Minnesota Studies in Vocational Rehabilitation:

IV. A Study of 1,637 DVR Counselees

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A Study of 1,637 DVR Counselees[1]

Summary

Data on a sample of 1,637 DVR counselees, rehabilitated during the period 1953-1957, were analyzed with the following major findings:

1. The total sample as a whole was young (median age at acceptance: 21 years) and was composed of persons with little work experience. Only a fourth of the total sample had substantial work experience prior to rehabilitation.

2. In terms of disability classification, the largest groups were orthopedic (27%), mental retardation (12%), tuberculosis (12%), and deaf and hard of hearing (10%). More than half of the counselees were disabled before age 14.

3. A wide range of variation was found for disability groups on characteristics such as age at disablement, age at acceptance, proportion of the sexes and employment history.

4. More than a third of the total rehabilitated sample did not receive any training. Another third went to a business college, or a college or university. One fifth were trained in a public vocational or private trade school.

5. Half of the counselees obtained jobs in the professional & managerial and clerical & sales fields. Median weekly wage earned by the whole group was $51.

6. Half of the counselees did not receive help in finding their jobs.

7. There was variation in jobs obtained at closure among counselees receiving the same type of training. Only 60% of university-trained counselees obtained jobs in professional fields. Less than half of the counselees trained in vocational schools obtained skilled and semi-skilled jobs.

8. Minneapolis counselees differed from St. Paul counselees in age, sex, marital status, number of dependents, education, disability, and job at closure. This finding underscores the need for caution in generalizing from data on counselees from one urban area to counselees in adjoining urban areas even within the same labor market.

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[1] This study was supported, in part, by a research Special Project grant from the Office of Vocational Rehabilitation, Department of Health, Education, and Welfare.

9. Age, education, and employment history at acceptance were important factors in determining the type of training program received by a counselee. These findings may reflect counselor practice in determining eligibility for vocational rehabilitation, and/or stereotypy in counseling procedures.

10. Economic responsibility (as reflected by number of dependents) was more important than age at acceptance or type of training received in determining the length of a counselee's rehabilitation period. Counselees with dependents had shorter periods of rehabilitation than counselees without dependents.

11. Disability groups varied greatly in the length of time spent in rehabilitation. Counselees with congenital disabilities spent the most time in rehabilitation. Counselees with lower extremity amputations spent the least time in rehabilitation.

12. Nature of the disability was related to job at closure, weekly wages earned, and how jobs were obtained. These findings suggest the possibility of developing a measure of the handicapping severity of a disability. Such a measure would reflect the relative ease or difficulty of rehabilitating a particular disability group in comparison with other disability groups.

Introduction

The Industrial Relations Center is currently engaged in a program of research in vocational rehabilitation.[2] One contemplated research project is a pilot study of job placement procedures used with physically handicapped persons.

In preparation for this research project, the characteristics of the counselee population being served by two district offices of the State Division of Vocational Rehabilitation (DVR) were studied. An analysis was made of data on 1,637 physically handicapped individuals comprising all DVR counselees from the Minneapolis–St. Paul area who completed their rehabilitation programs and were placed in employment during a five-year period (January 1, 1953 to December 31, 1957)[3]. The data were obtained from Closed Case Reports on file at DVR. A copy of the form used in transcribing data from the Closed Case Reports file is shown in the Appendix.

Characteristics at acceptance of the total DVR sample

Of the total DVR sample of 1,637 counselees, 60% were from Minneapolis and 40% from St. Paul; 63% were male, 37% female; 69% were single, 25% married and 6% widowed, divorced, or separated; and 6% were veterans.

Table 1 compares the total DVR sample with the national OVR counselee population for fiscal 1957 and the Minneapolis–St. Paul general population in 1950. Only one-fourth of the total DVR sample was married, compared to about one-half of the national OVR counselee population and two-thirds of the Minneapolis–St. Paul general population. Slightly more than a fourth of the total DVR sample had dependents, as against one-half of the national OVR counselee population. Average education was 10 years for the total DVR sample, 9 years for the national OVR counselee population, and 11 years for the Minneapolis–St. Paul general population.

Age distributions for the total DVR sample at time of acceptance and at time of disablement are presented in Table 2. This table shows that a large proportion of young individuals were accepted for rehabilitation in the two DVR district offices. The median age at acceptance was approximately 21 years, 75% of the total sample being 33 years or younger at

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[2] The IRC vocational rehabilitation research program is described in detail in IRC Bulletin 21, *Minnesota Studies in Vocational Rehabilitation: I. Research Plan and Bibliography.*

[3] Grateful appreciation is extended to the Minnesota State Division of Vocational Rehabilitation for making the data available.

acceptance. This sample was considerably younger than the national OVR counselee population, whose average age at acceptance was 36 years.[4]

Table 2 also shows the distribution of age at disablement for the DVR counselees. The total DVR sample differed from the national OVR coun-

Table 1

Sex, marital status, number of dependents and education of Minneapolis–St. Paul DVR counselees (1953-1957), national OVR counselees (1957), and Minneapolis–St. Paul general population (1950 census)

Characteristics	Minneapolis–St. Paul DVR counselees 1953-1957 (N = 1,637)	National OVR counselees[a] fiscal 1957 (N = 70,940)	Minneapolis–St. Paul general population[b] 1950
		Per cent	
Sex:			
Male	62.5	64.8	66.9[c]
Female	37.5	35.2	33.1
Marital status:			
Single	69.2	.....	24.9[d]
Married	25.1	48.2	64.8
Widowed, divorced, separated	5.7	.....	10.3
With one or more dependents	27.1	50.0	.....
Median education	10 years	9 years	11.1 years[e]

[a] From: Office of Vocational Rehabilitation, U. S. Department of Health, Education, and Welfare. *Rehabilitation services series No. 450.* May 19, 1958.

[b] From: Bureau of the Census, U. S. Department of Commerce. *United States census of population: 1950. Detailed characteristics, Minnesota.* U. S. Government Printing Office, 1952.

[c] Data on experienced civilian labor force, *Op. cit.*, Table 73, p. 177.

[d] Data on population 14 years and older, *Op. cit.*, Table 57, p. 150.

[e] Data on population 25 years and older, *Op. cit.*, Table 65, p. 166.

Table 2

Age at acceptance and age at disablement for total DVR sample

Age in years	Per cent	
	At acceptance	At disablement
Birth	.....	28.5
1-13	.....	23.5
14-18	40.2	12.0
19-23	16.6	8.7
24-33	18.2	12.3
34-43	12.3	8.9
44-53	9.0	4.2
54-64	3.2	1.7
65 and older	0.5	0.2

[4] Office of Vocational Rehabilitation, U. S. Department of Health, Education, and Welfare. *Rehabilitation services series No. 450.* May 19, 1958.

selee population in average age at disablement, 12.8 years for the total DVR sample compared with 26 years for the OVR population.[5] Disablement occurred before the age of 14 for 52% of the counselees. A large proportion (55% of this sub-group, 29% of the total sample) were congenital cases. Only 6% of the total sample rehabilitated became disabled after age 43.

As shown in Figure 1, only 24% of the cases studied were found to have had substantial work histories prior to rehabilitation.[6] Figure 2 shows that 63% were dependent on their families. These findings are related to the fact that the sample as a whole was young.

In terms of broad classifications of disabilities, the data in Figure 3 indicate highest frequencies for impairment of one or more extremities, mental retardation, and tuberculosis. An examination of origin of disability (Figure 4) shows that disease caused disability in 55% of the cases, while congenital conditions were the origin in 28% of the cases.

Figure 1

Employment history prior to acceptance for total DVR sample

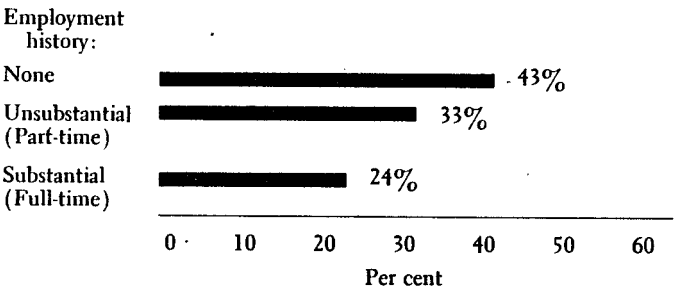


Figure 5 shows that the median lag in rehabilitation is 11 years. *Rehabilitation lag* is defined as the period of time from disablement to acceptance for rehabilitation.

In summary, the average DVR counselee was male, single, and about 21 years old. He had an orthopedic disability due to a disease which afflicted him at age 13. He had never worked before and was financially dependent on his family.

The characteristics of the total sample at acceptance described above

[5] *Op. cit.*

[6] Substantiality or unsubstantiality of employment experience was determined by the vocational rehabilitation counselor of each individual. Substantiality generally involved full-time work for a certain length of time, while unsubstantiality pertained to part-time employment or full-time employment of brief duration.

