can be seen from Figure 6 that, of the handicapped who are not working, approximately 21% are seeking work while 67% are not. These percentages change to 30% and 52% respectively if housewives and students who have never worked are excluded.

[15] Of the handicapped who are not working, 12% gave no information as to whether or not they were seeking work.

Figure 6

Percentage of handicapped persons who are not working[a] but who are seeking work



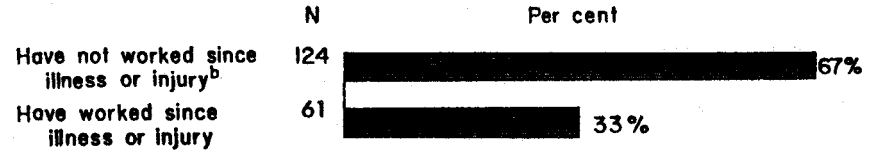
[a] In the labor force age range, 14 to 64 years of age.
[b] Includes 57 housewives and students who have never worked
[c] All 23 are housewives and students who have never worked.

8. Have the unemployed handicapped persons been employed since becoming handicapped?

It can be seen from Figure 7 that, of the handicapped persons who are not working, approximately 33% have worked since becoming handicapped while 67% have not worked. These percentages change to 58% and 42% respectively if housewives and students who have never worked are excluded.

Figure 7

Percentage of presently unemployed handicapped persons[a] (N = 185) who have worked since injury or illness



[a] In the labor force age range, 14 to 64 years of age.
[b] Includes 80 housewives and students who have never worked.

Technical Appendix

Appendix A-1: Methodology for Household Survey

Questionnaire construction

An interview questionnaire for obtaining information on handicapped persons had been designed and used by the IRC staff in connection with its studies in vocational rehabilitation.[1] This questionnaire was modified to include new items of interest to this study, while irrelevant items were omitted. The format was changed to conform as closely as possible to that used by the Minnesota Poll so that its interviewers would be able to use the instrument.

Page one[2] of the questionnaire was designed to gather data describing the household and to identify any handicapped household members who were either living there at the time or who were institutionalized. Handicapped persons at home were identified by asking the following questions:

"Have any of these persons, including the children, ever had an illness, a physical condition, or a mental or emotional problem of *any sort* which limits the *kind* of work they can do, or the amount of work they can do?"

"Have any of these persons ever had an illness, a physical condition, or a mental or emotional problem that limits his ordinary activity in any way?"

These questions which were used to identify the physically handicapped in the population were selected as most effective on the basis of previous IRC research.[3] The interviewer was instructed to give no assistance other than a repetition of the question if the interviewee did not understand the questions. No further explanation was used.

If the answer to either of these questions was "yes," the interviewer went on to gather complete information on each handicapped person.[4] If the answer to both questions was "no," the interviewer asked a question to identify household members who were in institutions and then concluded the interview.

Instructions were prepared for the interviewers with detailed explanations on the use of the instrument. These included a general introduction to the survey and an item-by-item outline of the procedure for asking the questions and recording the answers.

Using the revised questionnaire and the set of instructions, four members of the staff conducted 60 interviews in four sections of Minneapolis which represented a wide variety of socio-economic classes. This pretest was used to estimate the effectiveness of the questionnaire and set of instructions, and to determine the adequacy of the information obtained. The data collected were subjected to a trial analysis to test coding and analysis procedures. On the basis of this pretest, final revisions of the questionnaire and of the interviewer instructions were made.

Sample design and validation

This survey utilized the sample of urban and rural area designations selected by the Research Department of the Minneapolis Star and Tribune for use in its Minnesota

---

[1] *Minnesota Studies in Vocational Rehabilitation: V. Methodological Problems in Rehabilitation Research*, IRC Bulletin 25, December 1958.

[2] See Appendix C for a copy of the household survey questionnaire.

[3] *Minnesota Studies in Vocational Rehabilitation: V. Methodological Problems in Rehabilitation Research*, IRC Bulletin 25, December 1958.

[4] See Appendix C-1.

Poll surveys. Four times the usual number of Minnesota Poll interviews were conducted in each interviewing area. This insured a large enough sample to permit accurate estimation of total population figures. This sample yielded a 0.26 per cent sample of the total universe of households in the state.

In developing the original Minnesota Poll sample, the Research Department of the Minneapolis Star and Tribune used a form of probability sampling in selecting the urban interview points. It specified the census tracts, blocks and "nth" households in which interviews were to be obtained. These urban points were cities, towns, and municipalities of 2,500 population or more.

In the rural assignments—towns and villages of less than 2,500 population, rural non-farm homes and rural farm homes—a controlled-area quota sampling plan using socio-economic status as a cross-section control was utilized.

The interviewing areas were selected by first listing the counties in geographical order by congressional districts. Each county's population was broken down into an urban and a rural total using the 1956 Sales Management Survey of Buying Power as a basic reference.[5] To balance the cross-section by geographic location and urban-rural designation the population figures were cumulated in the following order:

Congressional District A—rural county segments
urban county segments
Congressional District B—urban county segments
rural county segments (order reversed)

Entering this list with a random starting number and an interval equal to 1/65 of the population, 65 county segments, urban and rural, were picked from this stratification.

Minneapolis, St. Paul, and Duluth were each divided into the required number of interviewing areas consisting of compact clusters of census tracts having approximately the same number of households. Four blocks were assigned per interviewing area to achieve dispersion. Blocks were selected at random with the chance of selection proportionate to the number of occupied dwelling units so that the more heavily populated blocks would have a greater chance of being included in the sample.[6] The same number of interviews was conducted within each block selected.

In the other urban communities, all blocks on a map of the city were numbered in a serpentine pattern. Then the sample blocks were picked with each block having an equal chance of being selected by use of a random number and interval. This sampling method has the obvious bias of tending to undersample the more heavily populated blocks in favor of less densely populated areas. However, there are administrative advantages to having an interviewer go to a designated block.

Each urban interviewer received a city map with the primary blocks outlined in red and secondary-A and secondary-B blocks outlined in blue. These secondary blocks were adjacent to the primary blocks and were to be used if it was impossible to obtain the required number of interviews from the primary blocks. Each urban interviewer

[5] Reference used by Minnesota Poll: *Sales Management—the magazine of marketing*. Philadelphia, Pa.: Bill Brothers Publishing Corp., May 10, 1956.

[6] The statistical source used to draw the sample of blocks in Minneapolis was the January 1, 1955, estimates of the census tracts and the 1950 block statistics. In St. Paul the December, 1955 estimation of the St. Paul City Planning Commission and the 1950 block statistics were used. In Duluth the 1950 block statistics were also used.

also received an instruction sheet describing in detail the method of selecting the households within the blocks.

The entire rural part of the county was theoretically the area for farm and town assignments. In practice, communities close to, but not including, the interviewer's home village were specified for town interviews. Farm interviews were generally confined to a quarter of the county. The standard proportions of socio-economic status were used as a cross-section control: socio-economic status A, 5%; B, 10%; C, 50%; and D, 35%. A farm-town assignment did not include any city interviews and vice versa.

Characteristics of the sample were checked against Census Bureau data as a measure of the representativeness of the sample as a cross-section of the households in Minnesota. Table 5 compares the percentages of the population estimated in the various age classifications in 1955 with those found in the sample. The sample percentages compare closely with the estimates. The larger proportion of the under-fourteen category is probably due to the rapid growth of this age group since 1955. Also the older population was slightly under-sampled because many of these people are located in institutions and therefore would not be counted in a household survey. They were included in the institution survey.

Table 5

Estimated age distribution of the population of Minnesota compared with the age distribution of the sample[a]

Age	Estimated Percentage[b] 1955	Observed Sample Percentage
Less than 14	28	34
14-29	20	20
30-39	14	12
40-49	12	12
50-64	16	13
Over 64	10	9

[a] This includes all members of every household contacted.

[b] From the *Statistical Abstracts of the U. S., 1956.*

The expected sex distribution of the population is compared with the sample characteristics in Table 6. The expected proportion of women to men is 100.1/100[7] while the sample proportion is calculated to be 97.2/100.

Survey administration

The household interviews were conducted by 65 professional interviewers (6 male and 59 female) from the Minnesota Poll who were supervised by a member of the IRC staff. The interviewing was done between July 22 and August 4, 1958. The interviewers worked an average of 16 hours including travel time, interviewing time, and study time. They traveled an average of 90 miles. The total cost of the interviewing was $1,985.00.

Because of the number of interviewers required for a survey of this scope and the time limit imposed upon this project, it would have been impossible to hire and conduct

[7] U. S. Department of Commerce, Bureau of the Census. *Statistical Abstracts of the United States.* 1956 (75th ed.). Washington: U. S. Government Printing Office, 1956.

Table 6

Estimated sex distribution of the population of Minnesota compared with the sex distribution of the sample[a]

Sex	Estimated Percentage[b] 1955	Observed Sample Percentage
Male	50.0	50.7
Female	50.0	49.3

[a] This includes all members of every household contacted.

[b] From the *Statistical Abstracts of the U. S., 1956.*

training sessions for an entirely new and inexperienced group of interviewers. Fortunately, it was possible to organize the interviewing staff from a roster of interviewers employed and trained by the Minnesota Poll. Interviewers with the most previous training and experience were selected. Those selected were hired as independent contractors for this research project.

Packets of materials necessary for conducting the interviews were mailed on July 12, 1958, allowing the interviewers a full week prior to the starting date of the interviewing period with which to study the questionnaire and interviewer instructions. The interviewers were instructed to call the research office "collect" regarding any questions or problems encountered during the interviewing period. During the one week of study time and two weeks of interviewing in the field, the research office received 40 telephone calls regarding the interviews and the interviewing procedures.

A check to insure that interviewers actually visited the households was built into the survey procedure. At the close of each interview, the interviewee was given a postcard which he was asked to fill out (his name and address) and mail to the research office. Seventy-two percent of these cards were returned. This was taken as sufficient indication that the interviews were, in fact, conducted by the interviewers.

Coding and analysis

The completed questionnaires were coded by the research staff. Each coded questionnaire was rechecked by someone other than the person who had done the original coding. The coding consisted of transferring the data to numerical notation for punching on a standard 80 column IBM card. Numbered spaces had been mimeographed on the interview schedule for this purpose.

Specific disabilities were classified into one of fourteen broad disability categories by the research staff. These disability categories were derived from the disability classification systems of ES and DVR.[8] No attempt was made in this survey to verify the diagnoses obtained from a family by an interviewer. However, a previous IRC study showed that disability information obtained by interview was valid in terms of diagnoses undertaken by DVR. A study made during the National Health Survey of 1935-36 also showed high agreement between family's and physician's statements of diagnosis when 15 diagnosis categories were used.

[8] *Minnesota Studies in Vocational Rehabilitation: V. Methodological Problems in Rehabilitation Research,* IRC Bulletin 25, December 1958. See Appendix for a comparison of the classification system used in this publication with DVR and ES classification systems.

Punching and machine analysis of the data was carried out by the Numerical Analysis Laboratory of the University of Minnesota under the supervision of Miss Lois Erickson.

Estimates of the handicapped population of the state were derived from the sample frequencies by use of a multiplier based on the best available estimate of the number of households in the state* and upon the size of the sample. It was calculated as follows: 945,000 households/2,440 households interviewed = 387.3.

Accuracy of the household survey

One measure of the accuracy of a survey is a comparison of sample data with information from an independent source. Tables 5 and 6 (see pages 21-22) show comparisons of sample data with the 1956 U. S. Census Bureau estimates of age and sex distribution. These give an indication of how the sample compares with statewide population characteristics.

An additional measure of accuracy is the sampling variation to be expected for a simple random sample of the size used in this survey. (The statistical computations which follow do not determine exactly the expected variation because it is difficult to fulfill all of the assumptions required in the mathematical theory of probability. However, they are adequate as approximations.)

The percentage of households in the sample found with handicapped persons is 18.7, for which the standard error (SE) is 0.8%. Using 2½ times this standard error (2%) it is possible to state that in 99 of 100 such samples the estimated percentage of households with handicapped persons would not vary from the true value by more than ±2%. A similar calculation for the number of individuals who were found to be handicapped yields a variation from the true value of not more than 0.6%. Translating these percentages to numbers, in 99 of 100 such samples the estimated number of handicapped persons would fall within a range of plus or minus 1,200 around the estimate from this sample which is 202,000. The above applies *only* to the figures derived from the sample survey before any adjustments to correct for unidentified handicapped persons or the addition of the institution population. Also, it considers *only* errors due to *sampling variation* based on the size of the sample.

The percentage estimates based on the 521 handicapped persons will not deviate (in 99 of 100 such samples) by more than 6% from the true value under the most rigorous conditions—a 50-50 division of responses. If the true proportion is smaller or larger than 50%, the sampling variation due to sample size is reduced. The corresponding error for percentages based on the 333 handicapped persons who are within the age range 14-64 is 7%. Percentages based on a smaller number of cases must be interpreted with caution and used only as a suggestion of the true proportion since the sampling variation becomes quite large.

Once the estimates have been increased by 30% to account for the unidentified handicapped persons in the sample, any mathematical statement of the error would be complicated. It should be noted that the error of the estimated total based on the unadjusted sample figure was shown to be negligible in comparison to the magnitude of the total. It is most practicable to examine separately the effect the variability of the 30% adjustment will have upon the estimate.

* The estimate currently used by the Minnesota Poll.

Since this 30% figure was based upon observations of 100 cases it has a SE of 4.5% and a 99% confidence interval of ±11%. Thus the adjusted total estimate would fall within the range 249,000 to 342,000 in 99 of 100 such samples. The institution survey was a census of all beds and is based on 91% of the bed capacity in the state. Because every institution was contacted, there are no sampling errors to be considered. The confidence interval based on the 30% adjustment may therefore be applied to the total after adding the results of the institution survey. The 99% confidence interval for the total estimate then becomes 284,000 to 377,000.

Appendix A-2: Methodology for Institutional Survey

Questionnaire construction

A questionnaire[10] was designed to identify all persons who were handicapped and currently institutionalized in hospitals, institutions, special schools, nursing homes and boarding-care homes throughout the state. The questionnaire asked for data on the number of handicapped persons in each institution by type of disability and age. The same fourteen broad disability categories that were used in the household survey were used in the institutional survey. Three age categories were used to distinguish potential labor force members from those patients younger or older than this group.