Figure 2

Source of income at acceptance for total DVR sample

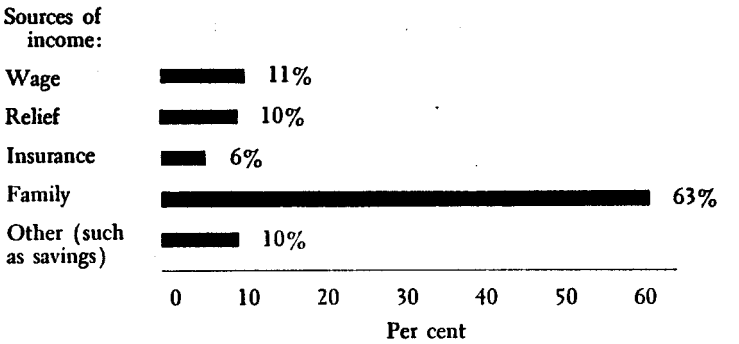


Figure 3

Classification of disabilities for total DVR sample

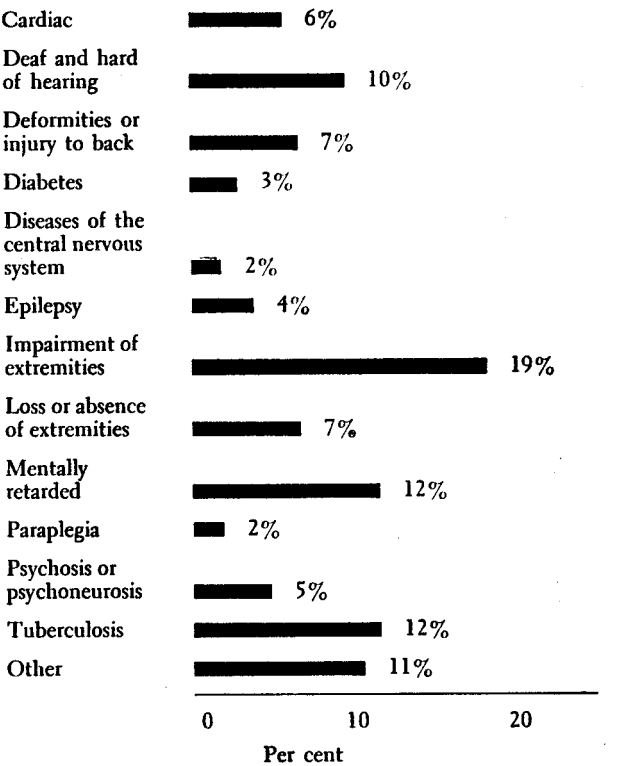


Figure 4

Origin of disability in total DVR sample

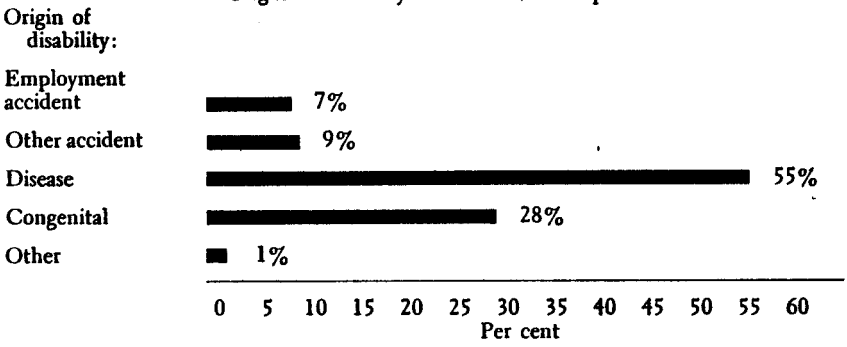
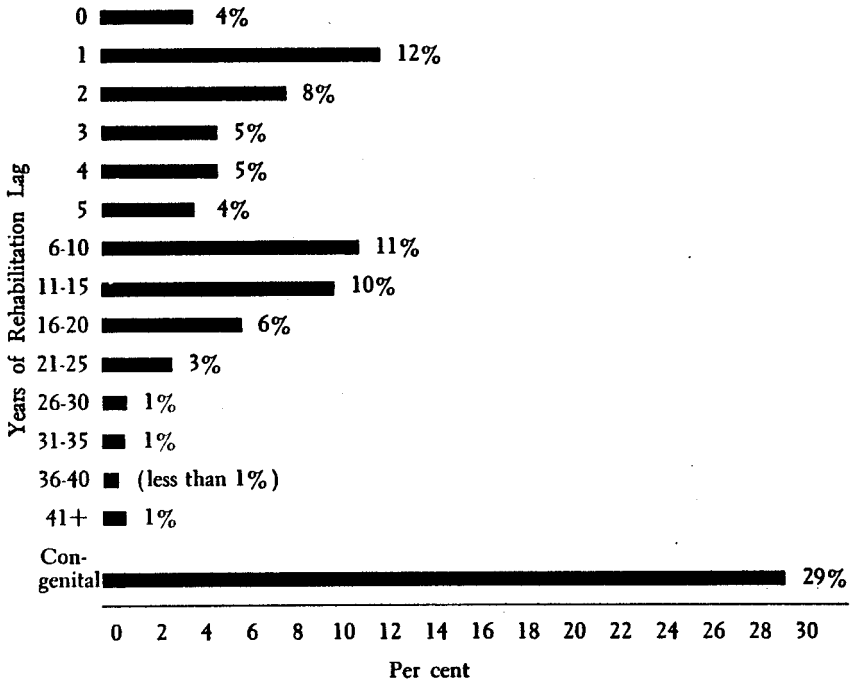


Figure 5

Rehabilitation lag for total DVR sample



reflect the selectivity exercised by the two district offices with regard to acceptance of applicants for rehabilitation. While the bases for selection policies and practices may be sound, it might be suggested that more attention could be given to case finding in the older age ranges.

Disability and characteristics at acceptance

Large differences were found in age at acceptance and age at disablement for the different disability groups. Table 3 shows the median age at acceptance varied from 16.8 years for the mental retard group to 38.3 years for the group with loss or absence of lower extremities.

Table 4 shows that median age at disablement ranged from 0 (birth) for the mental retard and deaf groups to 29.5 years for the group with deformities or injuries of the back.

In Table 5, the proportion of the sexes in the different disability groups are shown to have varied considerably. This indicates that the sex factor should be considered when examining and comparing disability groups on characteristics, such as occupation and income, which may be related to sex.

Table 3

Age at acceptance for each disability group

Disability group	N	Per cent in each age group at acceptance			Median age at acceptance in years
		14-18 years	19-43 years	44 and older	
Mental retardation	199	90	10	0	16.8
Diabetes	56	64	34	2	17.9
Deaf with speech impairment	33	55	39	6	18.5
Deaf	29	52	41	7	18.8
Impairment of lower extremity	127	51	34	15	18.9
Epilepsy	58	50	50	0	19.0
Impairment of upper extremity	51	49	35	16	19.3
Hard of hearing	95	48	37	15	19.8
Cardiac	106	47	39	14	20.1
Impairment of both lower extremities	73	44	38	18	21.5
Diseases of the central nervous system	31	36	55	9	22.0
Multiple impairment of extremities	63	38	55	7	22.5
Loss or absence of upper extremity	34	24	67	9	23.8
Paraplegia	39	26	60	14	28.0
Tuberculosis	202	7	74	19	30.3
Psychosis or psychoneurosis	82	4	81	15	30.5
Deformities or injury to back	117	25	59	16	31.4
Loss or absence of lower extremity	72	11	57	32	38.3
Total*	1637	41	47	12	20.9

* Includes 170 counselees not classified above.

Table 4

Age at disablement for each disability group

Disability group	N	Per cent in each age group at disablement				Median age at disablement in years
		Congenital	1-13 years	14-43 years	44 and older	
Mental retardation	199	98	1	1	.....	0
Deaf with speech impairment	33	78	16	3	3	0
Deaf	29	55	35	10	.....	0
Hard of hearing	95	31	46	19	4	5.8
Epilepsy	58	22	49	29	.....	8.0
Cardiac	106	27	34	32	7	9.1
Impairment of upper extremity	51	28	33	29	10	9.5
Impairment of lower extremity	127	12	54	28	6	9.7
Diseases of the central nervous system	31	45	7	42	6	10.3
Diabetes	56	4	62	34	.....	10.4
Multiple impairment of extremities	63	32	24	41	3	10.7
Impairment of both lower extremities	73	19	40	35	6	10.9
Paraplegia	39	23	13	61	3	17.0
Loss or absence of upper extremity	34	17	11	72	.....	19.4
Loss or absence of lower extremity	72	4	24	56	16	21.5
Tuberculosis	202	1	4	82	13	24.0
Psychosis or psychoneurosis	82	.....	4	92	4	26.3
Deformities or injury of back	117	16	15	59	10	29.5
Total[a]	1637	29	24	41	6	12.8

[a] Includes 170 counselees not classified above.

Employment histories of the different disability groups are compared in Table 6. In the group with loss or absence of lower extremity, 57% had substantial work experience, while 17% had no employment experience. In contrast to this, 57% of the mental retard group had no previous work experience and only 1% had substantial employment histories.

Characteristics at closure of the total DVR sample

Figures 6 through 8 and Tables 7 through 13 present data on length of rehabilitation period, kind of training obtained, job at closure, wage at closure, and how the counselees found their jobs. Figure 6 shows the median time spent in rehabilitation was 25 months. About 30% of the population spent one year or less, while 13% spent more than five years in rehabilitation.

Figure 7 shows that 35% of the total population went to business college, college or university, 19% went to public vocational school or private trade school, while 38% received no training at all.

Table 5

Sex distribution for each disability group

Disability group	N	Per cent	
		Male	Female
Loss or absence of upper extremity	34	88	12
Paraplegia	39	82	18
Loss or absence of lower extremity	72	81	19
Deformities or injuries to back	117	73	27
Diabetes	56	66	34
Impairment of upper extremity	51	65	35
Multiple impairment of extremities	63	65	35
Cardiac	106	65	35
Epilepsy	58	64	36
Impairment of both lower extremities	73	63	37
Impairment of lower extremity	127	61	39
Mental retardation	199	61	39
Deaf with speech impairment	33	58	42
Diseases of the central nervous system	31	58	42
Psychosis or psychoneurosis	82	52	48
Tuberculosis	202	49	51
Hard of hearing	95	46	54
Deaf	29	45	55
Total[a]	1637	62	38

[a] Includes 170 counselees not classified above.

Table 7 shows that 55% of the total sample planned on jobs in the professional & managerial and clerical & sales areas, and 51% obtained jobs in these areas.

Table 8 summarizes data on wage at closure. Median weekly wage was $51 which compares with a median weekly wage of $76.27 for employees of industrial firms in the Minneapolis-St. Paul area for the 1953-1957 period.[7]

Figure 8 shows that 43% of the DVR counselees found their own jobs; while counselors found jobs for only 11%.