Hospital directors and other hospital personnel in the Minneapolis area were consulted to determine the best terminology for the questionnaire. The questionnaire had to be worded in such a manner that it could be completed by the physician in charge of each ward, or by the nurse in charge of each nursing station, or by the medical person in charge of each hospital or home. A patient was to be classified as handicapped if he or she was expected to be totally or partially impaired in carrying out normal activities for the next ninety days whether still hospitalized or not. The term "impaired in carrying out normal activities" was used in place of the term "handicapped" since it was preferred by hospital and medical personnel consulted in preliminary studies. This term was also used to prevent the exclusion of patients who were not normally labor force participants, although handicapped in some degree. Ninety days was used as the time period for which an impairment would be considered serious enough to be classified as a handicap since ninety days or three months is the time period usually used to distinguish chronic diseases and serious disabilities from other less severe types.[11]

Although length of time hospitalized may be a more objective criterion to use in classifying patients as handicapped than a judgment as to the length of time in the future a patient is expected to be impaired, the latter method would exclude fewer handicapped patients. Many patients, although chronically ill or disabled, may be excluded if a length of time hospitalized type of criterion was used. In addition, the length of time hospitalized may not be indicative of the extent or severity of a disability or disease.

Administration

Persons filling out questionnaires were instructed to classify each patient with regard to his major disability if other disabilities were present.

---

[10] See Appendix C for a copy of the institutional survey questionnaire.

[11] Research Plan for the Kansas City Rehabilitation Survey and Demonstration. Community Studies, Inc.

Completed questionnaires were coded by the research staff. Every fourth coded questionnaire was rechecked for accuracy of the coding. Punching and machine analysis of the data was carried out by the Numerical Analysis Laboratory of the University of Minnesota.

In making estimates to account for non-respondents, it was assumed that the returns from the non-respondents in a particular type of hospital or institution would assume the same proportions regarding the number of handicapped patients in each disability and age category as did the returns from the respondents. This assumption was made in light of the high percentage of returns received and in the absence of any evidence that the characteristics of the non-respondents were different from those of the respondents.

Accuracy of the institutional survey

As a verification of survey accuracy, returns from the large public specialized institutions (e.g. mental hospitals and institutions for the mentally defective) were compared with a separate set of figures obtained from the Minnesota Department of Welfare. In spite of different compilation dates for the two sets of figures, returns from the questionnaire survey agree closely with the census figures of the Minnesota Department of Welfare as shown in Table 7.

The proportion of usable returns gives another measure of the accuracy of the survey. Tables 8 and 9 show that, in terms of this criterion (proportion of returns), the results obtained in the institutional survey may be accepted with confidence.

Table 7

Comparison of state institution resident populations, June 1958, as quoted in the Minnesota Department of Welfare Statistics, against the number of impaired patients reported by questionnaire

Name of Institution	Average Resident Population June 1958	Number of Impaired Patients as Reported in Questionnaire Survey
Mental Hospitals		
Anoka	1,276	1,034
Fergus Falls	1,817	1,814
Hastings	980	1,051
Moose Lake	1,237	1,247
St. Peter	2,147	2,154
Sandstone	445	416
Willmar	1,367	1,356
Institutions for Mentally Deficient and Epileptic		
Cambridge	1,413	1,553
Faribault	3,085	3,211
Lake Owasso	100	102
Owatonna	307	366
Shakopee	28	34
Total	14,202	14,338

Table 8

Percentage of usable returns

Type of Institution	Number of Questionnaires Sent	Number of Questionnaires Received	Percentage Received
Federal hospitals	5	4	80
General hospitals	180	167	93
Mental hospitals	12	11	92
Institutions for mentally deficient, epileptic or TB	13	13	100
Other special schools, hospitals, and institution infirmaries	12	11	92
Nursing and boarding care homes	419	317	76[a]
Total	641	523	82[b]

[a] Equals 81% when 23 incomplete responses are added in.

[b] Equals 85% when 23 incomplete responses are added in.

Table 9

Percentage of usable returns according to bed capacity

Type of Institution	Bed Capacity of Institutions to Which Questionnaires Were Sent	Bed Capacity of Institutions from Which Questionnaires Were Received	Percentage of Returns by Number of Beds
Federal hospitals	2,456	2,443	99.5
General hospitals	14,558	14,208	97.6
Mental hospitals	10,890	10,863	99.7
Institutions for mentally deficient, epileptic or TB	6,814	6,814	100.0
Other special schools, hospitals, and institution infirmaries	1,008	948	94.0
Nursing and boarding care homes	13,545	9,718	71.7
Total	49,271	44,994	91.3

Appendix B-1: Supplement on Household Survey

The following tables present detailed findings of the household survey. Part "a" presents tables showing the distribution of each disability category according to age. Part "b" presents tables on employment characteristics such as salaries, occupations, and current employment status. Part "c" presents information concerning sources of income, marital status, and education.

Appendix B-1-a: Estimated number of handicapped persons in each disability category by age

Table 10

Estimated number of handicapped persons with orthopedic impairments by age

Age	Sample Frequency	Sample Percentage	Estimate for entire state	
			From Sample	Adjusted
Under 14	11	7	4,280	6,120
14-24	23	14	8,570	12,240
25-44	42	27	16,520	23,610
45-64	55	35	21,420	30,600
Over 64	25	16	9,790	13,990
No age reported	2	1	620	870
Total	158	100	61,200	87,430

Table 11

Estimated number of handicapped persons with cardiovascular impairments by age

Age	Sample Frequency	Sample Percentage	Estimate for entire state	
			From Sample	Adjusted
Under 14	7	7	2,680	3,830
14-24	10	10	3,830	5,480
25-44	15	15	5,750	8,220
45-64	36	36	13,800	19,720
Over 64	30	30	11,500	16,430
No age reported	1	1	780	1,090
Total	99	99*	38,340	54,770

* Not equal to 100 due to rounding off of percentages.

Table 12

Estimated number of handicapped persons with generalized or systemic impairments by age

Age	Sample Frequency	Sample Percentage	Estimate for entire state	
			From Sample	Adjusted
Under 14	7	13	2,720	3,880
14-24	5	9	1,880	2,690
25-44	10	19	3,970	5,670
45-64	18	33	6,900	9,850
Over 65	13	24	5,020	7,170
No age reported	1	2	410	600
Total	54	100	20,900	29,860

Table 13

Estimated number of handicapped persons with neurological impairments by age

Age	Sample Frequency	Sample Percentage	Estimate for entire state	
			From Sample	Adjusted
Under 14	12	27	4,710	6,730
14-24	6	13	2,270	3,240
25-44	8	18	3,140	4,480
45-64	13	29	5,050	7,220
Over 64	5	11	1,920	2,740
No age reported	1	2	340	500
Total	45	100	17,430	24,910

Table 14

Estimated number of handicapped persons with visual impairments by age

Age	Sample Frequency	Sample Percentage	Estimate for entire state	
			From Sample	Adjusted
Under 14	6	19	2,280	3,260
14-24	4	13	1,660	2,400
25-44	5	16	1,920	2,740
45-64	6	19	2,280	3,260
Over 65	10	32	3,860	5,490
No age reported	0	0	.....	.....
Total	31	99*	12,000	17,150

* Not equal to 100 due to rounding off of percentages.

Table 15

Estimated number of handicapped persons with respiratory impairments by age

Age	Sample Frequency	Sample Percentage	Estimate for entire state	
			From Sample	Adjusted
Under 14	6	21	2,360	3,370
14-24	1	3	340	480
25-44	5	17	1,910	2,730
45-64	10	34	3,820	5,460
Over 64	6	21	2,360	3,370
No age reported	1	3	450	650
Total	29	99*	11,240	16,060

* Not equal to 100 due to rounding off of percentages.

Table 16

Estimated number of handicapped persons with neuropsychiatric impairments by age

Age	Sample Frequency	Sample Percentage	Estimate for entire state	
			From Sample	Adjusted
Under 14	4	16	1,550	2,210
14-24	5	20	1,940	2,770
25-44	5	20	1,940	2,770
45-64	6	24	2,330	3,320
Over 64	4	16	1,550	2,210
No age reported	1	4	380	560
Total	25	100	9,690	13,840

Table 17

Estimated number of handicapped persons with gastro-intestinal impairments by age

Age	Sample Frequency	Sample Percentage	Estimate for entire state	
			From Sample	Adjusted
Under 14	1	5	390	550
14-24	0	0	.....	.....
25-44	6	30	2,330	3,320
45-64	8	40	3,100	4,430
Over 64	5	25	1,930	2,770
No age reported	0	0	.....	.....
Total	20	100	7,750	11,070

Table 18

Estimated number of handicapped persons with a hearing impairment by age

Age	Sample Frequency	Sample Percentage	Estimate for entire state	
			From Sample	Adjusted
Under 14	3	17	1,180	1,690
14-24	1	6	420	600
25-44	9	50	3,480	4,980
45-64	2	11	770	1,090
Over 64	1	6	420	600
No age reported	2	11	690	990
Total	18	101*	6,960	9,950

* Not equal to 100 due to rounding off of percentages.

Table 19

Estimated number of handicapped persons with mental retardation by age

Age	Sample Frequency	Sample Percentage	Estimate for entire state	
			From Sample	Adjusted
Under 14	8	53	3,080	4,400
14-24	2	13	760	1,080
25-44	2	13	760	1,080
45-64	....	....	.....	.....
Over 64	2	13	760	1,080
No age reported	1	7	450	660
Total	15	99[a]	5,810	8,300

[a] Not equal to 100 due to rounding off of percentages.

Table 20

Estimated number of handicapped persons with genito-urinary, skin and allergy, speech and miscellaneous impairments by age

Age	Sample Frequency	Sample Percentage	Estimate for entire state	
			From Sample	Adjusted
Under 14	4	15	1,570	2,240
14-24	3	11	1,150	1,640
25-44	7	26	2,720	3,880
45-64	5	19	1,990	2,840
Over 64	8	30	3,030	4,330
No age reported	....	....	.....	.....
Total	27	101[a]	10,460	14,930

[a] Not equal to 100 due to rounding off of percentages.

Appendix B-1-b: Employment characteristics of handicapped persons

Table 21

Length of time the unemployed handicapped persons[a] have been out of work, by type of disability

Type of disability[b]	N	Months out of work			
		1 or less	1-5	5 or more	Never worked
Cardiovascular	36	31	17	11	42
Generalized or systemic	21	19	10	19	52
Neurological	19	11	26	11	53
Neuropsychiatric	11	55	18	9	18
Orthopedic	58	33	14	10	43
Miscellaneous	11	36	9	0	55
Total	185	26	16	10	48

[a] In labor force age range (14 to 64 years).

[b] Omitted disability categories (N = 29) have individual sample frequencies too small for use in estimation.

Table 22

Occupational distribution of presently employed handicapped persons[a]

DOT Occupational Group	Sample Frequency	Per cent
Agricultural, horticultural, and kindred occupations	31	21
Building service workers and porters	4	3
Clerical and kindred occupations	14	9
Managerial and office occupations	12	8
Personal service occupations	7	5
Professional occupations	9	6
Protective service occupations	3	2
Sales and kindred occupations	13	9
Semiprofessional occupations	4	3
Semiskilled occupations	14	9
Skilled occupations	20	14
Unskilled occupations	16	11
No information	1	1
Total	148	101[b]

[a] In labor force age range (14 to 64 years).

[b] Not equal to 100 due to rounding off of individual percentages.

Table 23

Salary per week of presently employed handicapped persons[a] by type of disability

Disability[b]	N	Salary per week			
		Less than $50	$50-99	$100 or more	No information
		Per cent			
Cardiovascular	25	32	24	32	12
Generalized or systemic	12	25	50	8	17
Neurological	8	38	25	13	25
Orthopedic	62	24	47	18	11
Respiratory	10	10	60	10	20
Visual	10	40	50	10	.....

[a] In labor force age range (14 to 64 years).

[b] Omitted disability categories (N = 21) have individual sample frequencies too small for use in estimation.