In summary, the average DVR counselee spent about 2 years in a rehabilitation program; was trained in a business college (or college or university), obtained a clerical job; found his own job; and earned $51 a week on this job.

Table 9 shows that length of rehabilitation period varied with the type of training received. Counselees who did not receive training spent a median of 11 months in rehabilitation. In contrast, counselees who received

[7] Computed from *Employment trends*, Minnesota State Department of Employment Security, Series 1953 to 1957.

Table 6

Employment history for each disability group

Disability group	N[a]	Employment history: No previous employment	Unsubstantial employment[b]	Substantial employment[c]
		Per cent		
Mental retardation	199	57	42	1
Tuberculosis	202	55	27	18
Diseases of the central nervous system	31	55	26	19
Multiple impairment of extremities	63	49	24	27
Epilepsy	58	48	33	19
Cardiac	105	48	27	25
Deaf with speech impairment	33	46	24	30
Diabetes	56	45	37	18
Deaf	29	45	31	24
Paraplegia	39	41	26	33
Impairment of both extremities	73	41	25	34
Impairment of lower extremity	127	38	39	23
Impairment of upper extremity	51	38	33	29
Deformities or injury to back	116	37	31	32
Hard of hearing	94	34	37	29
Psychosis or psychoneurosis	81	30	40	30
Loss or absence of upper extremity	34	26	32	42
Loss or absence of lower extremity	72	17	26	57
Other	169	43	32	25
Total group	1632	43	33	24

[a] Does not include 5 counselees without employment history information.

[b] Refers to part-time employment or full-time employment of brief duration.

[c] Refers to full-time employment for a substantial length of time.

Table 7

Employment objective and job at closure[a] for total DVR sample

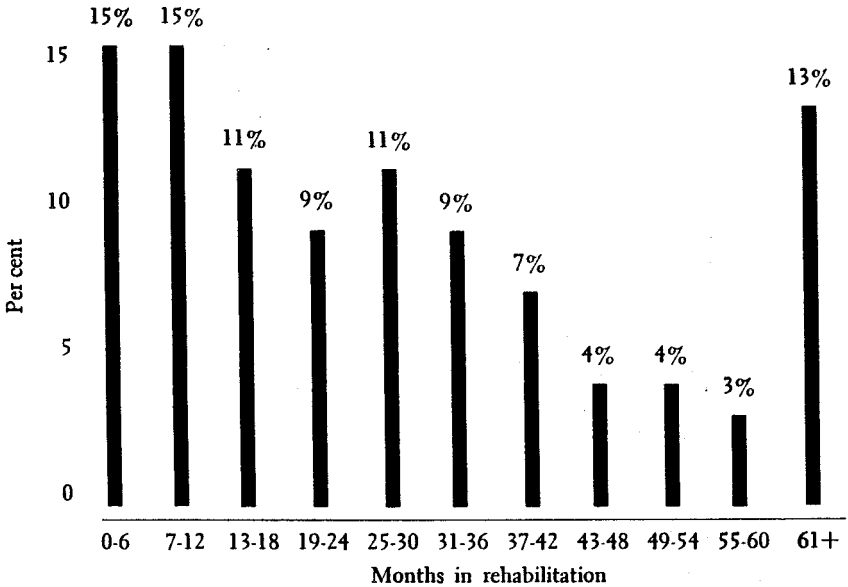
Occupational group	Employment objective (N = 1623)[b]	Job at closure (N = 1637)
	Per cent	
Professional and managerial	23	20
Clerical and sales	33	34
Service	7	11
Agricultural and kindred	1	1
Skilled	16	12
Semiskilled	15	13
Unskilled	5	6
Not in labor force	.....	3

[a] Refers to "closing the case" after the counselee has completed a program of rehabilitation and has been placed on a job.

[b] Excludes 14 individuals without data on employment objectives.

Figure 6

Length of rehabilitation period for total DVR sample



college or university training spent a median of 53.6 months in rehabilitation.

Job at closure was found to be in relatively close agreement with employment objective arrived at during counseling. The data in Table 10 are indicative of success in rehabilitation if one can assume that the employment objectives were arrived at through realistic vocational planning during the rehabilitation process.

Table 8

Wage at closure for total DVR sample

Occupational group	N	Median wage	Q[a]
Professional and managerial	322	$70.00	$16.00
Clerical and sales	562	47.00	4.00
Service	189	41.00	4.00
Agricultural and kindred	14	52.00	6.00
Skilled	194	62.00	6.75
Semiskilled	216	50.00	5.75
Unskilled	93	52.00	17.50
Total[b]	1590	51.00	15.00

[a] Semi-interquartile range.

[b] Excludes 47 individuals who did not obtain jobs at closure.

Figure 7

Training received by DVR counselees

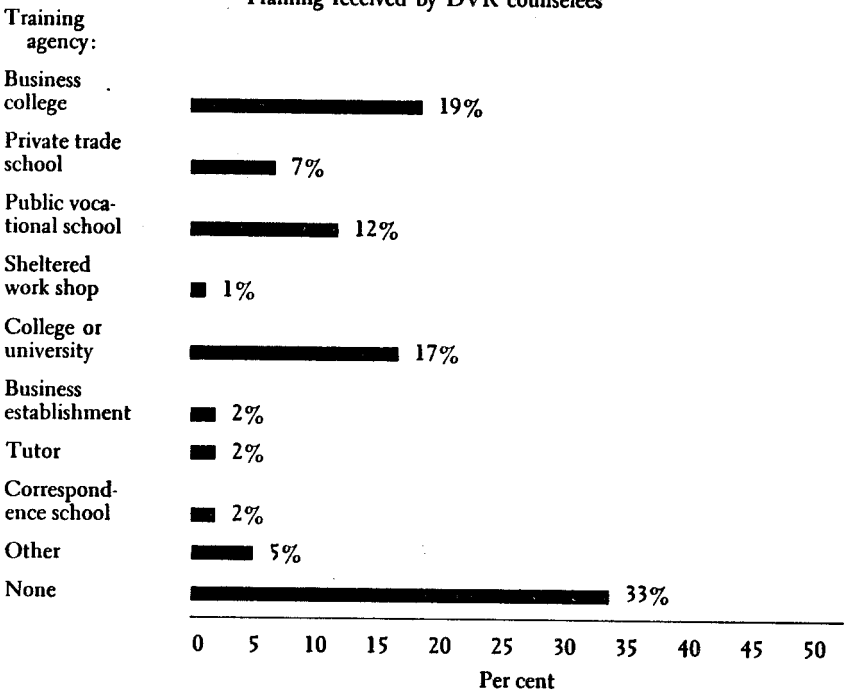


Figure 8

How DVR counselees obtained their jobs at closure

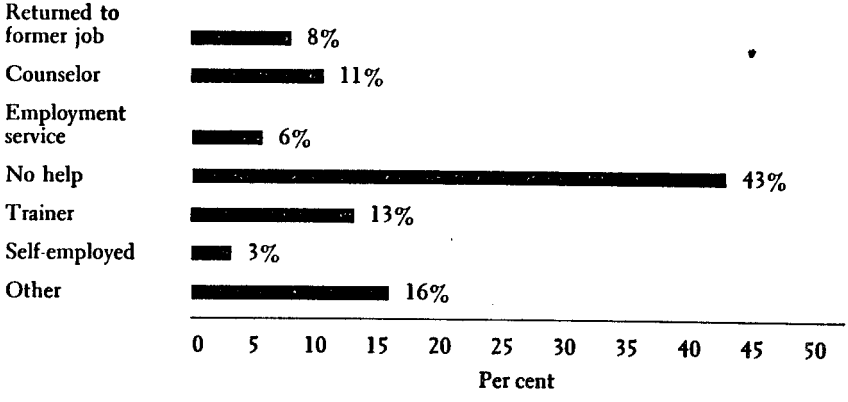


Table 9

Length of rehabilitation period according to type of training received

Type of training	N	Per cent in rehabilitation								Median rehabilitation period in mos.
		0-6 mos.	7-12 mos.	13-18 mos.	19-24 mos.	25-30 mos.	31-42 mos.	43-60 mos.	61+ mos.	
No training	616	35	18	9	6	7	13	7	5	11.0
Business establishment	25	8	27	19	8	8	8	14	8	16.2
Sheltered workshop	17	6	17	33	15	6	6	11	6	16.5
Business college	286	4	21	22	12	14	10	9	8	17.9
Private trade school	101	2	13	13	20	17	14	9	12	24.2
Public vocational school	193	4	7	7	13	17	30	9	13	30.5
Correspondence school	38	3	8	11	3	11	35	11	18	35.1
Tutor	37	0	16	11	11	6	11	13	32	53.3
College or university	264	0	4	4	3	8	16	24	41	53.6
Other	60	2	17	7	25	7	12	20	10	24.0

Table 10

Job at closure compared with employment objective

Employment objective	N	Job at closure							
		Professional and mgrl.	Clerical and sales	Service	Agricultural and kindred	Skilled	Semi-skilled	Un-skilled	Not in labor force
		Per cent							
Professional and managerial	379	61	22	3	0	4	3	2	5
Clerical and sales	531	6	78	3	0	2	4	2	5
Service	122	2	9	68	1	2	4	2	12
Agricultural and kindred	9	33	11	0	45	0	0	11	0
Skilled	252	5	9	10	1	51	16	6	2
Semiskilled	245	2	9	12	0	13	52	8	4
Unskilled	85	1	6	27	1	7	14	42	2
Total[a]	1637	20	34	11	1	12	13	6	3

[a] Includes 14 individuals without data on employment objectives.

Training was an important determinant of the kind of job the counselee obtained at closure when training was obtained in a college or university, or business college. Table 11 shows that 61% of college and university-trained counselees obtained jobs in professional fields, and 72% of counselees trained in business college obtained clerical jobs at closure. For other types of training, there was less relationship with job at closure.

Table 11

Job at closure for different types of training received

Type of training received	N	Job at closure: Professional and managerial	Clerical and sales	Service	Skilled	Semi-skilled	Unskilled	Other[a]
		Per cent						
Business college	286	12	72	3	4	4	4	1
Business establishment	25	.....	36	12	24	24	.....	4
College or university	264	61	30	4	2	1	1	1
Correspondence school	38	26	53	.....	13	8	.....	0
Private trade school	101	16	21	12	37	10	.....	4
Public vocational school	193	11	9	22	18	30	9	1
Sheltered workshop	17	.....	31	25	19	19	6	0
Tutor	37	23	14	9	17	31	6	0
Other	60	39	19	13	12	2	.....	15
No training	616	11	30	17	13	18	10	1
Total	1637	20	34	11	12	13	6	4

[a] Includes those in agricultural and kindred occupations and those who are not in the labor force.

Median weekly wage at closure differed considerably among groups with different training. Table 12 shows those who received training in a college or university received a median wage of $62 per week at closure. Those who received no training received a median wage of $47 a week. Those who were tutored received a median wage of only $14 a week.

Table 13 gives the median weekly wages of counselees grouped according to the number of years they spent from acceptance to closure. No re-

Table 12

Wage at closure for different types of training

Type of training	N[a]	Median wage	Q[b]
College or university	251	$62.00	$14.50
Private trade school	101	60.00	11.75
Correspondence school	38	59.00	11.78
Public vocational school	188	48.00	11.80
Business college	283	48.00	7.60
No training	599	47.00	13.20
Business establishment	25	46.00	13.50
Sheltered workshop	16	41.00	7.22
Tutor	37	14.00	14.52
Other	52	46.00	17.50

[a] Excludes 47 counselees who did not obtain jobs at closure.

[b] Semi-interquartile range.

Table 13

Median weekly wage in each occupational group as related to length of rehabilitation period

Occupational group	N[a]	Length of rehabilitation				
		1 year or less	1 to 2 years	2 to 3½ years	3½ to 5 years	Over 5 years
Professional and managerial	322	$65	$59	$62	$67	$68
Clerical and sales	562	45	46	46	50	45
Service	189	42	44	36	40	31
Skilled	194	58	61	54	70	59
Semiskilled	216	48	43	49	51	48
Unskilled	93	48	57	45	55	65

[a] Does not include 61 individuals in agricultural and kindred occupations or no longer in the labor force.

lationship was found between wage at closure and length of rehabilitation for the different occupational groups in the total DVR sample.

Comparison of Minneapolis and St. Paul DVR samples

Figures 9 through 12 and Table 14 illustrate that gross differences may exist between counselee populations served by large, adjacent, urban district offices within a single state agency. Differences such as these indicate a need for caution in generalizing from data on counselees from one urban area to counselees in adjoining urban areas even within the same labor market. Significant differences were found between the Minneapolis and St. Paul DVR counselees when age, sex, marital status, number of dependents, education, and disability (at acceptance) and job at closure were considered.

Figure 9 shows the Minneapolis sample was considerably younger than the St. Paul sample: 50% of Minneapolis DVR counselees were 18 years or younger at acceptance, as compared with only 25% of St. Paul DVR counselees. In terms of age, both samples were not representative of the general population.

Table 14 shows a difference in the proportion of the sexes in the two samples. The Minneapolis sample had proportionately fewer males and more females. Both samples, however, had more males (59% in the Minneapolis sample; 68% in the St. Paul sample). These proportions differ from those in the general population. In both cities, 53% of all persons between 14 and 64 years are females.[8]

[8] Bureau of the Census, U. S. Department of Commerce. *United States census of population: 1950. Detailed characteristics, Minnesota.* U. S. Government Printing Office. Table 51, pp. 139-141.

Figure 9

Age distribution of DVR counselees by city

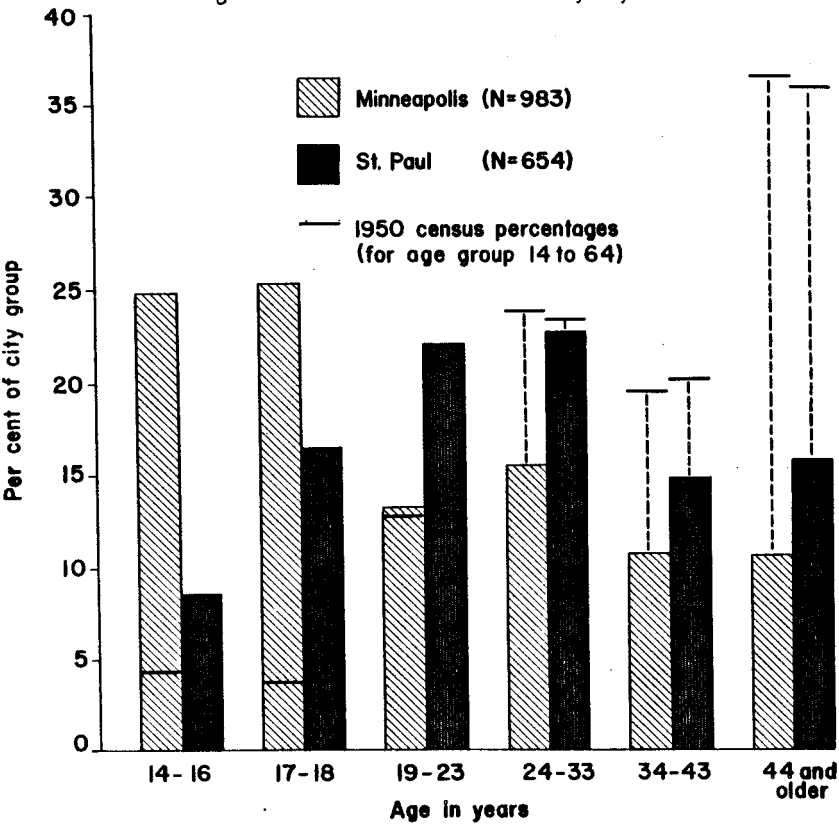


Table 14 also shows distributions according to marital status and number of dependents. The Minneapolis DVR sample had a larger proportion of single individuals and individuals with no dependents. This would be expected, since the Minneapolis DVR sample was younger.

Figure 10 shows the St. Paul DVR sample had a larger proportion of counselees with 8 years of schooling or less at acceptance. This compares well with 1950 census data for the Twin Cities general population.[9] The Minneapolis DVR sample had proportionately more counselees with 9 to 11 years schooling, whereas in the general population the proportions

[9] Op. cit., Tables 64 and 65, pp. 163-167.

Table 14

Sex, marital status, number of dependents and education of Minneapolis and St. Paul DVR counselees

Characteristics	Minneapolis DVR counselees (N = 983)	St. Paul DVR counselees (N = 654)
	Per cent	
Sex:		
Male	58.6	68.3
Female	41.4	31.7
Marital status:		
Single	74.0	60.8
Married	20.4	31.8
Widowed, divorced, separated	4.8	6.4
With one or more dependents	22.7	34.6
Median education	10 years	11 years