Appendix B-1-c: General characteristics of handicapped persons

Figure 8

Education of handicapped persons of all ages

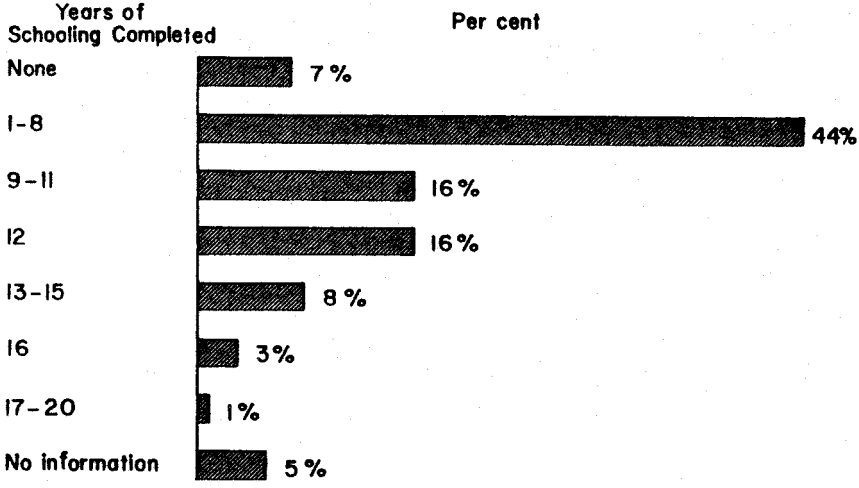


Figure 9

Marital status of handicapped persons of all ages

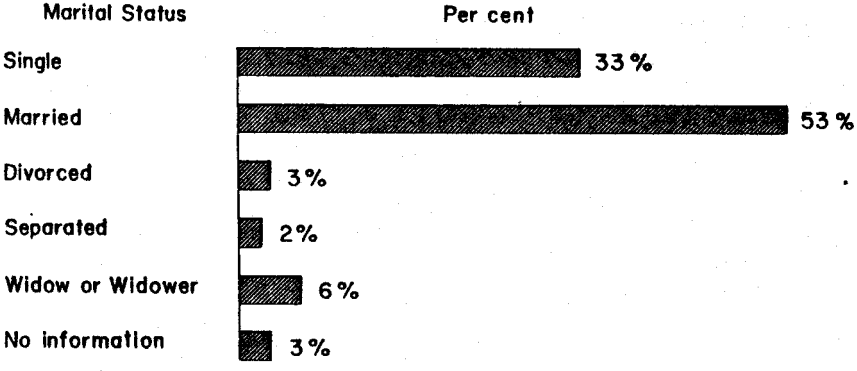
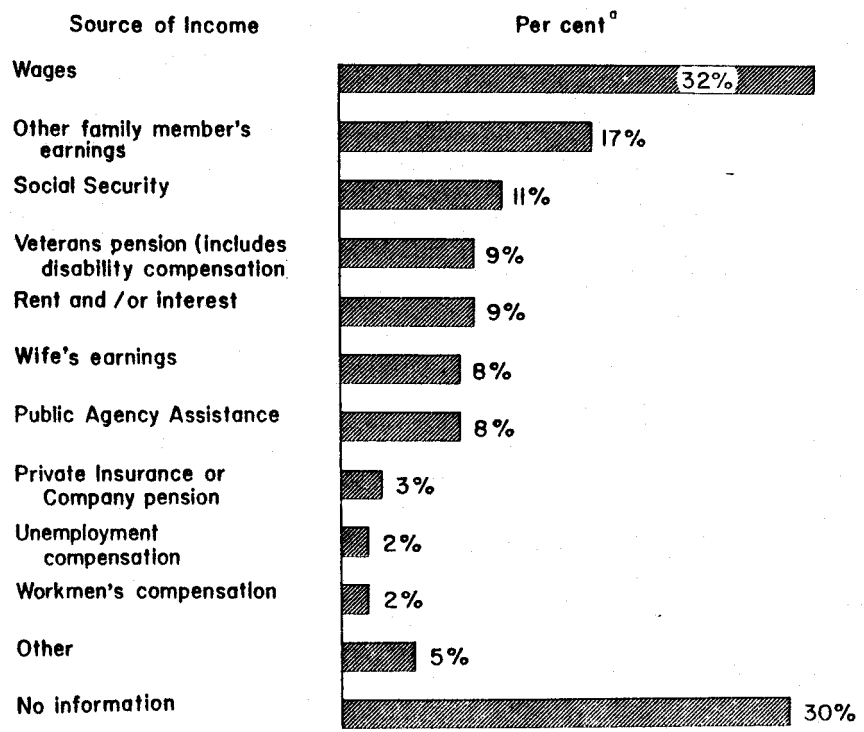


Figure 10

Sources of income for handicapped persons of all ages



[a] Some persons listed more than one agency; therefore total percentage exceeds 100.

Appendix B-2: Supplement on Institutional Survey

The following tables present detailed findings of the institutional survey. Part "a" presents data on the distribution of handicapped persons in Minnesota hospitals and related institutions by age, type of disability, and type of institution. Part "b" presents data actually reported in the survey and corrected data adjusted to account for non-responding institutions.

Appendix B-2-a: Characteristics of handicapped persons in Minnesota hospitals and related institutions

Figure 11

Age distribution of the institutionalized handicapped population of Minnesota

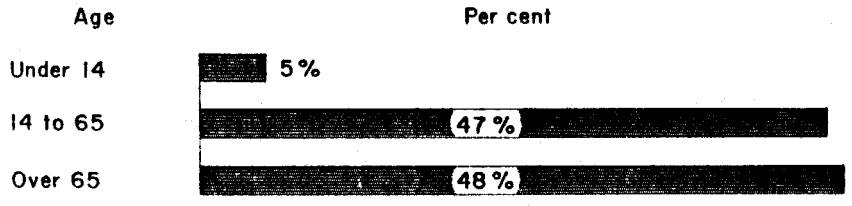


Table 24

Number of physically handicapped patients in Minnesota hospitals and related institutions

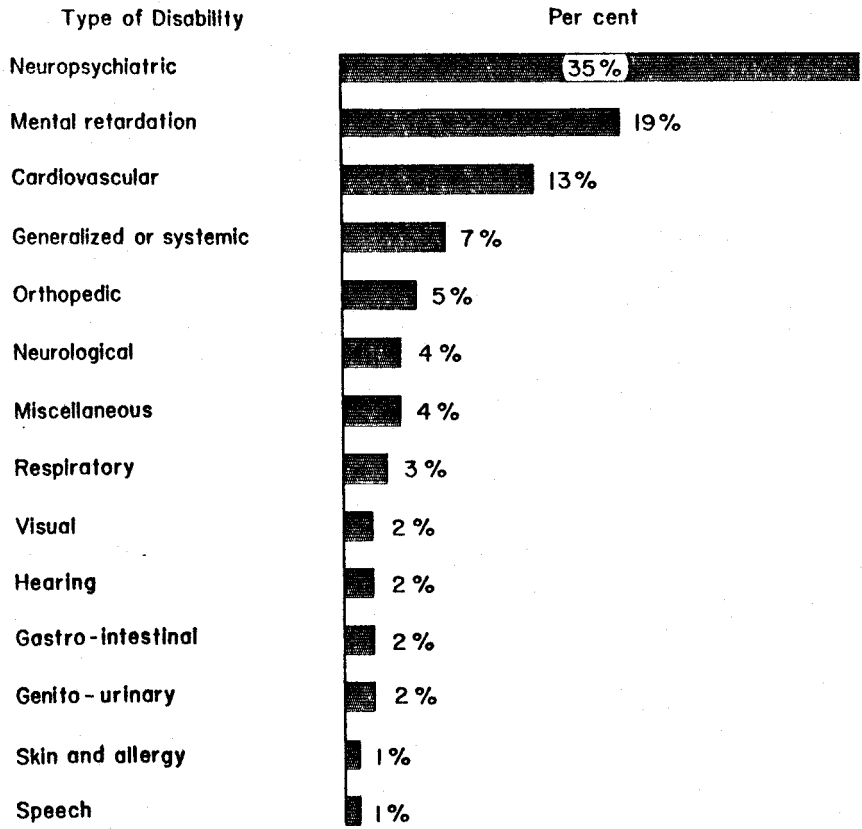
Type of institution	(1) Bed capacity of institutions to which questionnaires were sent	(2) Bed capacity of institutions from which questionnaires were received	(3) Number of impaired patients reported	(4) Per cent of beds with impaired patients[a]	(5) Number of impaired patients—corrected to cover non-respondents[b]
Federal hospitals	2,456	2,443	1,693	69.3	1,702
General hospitals	14,558	14,208	5,273	37.1	5,402
Mental hospitals	10,890	10,863	10,794	99.4	10,820
Institutions for the mentally deficient, epileptic or TB	6,814	6,814	6,191	90.9	6,191
Other special schools, hospitals and institution infirmaries	1,008	948	706	74.5	751
Nursing and boarding care homes	13,545	9,718	7,288	75.0	10,157
Total	49,271	44,994	31,945		35,023

[a] Obtained by dividing column 3 by column 2.

[b] Obtained by projecting from percentage in column 4 to bed capacity in column 1.

Figure 12

Distribution of the institutionalized handicapped population by disability



Appendix B-2-b: Reported and corrected data on handicapped persons in Minnesota hospitals and related institutions by disability and age

Table 25

Number of physically handicapped patients in Minnesota hospitals and related institutions by type of disability and age

Type of disability	Reported[a]				Adjusted[b]			
	Under 14	14 to 65	Over 65	Total	Under 14	14 to 65	Over 65	Total
Cardiovascular	53	571	3,031	3,655	54	608	3,870	4,532
Gastro-intestinal	7	217	317	541	7	225	382	614
Generalized or systemic	37	503	1,562	2,102	38	534	1,984	2,556
Genito-urinary	17	105	386	508	17	111	485	613
Hearing	168	139	306	613	178	151	412	741
Mental retardation	975	4,876	553	6,404	977	4,955	660	6,592
Neurological	68	582	648	1,298	70	633	811	1,514
Neuropsychiatric	109	7,231	4,726	12,066	112	7,269	4,878	12,259
Orthopedic	152	503	872	1,527	162	529	1,068	1,759
Respiratory	78	629	382	1,089	78	638	429	1,145
Skin and allergy	14	64	81	159	14	67	105	186
Speech	4	27	95	126	4	29	125	158
Visual	109	126	404	639	115	162	539	816
Miscellaneous	33	437	748	1,218	34	497	998	1,529
Total	1,824	16,010	14,111	31,945	1,860	16,408	16,746	35,014[c]

[a] Figures cover 91.3% of the hospital and institutional beds in Minnesota.