Figure 10

Education of DVR counselees by city

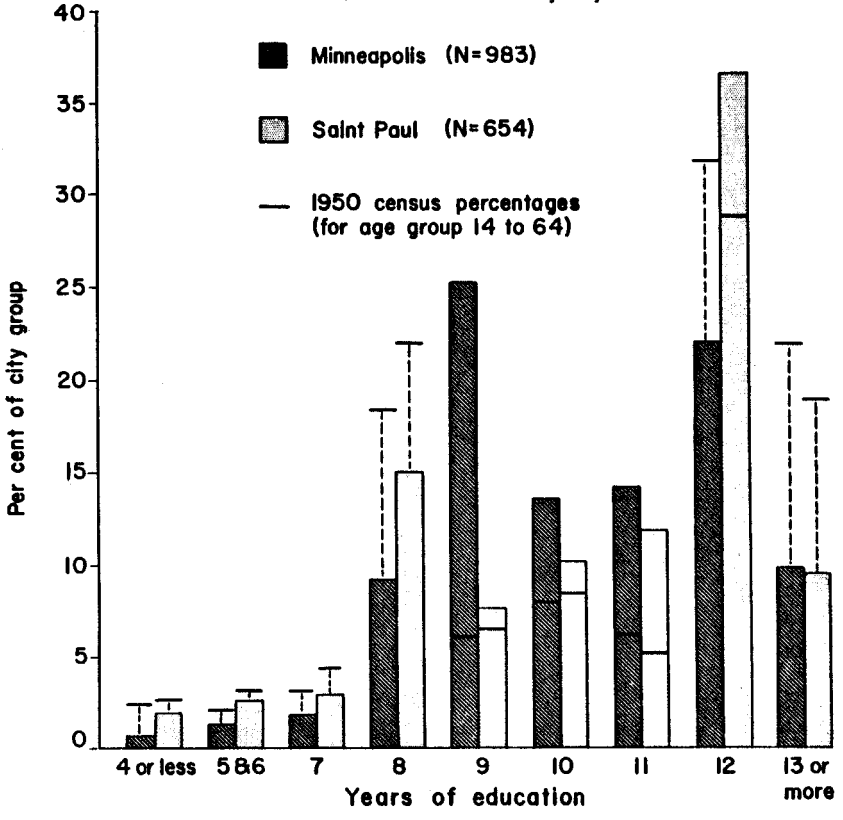
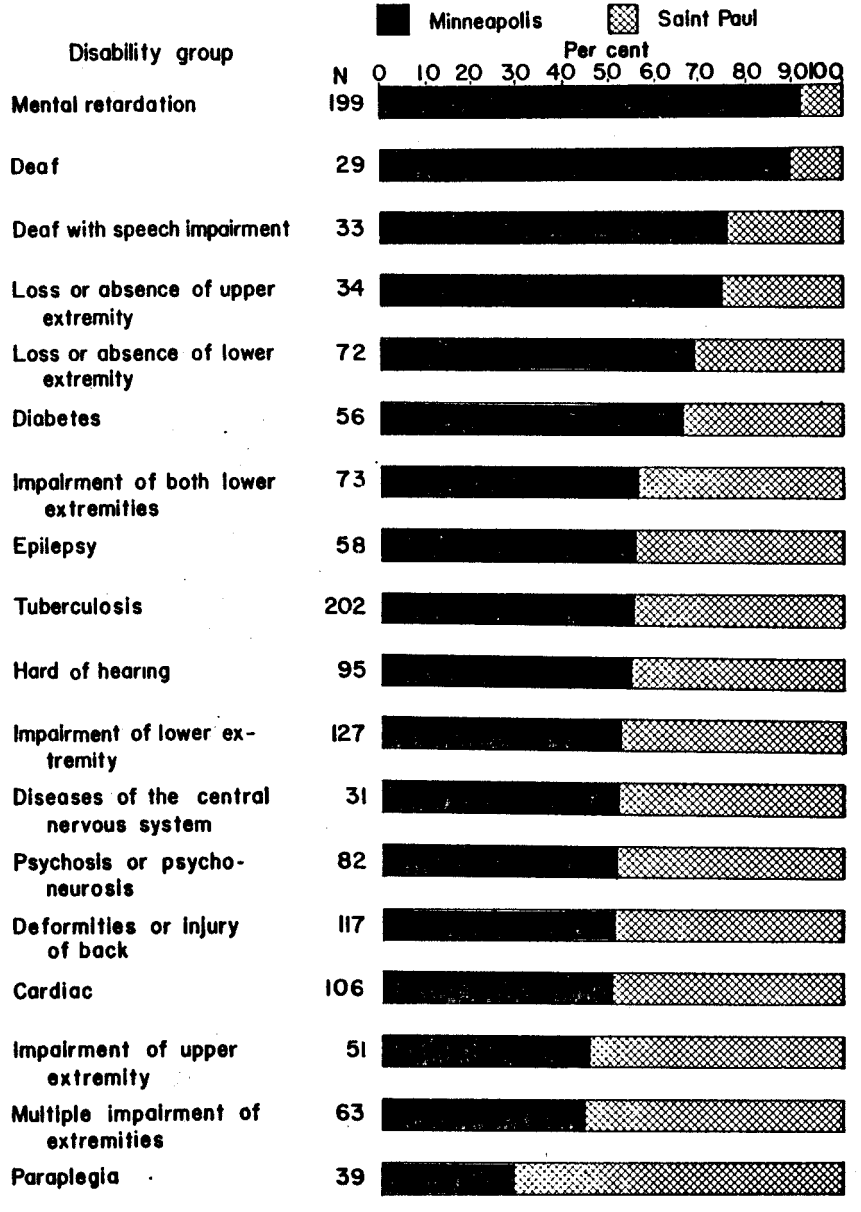


Figure 11

Proportion of DVR counselees from each city by disability



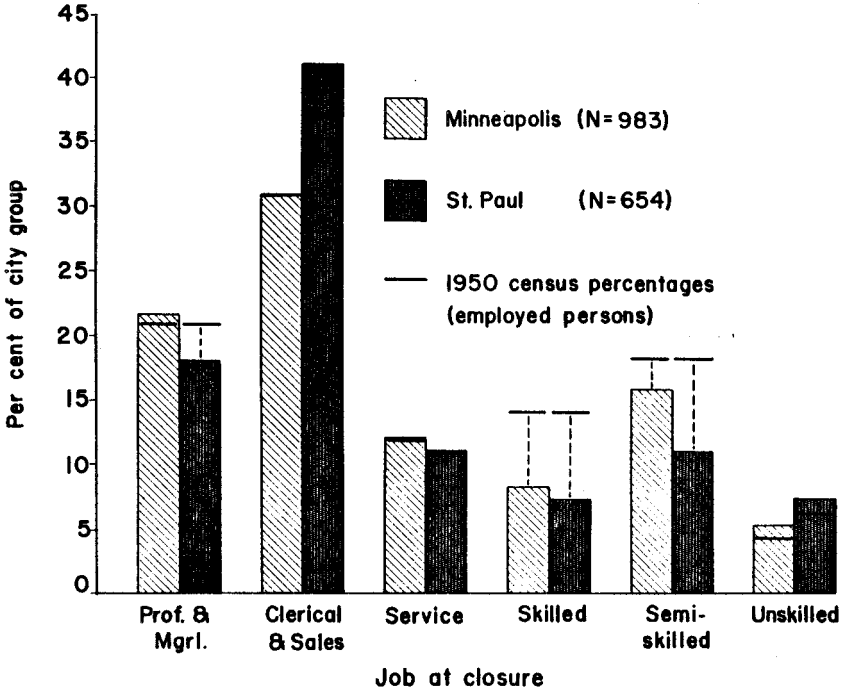
in the two cities were equal. In the group with 12 years or more of schooling at acceptance, the St. Paul DVR sample had proportionately more counselees than the Minneapolis DVR sample. In the 1950 general population, however, the proportion with 12 years or more education was greater in Minneapolis than in St. Paul.

Figure 11 indicates that the St. Paul district office received a larger proportion of paraplegics and persons with multiple impairment of the extremities. The Minneapolis district office, on the other hand, rehabilitated proportionately more deaf persons, mentally retarded individuals, and persons with arthritis. These findings probably reflect differences in emphasis between the two district offices with regard to referral sources.

Figure 12 shows that a larger proportion of the St. Paul population went into clerical work, while proportionately more of the Minneapolis population went into semi-skilled occupations.

Figure 12

Occupational distribution of DVR counselees by city

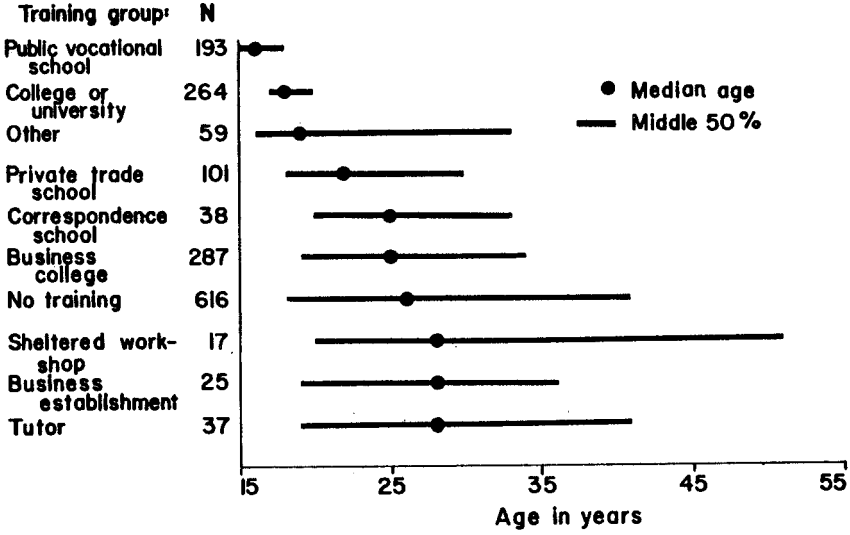


Relationships between characteristics at acceptance and characteristics at closure

Figure 13 shows the relationship of age at acceptance to the type of training received. The median age at acceptance was lowest for those who entered public vocational school (16 years) and highest for those who were trained by tutors or received training in business establishments or sheltered workshops (28 years). The middle 50% of those who went to public vocational school were between the ages of 15 and 18. In contrast, the middle 50% were between 19 and 36 years for those trained in business establishments, 19 and 41 years for those trained by tutors, and between 20 and 51 years for those trained in sheltered workshops. Figure 13 also shows that counselees who received training at colleges and universities were generally younger persons.

Figure 13

Age and age range in each training group



The relationship between education at acceptance and training received is shown in Table 15. Of the group with an 8th grade education or less at acceptance, 66% did not receive any training, while only 1% went on to college. In the group with 12th grade education or better at acceptance, only 31% did not receive training, while 23% went to college or university and 27% went to business college.

Table 15

Education at acceptance and training received

Education at acceptance	N	Training agency (vocational course)					
		Private trade school	Public vocational school	Business college	College or university	Other[a]	No training
		Per cent					
8th grade or lower	286	4	6	10	1	13	66
9th grade to 11th grade	727	6	22	13	17	10	32
12th grade or higher	624	7	2	27	23	10	31

[a] Includes training in sheltered workshops, business establishments, correspondence school, etc.

Table 16 shows the relationship between employment history and training received. Half of the counselees with substantial work histories did not receive any training at all, compared with about a third of the counselees with no employment experience. About one-fifth of the counselees with no work experience were trained in business college. Proportionately more counselees with unsubstantial work histories than any other work-history group were trained in private trade schools and public vocational schools. About one-fifth of those with no work experience or unsubstantial work experience were trained in college or university.

Table 16

Employment history at acceptance and training received

Employment history at acceptance	N[a]	Training agency (vocational course)					
		Private trade school	Public vocational school	Business college	College or university	Other[b]	No training
		Per cent					
Substantial history	402	7	5	19	8	10	51
Unsubstantial part-time history	533	7	16	15	19	11	32
No history	697	5	12	19	19	11	34

[a] Does not include 5 counselees without employment history information.

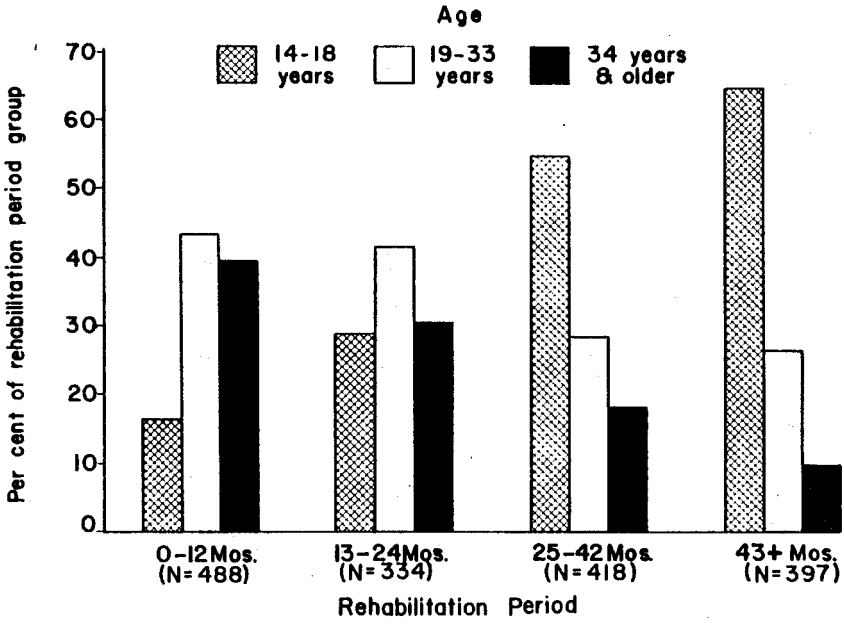
[b] Includes training in sheltered workshops, business establishments, correspondence school, etc.

Figure 14 shows that proportionately more counselees with longer rehabilitation periods were in the younger age range. Evidently, younger counselees were given longer periods of training while in rehabilitation.

Proportionately more counselees in the younger age ranges spent longer periods in rehabilitation even among counselees who did not receive any

Figure 14

Relationship between age and length of rehabilitation period for total DVR sample



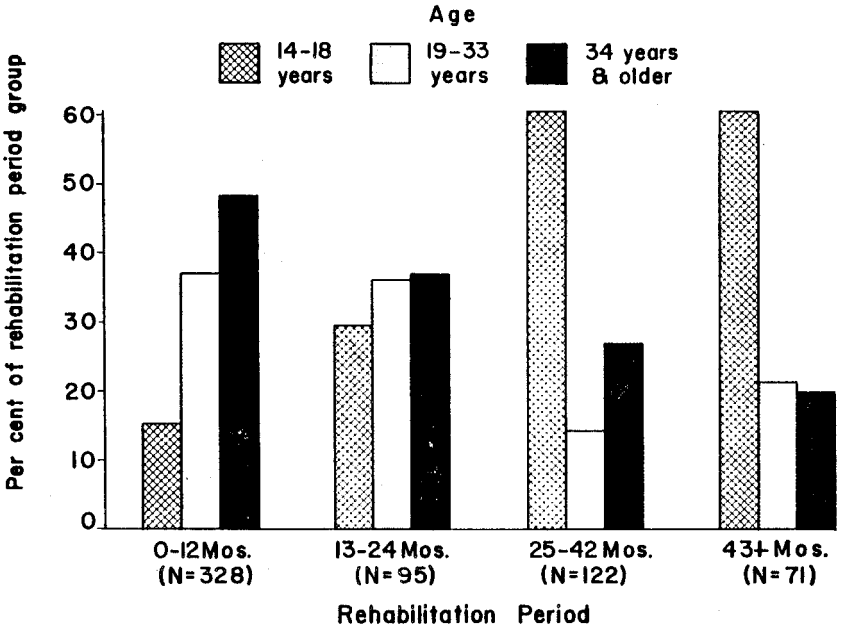
training (Figure 15). Several explanations might account for this finding, such as: (a) younger handicapped counselees had a more difficult time in finding jobs; (b) due to vocational immaturity, younger counselees took a longer time in planning their vocational programs; or (c) younger counselees as a group had relatively fewer dependents and therefore had less economic need to find jobs in a hurry.

Figure 16 indicates that work experience was related to the length of the rehabilitation period. When work experience was plotted against length of rehabilitation period for counselees who did not receive any training, as in Figure 17, the trend shown in Figure 16 was accentuated. Proportionately more counselees with substantial employment histories had shorter periods of rehabilitation; conversely, more counselees with no employment histories had longer periods of rehabilitation.

Figure 18 shows that counselees who had dependents spent less time in rehabilitation than those with no dependents. This might reflect the pressures of economic responsibilities or just the fact that those who had dependents were older. (It has already been shown that older counselees spent relatively less time in rehabilitation.) To investigate the latter possi-

Figure 15

Relationship between age and length of rehabilitation period for "no training" group



bility, counselees were grouped by age and the relationship of number of dependents to length of rehabilitation was determined. Table 17 shows that in each age group, persons with dependents spent less time in rehabilitation than those without dependents.

Another possible explanation for Figure 18 is that counselees who had no dependents were placed in training programs of longer duration. Table 18 shows that in the group which did not receive any training at all, counselees with no dependents still spent relatively more time in rehabilitation than counselees with dependents.

Apparently, therefore, counselees who had dependents spent less time in rehabilitation, and this finding was not affected by considerations of age or type of training received. This finding strongly suggests that economic responsibility, as reflected by number of dependents, is an important factor in determining the length of the rehabilitation period.

Table 19 shows data on length of rehabilitation period for the different disability groups within the total DVR sample. Median time spent in rehabilitation ranged from 10.8 months for the group with amputation of

Figure 16

Relationship between employment history and length of rehabilitation period for total DVR sample

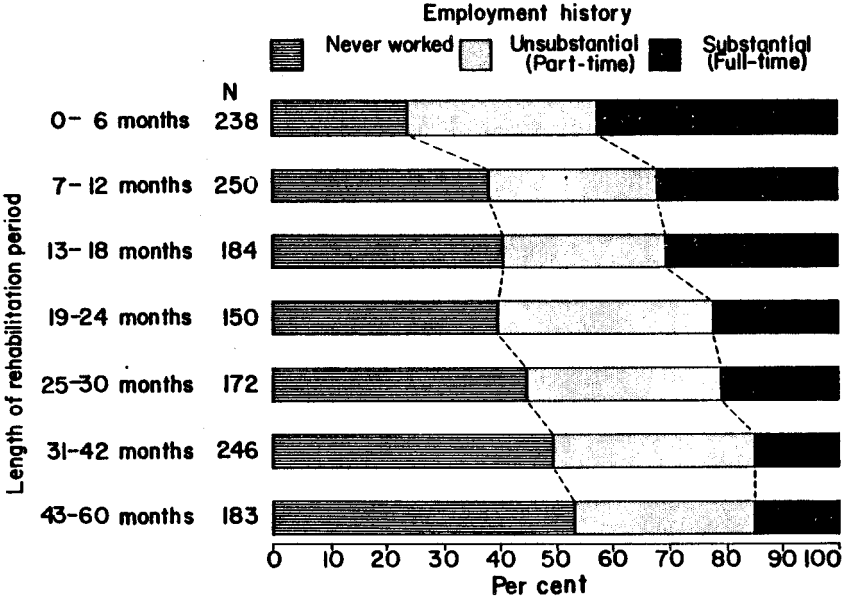


Table 17

Length of rehabilitation as related to having dependents, for different age groups

Age group	N	Per cent in rehabilitation				
		1 year or less	1 to 2 years	2 to 3½ years	3½ to 5 years	Over 5 years
23 years and younger:						
Without dependents	889	17	17	31	15	20
With dependents	40	40	20	20	7	13
24 to 33 years:						
Without dependents	161	37	26	17	11	9
With dependents	137	51	23	17	5	4
34 to 43 years:						
Without dependents	65	37	34	17	3	9
With dependents	139	49	25	15	7	4
44 years and older:						
Without dependents	80	46	24	23	5	2
With dependents	126	56	20	17	6	1

the lower extremities, to 38.5 months for paraplegics and counselees with diseases of the central nervous system.

To isolate the influence of training time in relating disability to length of rehabilitation period, the data for the group which did not receive any

Table 18

Length of rehabilitation as related to having dependents for group receiving no training

Length of rehabilitation	Per cent of "no training" group (N = 616)	
	Without dependents (N = 386)	With dependents (N = 230)
6 months or less	26.4	48.2
7 to 12 months	17.6	20.4
13 to 18 months	10.6	7.4
19 to 24 months	5.7	6.5
25 to 30 months	8.5	4.8
31 to 42 months	16.1	6.9
43 to 60 months	8.5	3.9
61 months and longer	6.6	1.9

Figure 17

Relationship between employment history and length of rehabilitation period for "no training" group