[b] Adjusted to include non-responding institutions.

[c] Does not add up to 35,023 due to rounding off in the calculations. (Cf. Table 24.)

Table 26

Number of physically handicapped patients in Minnesota federal hospitals by type of disability and age

Type of disability	Reported[a]				Adjusted[b]			
	Under 14	14 to 65	Over 65	Total	Under 14	14 to 65	Over 65	Total
Cardiovascular	0	29	19	48	0	29	19	48
Gastro-intestinal	0	24	5	29	0	24	5	29
Generalized or systemic	0	42	12	54	0	42	12	54
Genito-urinary	1	7	4	12	1	7	4	12
Hearing	0	3	0	3	0	3	0	3
Mental retardation	1	0	0	1	1	0	0	1
Neurological	0	41	33	74	0	41	33	74
Neuropsychiatric	0	1,025	288	1,313	0	1,030	290	1,320
Orthopedic	1	18	15	34	1	18	15	34
Respiratory	0	87	17	104	0	88	17	105
Skin and allergy	0	11	0	11	0	11	0	11
Speech	0	0	0	0	0	0	0	0
Visual	0	3	4	7	0	3	4	7
Miscellaneous	0	1	2	3	0	1	2	3
Total	3	1,291	399	1,693	3	1,297	401	1,701[c]

[a] Figures cover 99.5% of the beds in this type of institution.

[b] Adjusted to include non-responding institutions of this type.

[c] Does not add up to 1,702 due to rounding off in the calculations. (Cf. Table 24.)

Table 27

Number of physically handicapped patients in Minnesota general hospitals by type of disability and age

Type of disability	Reported[a]				Adjusted[b]			
	Under 14	14 to 65	Over 65	Total	Under 14	14 to 65	Over 65	Total
Cardiovascular	52	440	830	1,322	53	451	850	1,354
Gastro-intestinal	0	176	150	326	0	180	154	334
Generalized or systemic	36	378	442	856	37	387	453	877
Genito-urinary	16	83	131	230	16	85	134	235
Hearing	1	12	19	32	1	12	20	33
Mental retardation	35	12	15	62	36	12	15	63
Neurological	50	256	162	468	51	262	166	479
Neuropsychiatric	109	365	113	587	112	374	116	602
Orthopedic	56	379	363	798	57	388	372	817
Respiratory	11	116	64	191	11	119	66	196
Skin and allergy	14	37	15	66	14	38	15	67
Speech	4	11	11	26	4	11	11	26
Visual	9	25	47	81	9	26	48	83
Miscellaneous	29	120	79	228	30	123	81	234
Total	422	2,410	2,441	5,273	431	2,468	2,501	5,400[c]

[a] Figures cover 97.6% of the available beds in this type of institution in Minnesota.

[b] Adjusted to include non-responding institutions of this type.

[c] Does not add up to 5,402 due to rounding off in the calculations. (Cf. Table 24.)

Table 28

Number of physically handicapped patients in Minnesota mental hospitals by type of disability and age

Type of disability	Reported[a]				Adjusted[b]			
	Under 14	14 to 65	Over 65	Total	Under 14	14 to 65	Over 65	Total
Cardiovascular	0	26	37	63	0	26	37	63
Gastro-intestinal	7	5	2	14	7	5	2	14
Generalized or systemic	0	26	40	66	0	26	40	66
Genito-urinary	0	5	6	11	0	5	6	11
Hearing	0	17	21	38	0	17	21	38
Mental retardation	0	405	62	467	0	406	62	468
Neurological	0	150	46	196	0	150	46	196
Neuropsychiatric	0	5,785	3,867	9,652	0	5,798	3,875	9,673
Orthopedic	0	7	13	20	0	7	13	20
Respiratory	0	3	6	9	0	3	6	9
Skin and allergy	0	12	5	17	0	12	5	17
Speech	0	11	7	18	0	11	7	18
Visual	0	9	11	20	0	9	11	20
Miscellaneous	0	173	30	203	0	174	30	204
Total	7	6,634	4,153	10,794	7	6,649	4,161	10,817[c]

[a] Figures cover 99.7% of the available beds in this type of institution in Minnesota.

[b] Adjusted to include non-responding institutions of this type.

[c] Does not add up to 10,820 due to rounding off in the calculations. (Cf. Table 24.)

Table 29

Number of physically handicapped patients in Minnesota institutions for the mentally deficient, epileptic or TB by type of disability and age[a]

Type of disability	Age			
	Under 14	14 to 65	Over 65	Total
Cardiovascular	0	0	2	2
Gastro-intestinal	0	1	0	1
Generalized or systemic	0	1	1	2
Genito-urinary	0	0	0	0
Hearing	1	0	0	1
Mental retardation	926	4,257	204	5,387
Neurological	4	1	0	5
Neuropsychiatric	0	25	102	127
Orthopedic	0	1	4	5
Respiratory	67	409	181	657
Skin and allergy	0	0	0	0
Speech	0	0	0	0
Visual	0	0	0	0
Miscellaneous	0	0	4	4
Total	998	4,695	498	6,191

[a] Figures cover 100% of the beds in this institutional type. Therefore, no adjustments are necessary.

Table 30

Number of physically handicapped patients in Minnesota special hospitals, schools and institution infirmaries by type of disability and age

Type of disability	Reported[a]				Adjusted[b]			
	Under 14	14 to 65	Over 65	Total	Under 14	14 to 65	Over 65	Total
Cardiovascular	1	13	74	88	1	14	79	94
Gastro-intestinal	0	0	4	4	0	0	4	4
Generalized or systemic	1	1	27	29	1	1	29	31
Genito-urinary	0	0	2	2	0	0	2	2
Hearing	166	92	0	258	176	98	0	274
Mental retardation	13	4	0	17	14	4	0	18
Neurological	13	21	3	37	14	22	3	39
Neuropsychiatric	0	4	2	6	0	4	2	6
Orthopedic	85	65	4	154	90	69	4	163
Respiratory	0	1	0	1	0	1	0	1
Skin and allergy	0	0	0	0	0	0	0	0
Speech	0	0	0	0	0	0	0	0
Visual	100	1	2	103	106	1	2	109
Miscellaneous	4	1	2	7	4	1	2	7
Total	383	203	120	706	406	215	127	748[c]

[a] Figures cover 94% of the beds in this type of institution.
[b] Adjusted to include non-responding institutions of this type.
[c] Does not add up to 751 due to rounding off in the calculations. (Cf. Table 24.)

Table 31

Number of physically handicapped patients in Minnesota nursing and boarding care homes by type of disability and age

Type of disability	Reported[a]				Adjusted[b]			
	Under 14	14 to 65	Over 65	Total	Under 14	14 to 65	Over 65	Total
Cardiovascular	0	63	2,069	2,132	0	88	2,883	2,971
Gastro-intestinal	0	11	156	167	0	15	217	232
Generalized or systemic	0	55	1,040	1,095	0	77	1,449	1,526
Genito-urinary	0	10	243	253	0	14	339	353
Hearing	0	15	266	281	0	21	371	392
Mental retardation	0	198	272	470	0	276	379	655
Neurological	1	113	404	518	1	157	563	721
Neuropsychiatric	0	27	354	381	0	38	493	531
Orthopedic	10	33	473	516	14	46	660	720
Respiratory	0	13	114	127	0	18	159	177
Skin and allergy	0	4	61	65	0	6	85	91
Speech	0	5	77	82	0	7	107	114
Visual	0	88	340	428	0	123	474	597
Miscellaneous	0	142	631	773	0	198	879	1,077
Total	11	777	6,500	7,288	15	1,084	9,058	10,157

[a] Figures cover 71.7% of the beds in this type of institution.
[b] Adjusted to include non-responding institutions of this type.

Appendix C

Questionnaires

Appendix C-1: Household Survey Questionnaire

University of Minnesota
Industrial Relations Center
Legislative Study

CONFIDENTIAL

No._____ Address_____

Interviewer_____ Time started_____ Ended_____

(Give your INTRODUCTION according to the Interviewer Instructions.)

IBM Code

1. How many persons usually live here?_____ 1___
   Be sure to include all of your family who usually live here, roomers, and yourself. Do not include visitors. 2___

2. Would you give me some information about each of them? Names are not important. 3___ 4___

Persons in Household

(1)	(2)	(3)	(4)	(5)		
Interviewee (Check Here)	Relationship to head of house	Age	Sex	Handicapped Yes	Handicapped No	
	(Head)					(Under 14) 6___
						(14-29) 7___
						(30-39) 8___
						(40-49) 9___
						(50-64) 10___
						(Over 64) 11___

5___

a. Have any of these persons, including the children, ever had an illness, a physical condition, or a mental or emotional problem *of any sort* which limits the *kind* of work they can do, or the *amount* of work they can do? 12___ 13___ 14___ 15___

Yes_____ No_____

(If YES, check appropriate block in handicapped column of table above and ask to speak to that person if possible and then begin question No. 3. If NO, continue.)

b. Have any of these persons ever had an illness, a physical condition, or a mental or emotional problem that limits his ordinary activity in any way?

Yes_____ No_____

(If YES, check appropriate block in handicapped column of table above and ask to speak to that person if possible. If both "a" and "b" are NO, then conclude interview after next question.) 16___

3. Is there a member of this household who is away in the hospital, an institution or a special school? 17___ 18___

Yes_____ No_____ 19___

(If YES): 20___

a. Age_____ b. Sex_____ 21___

c. Where is this person?_____ 22___
   (Complete name of hospital, institution, or school) 23___

d. For what reason?_____ 24___

_____ 25___ 26___

e. How long has this person been there?_____ 27___

4. What is the nature of the injury or illness? IBM Code

_____ 1___
_____ 2___
_____ 3___
_____ 4___

5. How old were you when this happened?_____years 5___

6. How did you become handicapped? 6___
   ___(1) Employment accident 7___
   ___(2) Illness
   ___(3) Present at birth 8___
   ___(4) War injury/illness 9___
   ___(5) Other accident: Specify_____ 10___

7. Were you employed at the time you were injured or became sick?
   Yes___ No___ 11___
   (If YES):
   a. What was the job you held before the injury/illness? (Describe fully.)

   _____ 12___
   _____ 13___
   _____ 14___

   b. How long had you held this job?_____months 15___

   c. How long had you been in this line of work?_____ 16___ 17___

8. Have you received any help from any public agencies? Here are some kinds of assistance you could have received. (Hand CARD A to interviewee.) Did you receive any of these from: (Now read each agency and record the responses.) 18___ 19___

Agency	Kind of assistance**							
	None	1	2	3	4	5	6	7
a. State Vocational Rehabilitation (DVR)	___	___	___	___	___	___	___	___
b. State Employment Service	___	___	___	___	___	___	___	___
c. Veterans Hospital	___	___	___	___	___	___	___	___
d. Veterans Administration (other than hospital)	___	___	___	___	___	___	___	___
e. Other public or private agencies	___	___	___	___	___	___	___	___

20___ 21___ 22___ 23___ 24___

Specify_____

** None. No assistance from this agency.
1. Medical, surgical, and other hospital services.
2. Counseling and guidance.
3. Training for a job.
4. Planning for a job.
5. Assistance in finding a job.
6. Physical, manual, occupational therapy.
7. Other (such as providing artificial limbs, hearing aid, tools).

Specify_____

9. At what places have you talked with a counselor about the best kind of work for you? IBM Code 25___

_____

_____

(Name and location of the agency or organization)

10. What was the first job you held after the injury/illness? (Describe fully) 26___

_____ 27___

28___

_____

_____

a. How did you get this job? (Check one of the alternatives only. If the interviewee states that he got the job himself, ask the additional question, "Did anyone help you in any way to get this job?" We want to make sure we learn of any help he may have had from outside sources.)

___(1) Through the State Vocational Rehabilitation (DVR) 29___

___(2) Through the State Employment Service

___(3) Through a private employment agency

___(4) Through a vocational counselor

___(5) Through friends or relatives

___(6) I got the job myself (ask additional question if this is choice)

___(7) I am self-employed

___(8) I returned to my former job

___(9) Some other way: Specify_____

b. How long was it before you returned to work after your injury/illness? 30___

_____ 31___

32___

c. Did you earn more or less on this job than you earned on the job held before your illness/injury? More_____ Less_____ (Same_____) 33___

d. If MORE or LESS, how much? $_____per week 34___

e. Did you change your usual line of work in any way after the illness/injury? (*Usual line of work* is that type of work for which the handicapped person has had the most experience and/or training.) 35___

36___

Yes___ No___

f. Describe the nature of the changes: (Describe fully) 37___

_____ 38___

_____

_____

_____

11. Are you working now? Yes___ No___ | IBM Code

(If YES):

a. How many hours per week do you work?_____hours per week | 39___ 40___

b. (If less than 35 hours per week . . .) Are you looking for full-time work? | 41___

Yes___ No___ | 42___

(If NO):

c. How long have you been out of work?_____months | 43___ 44___

d. Are you looking for work now? Yes___ No___ | 45___

e. During the past 12 months, how many months have you been employed:

(1) Full time?_____months (35 or more hours per week) | 46___ 47___

(2) Part time?_____months (Less than 35 hours per week) | 48___ 49___

(3) Unemployed?_____months | 50___ 51___

(4) Retired with some part-time employment?_____months | 52___ 53___

(5) Retired?_____months | 54___

(In introducing the following question, give a brief summary of what information you have covered so far, such as, "We have talked about the jobs you have held before and after your illness/injury, now we want to discuss in detail your present job. Please answer all of the following questions on the basis of your present job (if YES to question 11) or on the basis of the last job you held (if NO to question 11)." | 55___

12. a. Name of job_____ | 56___ 57___

_____ | 58___

b. Describe duties_____

_____

_____

c. Name of employer_____ (Complete name of Company) | 59___

d. Type of business or industry_____

e. Hours worked per week_____ | 60___ 61___

f. Date job started_____ (month and year) | 62___ 63___

g. Date job ended_____ (month and year) | 64___ 65___

h. Do (Did) you like the activities you engage(d) in one this job? IBM Code

Yes___ No___ 66___

i. Do (Did) you like the kind of treatment you receive(d) from your employer and/or co-workers?