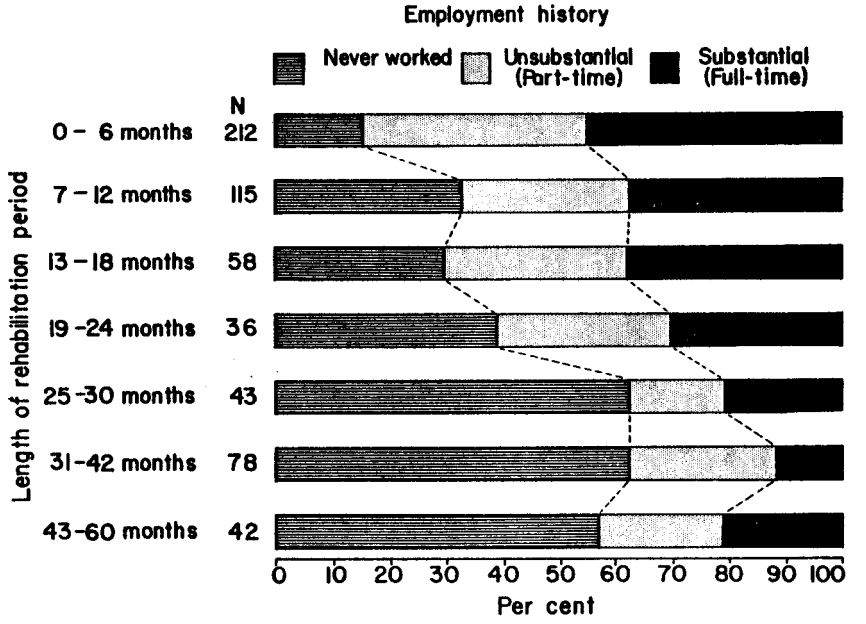
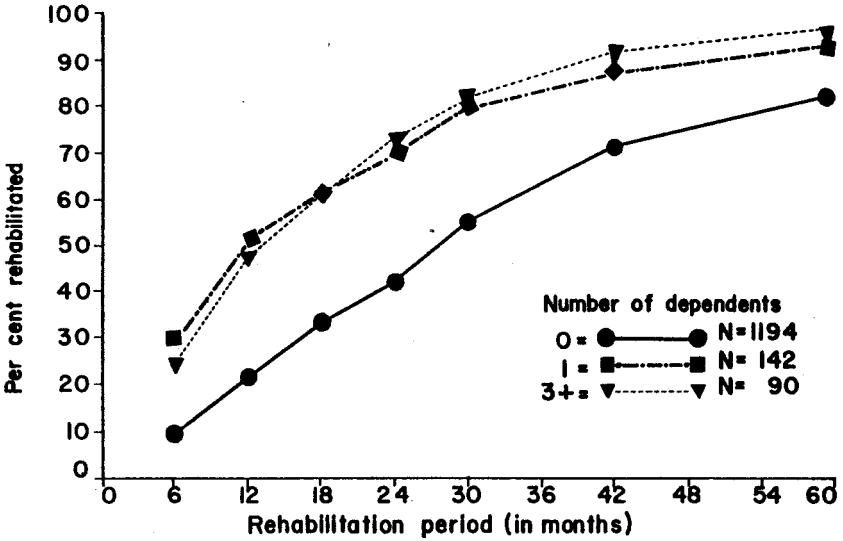


Figure 18

Relationship of number of dependents and length of rehabilitation period



training were examined. Table 19 also shows the length of rehabilitation period for different disability groups within this "no training" group. Median length of rehabilitation period ranged from 5.1 months for counselees with psychosis and psychoneurosis, to 33.8 months for the mental retard group. Paraplegics and counselees with disease of the central nervous system in the "no training" group had relatively short periods of rehabilitation (medians of 10 and 12 months respectively).

When the disability groups were ranked according to the median time spent in rehabilitation, some agreement was found between the rankings for the total DVR sample and those for the "no training" group (Spearman *rho* = +.55, significant at the .05 level.) Large differences between the two rankings were found for paraplegics and counselees with multiple impairment of the extremities and deformities or injury of the back. The smallest differences in ranks occurred for the group with loss or absence of upper extremity, impairment of lower extremity, deaf with speech impairment, tuberculosis, psychosis or psychoneurosis, epilepsy, and mental retardation.

Table 20 relates origin of disability to length of rehabilitation period. Counselees with disabilities suffered in employment accidents spent the least time in rehabilitation (a median of 16.2 months). Counselees with

Table 19

Disability as related to length of rehabilitation period

Disability group	Total DVR sample[a] N	Total DVR sample[a] Median rehabilitation period in months	"No training" group[b] N	"No training" group[b] Median rehabilitation period in months
Loss or absence of lower extremity	72	10.8	58	8.1
Psychosis or psychoneurosis	82	14.7	29	5.1
Deformities or injury to back	117	16.0	44	12.3
Tuberculosis	202	19.0	58	5.8
Loss or absence of upper extremity	34	21.0	12	6.0
Deaf with speech impairment	33	22.0	16	11.0
Multiple impairment of extremities	63	23.7	21	16.8
Hard of hearing	95	23.9	48	12.4
Impairment of upper extremity	51	24.3	21	12.8
Deaf	29	28.0	12	10.0
Cardiac	106	28.3	27	16.0
Impairment of both lower extremities	73	28.4	28	10.4
Impairment of lower extremity	127	28.8	39	16.5
Diabetes	56	29.0	21	11.5
Epilepsy	58	32.5	24	22.0
Mental retardation	199	33.3	72	33.8
Paraplegia	39	38.5	9	10.0
Diseases of the central nervous system	31	38.5	12	12.0

[a] Excludes 170 individuals not classified above.

[b] Excludes 65 individuals not classified above.

Table 20

Origin of disability as related to length of rehabilitation

Origin of disability	N	Length of rehabilitation period: 0-6 mos.	7-12 mos.	13-18 mos.	19-24 mos.	25-30 mos.	31-42 mos.	43-60 mos.	61+ mos.	Median rehabilitation period in mos.
		Per cent								
Employment accidents	113	18	21	16	11	8	14	8	4	16.2
Other accidents	148	20	17	13	8	9	11	9	13	18.5
Disease	906	15	17	12	10	10	12	11	13	21.5
Congenital	463	11	11	7	8	12	23	12	16	30.7
Total[a]	1637	15	15	10	10	11	15	11	13	25.0

[a] Includes 7 other counselees not classified above.

congenital disabilities spent the longest periods in rehabilitation (a median of 30.7 months).

The relationship between rehabilitation lag [10] and length of rehabilitation period for the total DVR sample is shown in Table 21. The median length of rehabilitation increased with increase in rehabilitation lag until a lag of 16 years or more was reached. The relationship did not hold from this point on. Counselees with congenital disabilities had a median rehabilitation lag of 17.6 years and spent a median of 30.7 months in rehabilitation.

Table 21

Rehabilitation lag as related to length of rehabilitation period

Rehabilitation lag in years	Total DVR sample		"No training" group	
	N	Median rehabilitation period in months	N	Median rehabilitation period in months
1 or less	257	18.6	90	11.5
2 to 3	229	20.2	88	9.0
4 to 5	154	24.3	63	9.2
6 to 10	180	24.8	61	10.1
11 to 15	163	26.1	52	11.1
16 or more	191	13.9	93	6.6
Congenital	463	30.7	169	22.5

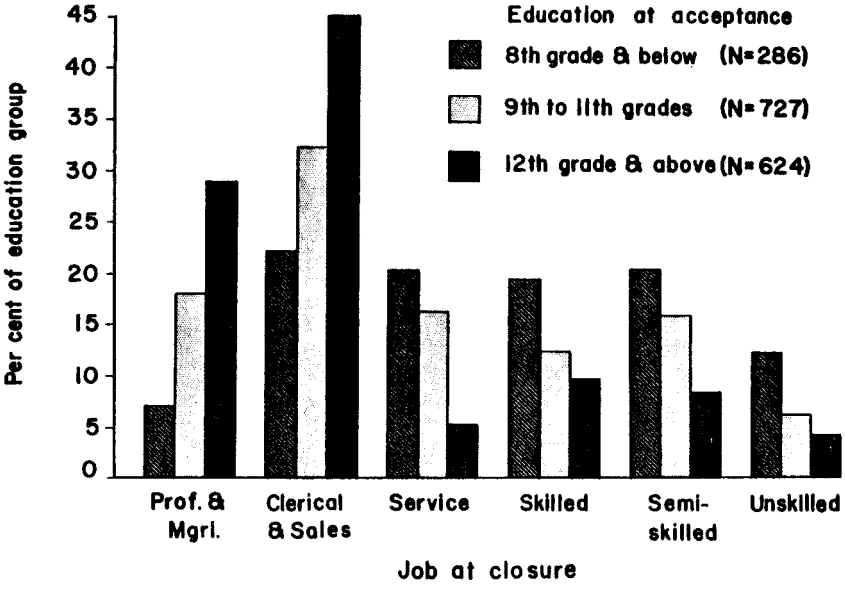
Since the relationship between rehabilitation lag and length of rehabilitation period may be related to amount of training received, the data for the group which did not receive training were examined (see Table 21). For this group, there appears to be no relationship between rehabilitation lag and length of rehabilitation period. However, it is interesting to note that even in this group (which did not receive training) counselees with congenital disabilities spent the most time in rehabilitation.

Figure 19 shows the relationship between education at acceptance and job at closure. Only 29% of counselees with an 8th grade education or less at acceptance found jobs in the professional and clerical fields. On the other hand, 74% of the counselees with 12th grade education or better at acceptance obtained professional and clerical jobs. This finding is related to previous findings concerning education at acceptance and training received (see Table 15, page 22) and also training received and job at

[10] "Rehabilitation lag" is defined as the period between disablement and acceptance for rehabilitation.

Figure 19

Relationship of education at acceptance to job at closure



closure (Table 11, page 15). Since education at acceptance was a determinant of training program given, and type of training received influenced job obtained at closure, the close relationship between education at acceptance and job at closure is to be expected.

Figure 20 shows the percentage of males and females in each occupational group at closure, with comparable census data for the Twin Cities. As would be expected, females comprised a relatively small portion of the skilled occupations and relatively large portion of clerical and sales occupations. In general, the occupational distributions for the sexes in the total DVR sample compared fairly well with those of the Twin Cities' labor force.

Table 22 shows the relationship between disability and job at closure. In general, more counselees obtained jobs in the clerical field than in any other occupational group, with some notable exceptions. Counselees with upper extremity amputations found most of their jobs in the professional, skilled, and semi-skilled levels. Lower extremity amputees and the deaf (with speech impairment) found most of their jobs in skilled and semi-skilled areas. The mentally retarded found most of their jobs in service and semi-skilled occupations.