Yes___ No___ 67___

(1) What do (did) you like or dislike?_____ 68___

_____

j. About how much money do (did) you usually earn a week on this job? 69___

___a. Less than $20
___b. $20 to $29
___c. $30 to $39
___d. $40 to $49
___e. $50 to $59
___f. $60 to $69
___g. $70 to $79
___h. $80 to $89
___i. $90 to $99
___j. $100 to $109
___k. $110 to $119
___l. $120 or more

13. What are your present sources of income or support? (Use CARD B here.) Check as many as apply to you. 70___

___a. Wages
___b. Wife's earnings
___c. Other family member's earnings
___d. Veterans pension (includes disability compensation
___e. Unemployment compensation
___f. Workmen's compensation
___g. Private Insurance and/or company pension
___h. Public agency assistance
___i. Private agency assistance
___j. Social Security
___k. Rent and/or interest
___l. Other (Specify below)
_____
_____

14. If you are the head of the household, how many persons do you support including yourself?_____ 71___

15. Do you feel that your illness/injury has affected your over-all earning ability? 72___

Yes___ No___

(If YES): a. How?_____

_____ 73___

(If NO): b. Why?_____

_____

16. Marital Status: ___Single ___Married ___Divorced ___Separated 74___
___Widow or Widower _____Other

17. Military Service: ___Veteran WWI ___Veteran WWII and/or Korea 75___
___Non-Veteran _____Other

18. What was the highest grade you finished in school? 76___

1 2 3 4 5 6 7 8 Grade School | 9 10 11 12 High School | 13 14 15 16 College | 17 18 19 20 Graduate 77___

19. In addition to all the information we have obtained, we would like your ideas about services to handicapped individuals: IBM Code

78.___
79.___

_____

_____

_____

_____

20. Is there anyone else in this household who should be interviewed who has ever had an injury, illness, or a mental or emotional problem of any sort? 80.___

Yes___ No___

(If YES, fill out another interview schedule. Be sure to complete one full line of information in table (question 2) on the new schedule for this new handicapped person. Also be sure to use the same code number as appears on this form.)

(Complete your interview with a word of thanks, such as *"Thank you very much for your cooperation!"*)

(Be sure to go back to the first page of this questionnaire and fill in the address of this household, the time this interview ends, and then sign your name. Also, check to see that every question that is applicable to the handicapped person has been answered. *Leave no blanks or unanswered questions!* If a question does not apply to the handicapped person being discussed, please indicate this by writing in the words "Not Applicable" or "N/A."

NOTATIONS

Appendix C-2: Institutional Survey Questionnaire

Questionnaire Instructions

The procedure for filling out this questionnaire is as follows:

(1st) Identify those bed patients in your institution who, by reason of a physical, emotional or mental condition or illness, are expected to be partially or totally impaired in carrying out normal activities for at least the next ninety days whether still hospitalized or not. The condition or illness may be congenital in origin or acquired by accident, injury or diseases.

then

(2nd) Classify these patients into one of the disability categories given on the basis of their most *limiting* condition or illness, for example, an amputee who is currently hospitalized for asthma might be classified in the orthopedic category since this might well be his most limiting condition.

then

(3rd) Classify the patients in a disability category into the three age groups given.

The completed questionnaire will contain the number of patients at your institution who may be expected to be impaired in their normal activities for the next ninety days in each of our disability categories by age groups.

If it is not possible to give us actual figures in this report from your records, please estimate the number of bed patients in each of our disability categories by age groups and indicate which figures are estimated by placing an asterisk beside such figures.

Survey of Impaired Bed Patients

Name of institution_____

Date questionnaire completed_____

Disability Category	Total number of impaired bed patients in each disability category	Number of impaired patients in each disability category by age groups		
		Under 14	14 to 65	Over 65
Orthopedic: Such as amputations, spinal fusions	_____	_____	_____	_____
Visual:	_____	_____	_____	_____
Hearing:	_____	_____	_____	_____
Speech:	_____	_____	_____	_____
Cardiovascular: Such as heart disease, diseases of the arteries or veins	_____	_____	_____	_____
Respiratory: Such as TB, chronic bronchitis	_____	_____	_____	_____

Neurological: Such as epilepsy, paraplegia	_____	_____	_____	_____
Neuropsychiatric: Such as neurosis, psychosis	_____	_____	_____	_____
Skin and Allergy:	_____	_____	_____	_____
Generalized or Systemic: Such as diabetes, cancer, arthritis	_____	_____	_____	_____
Gastro-Intestinal: Such as colostomy, ulcers	_____	_____	_____	_____
Genito-Urinary:	_____	_____	_____	_____
Mental Retardation:	_____	_____	_____	_____
Miscellaneous:	_____	_____	_____	_____

NOTE

The term "bed patients" used in this questionnaire was intended to distinguish patients in residence from out-patients and includes all persons currently in residence at your institution who are not staff members. It does not refer to just those patients who are bed-ridden.

When classifying impaired patients with several disabilities into one of the disability categories, be sure to classify the patient into one disability category only on the basis of what in your judgment is his *most limiting* disability.

Minnesota Studies in Vocational Rehabilitation

I. Research Plan and Bibliography.
II. A Study of Referral Information.
III. A Follow-up Study of Placement Success.
IV. A Study of 1,637 DVR Counselees.
V. Methodological Problems in Rehabilitation Research.
VI. A Survey of the Physically Handicapped in Minnesota.
VII. Factors Related to Employment Success.
VIII. A Study of ES Applicants.
IX. The Application of Research Results.
X. A Definition of Work Adjustment.
XI. Attitudinal Barriers to Employment.
XII. Validity of Work Histories Obtained by Interview.
XIII. The Measurement of Employment Satisfaction.
XIV. The Measurement of Employment Satisfactoriness.
XV. A Theory of Work Adjustment.
XVI. The Measurement of Vocational Needs.
XVII. Disability and Work.
XVIII. Construct Validation Studies of the Minnesota Importance Questionnaire.
XIX. An Inferential Approach to Occupational Reinforcement.
XX. Seven Years of Research on Work Adjustment.
XXI. Instrumentation for the Theory of Work Adjustment.
XXII. Manual for the Minnesota Satisfaction Questionnaire.
XXIII. A Theory of Work Adjustment (A Revision).
XXIV. Occupational Reinforcer Patterns (First Volume).
XXV. The Measurement of Occupational Reinforcer Patterns.
XXVI. A Follow-up Study of Former Clients of the Minnesota Division of Vocational Rehabilitation.
XXVII. Manual for the Minnesota Satisfactoriness Scales.
XXVIII. Manual for the Minnesota Importance Questionnaire.
XXIX. Occupational Reinforcer Patterns (Second Volume).
XXX. Applications of the Theory of Work Adjustment to Rehabilitation and Counseling.

New Publications:

The Minnesota Occupational Classification System
The Counseling Use of the Minnesota Importance Questionnaire

For ordering information contact:

Vocational Psychology Research/Department of Psychology
Elliott Hall/University of Minnesota/Minneapolis, MN 55455.