Figure 20

Occupational distribution of DVR counselees by sex

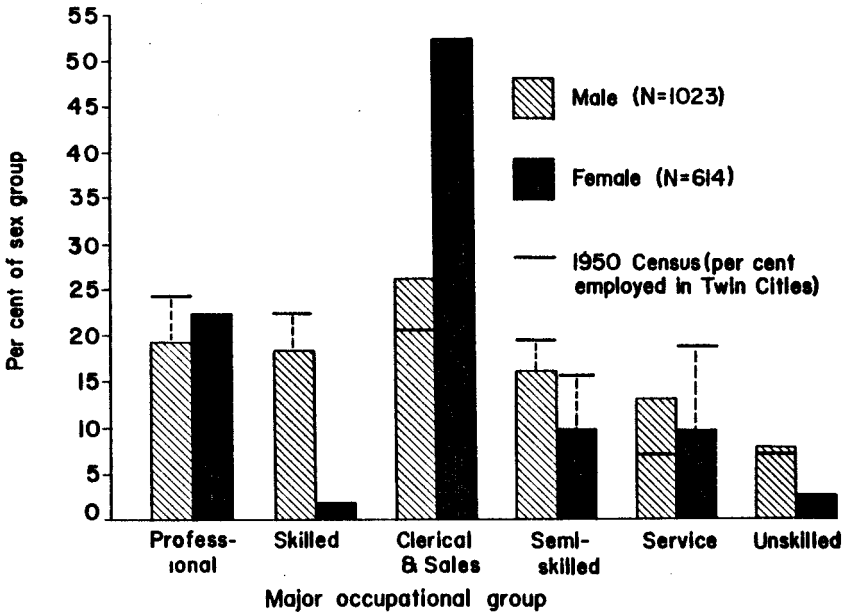


Table 23 shows the relationship between disability and wage at closure for the total DVR sample and for counselees who did not receive any training. Data on the latter group are included to eliminate whatever effects type of training received might have on the relationship between disability and wage at closure. The ranking of median weekly wages for the "no training" group correlates +.72 (Spearman *rho*) with that for the total DVR sample. Largest differences between the rankings occur for the lower extremity amputee and diabetes groups, whereas upper extremity amputees and the deaf (without speech impairment) have identical ranks.

Table 23 shows that, in both total DVR sample and "no training" groups, highest weekly wages were earned by counselees with amputated upper extremities or with deformities or injuries of the back. Lowest weekly wages in both groups were received by mentally retarded counselees, deaf counselees without speech impairment, and counselees handicapped by diseases of the central nervous system.

The relationship between disability and how the counselee obtained his job is given in Table 24. The largest percentage of counselees in each disability group found their own jobs, with the exception of those who

were deaf. The deaf received the most counselor assistance in job placement; 36% of those with speech impairment and 24% of those without speech impairment were placed by counselors. In the total DVR sample, only 11% obtained jobs through the counselor's assistance. Only 15% of the deaf found jobs without help, as compared to 42% of the total sample. The diabetes, psychoneurosis and psychosis groups received less assistance in finding jobs than any other group. However, 16% of the psychoneurosis and psychosis group found their jobs with ES assistance, as compared to 6.2% of the total sample. Of the mentally retarded, 31% found jobs

Table 22

Job at closure for various disability groups

Disability group	N	Per cent in occupation						
		Professional and mgrl.	Clerical and sales	Service	Skilled	Semi-skilled	Un-skilled	Other[a]
Cardiac	106	26	46	9	10	3	3	3
Deaf	29	10	28	3	14	34	10	1
Deaf with speech impairment	33	21	12	3	21	30	9	4
Deformities or injury of back	117	13	33	7	24	13	6	4
Diabetes	56	27	48	2	9	9	2	3
Diseases of the central nervous system	31	32	26	10	10	14	6	2
Epilepsy	58	24	35	9	6	12	6	8
Hard of hearing	95	22	39	8	6	15	8	2
Impairment of both lower extremities	73	21	49	7	12	8	0	3
Impairment of lower extremity	127	23	46	10	10	7	2	2
Impairment of upper extremity	51	20	37	6	10	20	2	3
Loss or absence of lower extremity	72	15	22	10	22	24	2	5
Loss or absence of upper extremity	34	37	13	9	18	18	5	0
Mental retardation	199	6	11	34	9	24	12	4
Multiple impairment of extremities	63	29	32	10	5	14	10	0
Paraplegia	39	23	41	0	20	11	5	0
Psychosis or psychoneurosis	82	12	52	18	6	5	5	2
Tuberculosis	202	21	44	9	11	7	4	4
Total[b]	1637	20	34	11	12	13	6	4

[a] Includes those in agricultural and kindred occupations and those who were not in the labor force.

[b] Includes 170 individuals not classified above.

Table 23

Wage at closure for various disability groups

Disability group	Total DVR sample		"No training" group	
	N[a]	Median weekly wage at closure	N[a]	Median weekly wage at closure
Loss or absence of upper extremity	34	67.60	12	61.50
Deformities or injury of back	114	59.20	41	60.00
Diabetes	55	56.40	20	47.00
Tuberculosis	192	53.10	51	50.00
Deaf with speech impairment	32	52.80	14	51.00
Loss or absence of lower extremity	71	52.50	55	53.00
Impairment of upper extremity	48	50.50	20	51.00
Cardiac	104	50.50	25	46.00
Paraplegia	39	49.70	9	60.00
Hard of hearing	95	49.60	47	50.00
Multiple impairment of extremities	62	48.70	21	46.00
Psychosis or psychoneurosis	81	48.50	29	50.00
Impairment of both lower extremities	71	48.20	28	46.00
Epilepsy	55	47.50	18	45.50
Diseases of the central nervous system	30	46.50	11	31.00
Deaf	29	45.50	12	43.50
Impairment of lower extremity	125	45.10	38	50.00
Mental retardation	187	40.00	64	40.00

[a] Includes only those individuals for whom wage data was available.

through "other" means, such as through relatives, friends, and private organizations.

In summary, the data indicate that age, education and employment history at acceptance were important determiners of the type of training program a counselee received. Age, employment history, number of dependents, disability and, to a lesser extent, rehabilitation lag were found to be related to the length of time a counselee spent in rehabilitation. Education at acceptance, disability, and training received were factors found related to the job a counselee obtained at closure. Disability, furthermore, was related to wage at closure and the manner in which a counselee obtained a job.

Disability and the ease or difficulty of vocational rehabilitation

For various reasons, a measure or measures of the handicapping severity of a disability would be useful to practitioners and others interested and active in vocational rehabilitation. Such a measure could help administrators, for example, in the evaluation of the work done by vocational rehabilitation counselors. Development of counseling and training techniques would be facilitated by the added homogeneity of experimental

groups which would result from use of a severity measure. Research would be aided by increased precision in the definition of counselee groups studied.

One measure of severity, which has been suggested by the data and findings presented above, is the ease or difficulty of rehabilitating counselees with a given disability in comparison with the rehabilitation of counselees with other disabilities. The section which follows demonstrates how an index of rehabilitation ease or difficulty may be derived.

On the basis of available data, three criteria were selected in terms of relevance, reliability, and objectivity. These were:

Table 24

Job finding by different disability groups

Disability group	N	Per cent of disability group						
		Returning to former job	Self employed	Placed by counselor	Placed by ES	Placed by trainer	No help	Other[a]
Cardiac	106	3	4	15	6	14	42	16
Deaf	29	10	7	24	3	3	14	39
Deaf with speech impairment	33	6	.....	36	.....	18	15	25
Deformities or injury of back	117	8	8	10	7	13	46	8
Diabetes	56	5	2	7	4	14	52	16
Diseases of the central nervous system	31	6	10	3	7	13	48	13
Epilepsy	58	2	2	10	7	16	45	18
Hard of hearing	95	12	2	13	8	11	35	19
Impairment of both lower extremities	73	5	4	16	1	11	44	19
Impairment of lower extremity	127	6	3	9	6	17	42	17
Impairment of upper extremity	51	8	2	8	2	11	42	27
Loss or absence of lower extremity	72	38	4	3	3	3	44	5
Loss or absence of upper extremity	34	15	6	6	3	12	44	14
Mental retardation	199	.....	1	8	8	11	41	31
Multiple impairment of extremities	63	8	3	16	5	13	44	11
Paraplegia	39	10	12	7	7	12	42	10
Psychosis or psychoneurosis	82	4	.....	10	16	11	51	8
Tuberculosis	202	12	2	10	9	18	37	12
Other[b]	170	6	4	15	4	11	52	8
Total	1637	8.0	3.2	10.6	6.2	12.8	42.0	17.2

[a] Includes placement by relatives, friends, private organizations, and unions.

[b] Includes all other cases not classified above.

1. Length of time it takes to rehabilitate a counselee—The assumption is that the longer it takes to rehabilitate a counselee, the more severe is the disability, relatively speaking;
2. Wages earned by a counselee—Disability is assumed to have effects on the earning abilities of physically handicapped persons, and group comparisons may indicate which disabilities have relatively greater effects and which have lesser effects;
3. Amount of "self help" in finding a job—The group which relies most on "self help" may be, vocationally speaking, the least handicapped.

Table 25 shows the rankings on the three criteria for 18 disability groups. Spearman rank order correlation coefficients among the criteria are: +.55 between median length of rehabilitation period and median wage (significant at the .05 level); +.28 between median length of rehabilitation period and amount of "self help" (not significant); and +.44 between median wage and amount of "self help" (significant at the .05 level.) These correlation coefficients indicate some degree of relationship among the criteria.

Table 25

Comparison of disability groups on three criteria of ease or difficulty of rehabilitation

Disability group	N	Rank		
		Median length of rehabilitation tion period	Median weekly wage at closure	Proportion of "self-help" in job-finding
Loss or absence of lower extremity	72	1	6	1
Psychosis or psychoneurosis	82	2	12	4.5
Deformities or injury to back	117	3	2	6
Tuberculosis	202	4	4	10.5
Loss or absence of upper extremity	34	5	1	2
Deaf with speech impairment	33	6	5	18
Multiple impairment of extremities	63	7	11	7.5
Hard of hearing	95	8	10	13.5
Impairment of upper extremity	51	9	7.5	9
Deaf without speech impairment	29	10	16	17
Cardiac	106	11	7.5	15
Impairment of both lower extremities	73	12	13	10.5
Impairment of lower extremity	127	13	17	12
Diabetes	56	14	3	3
Epilepsy	58	15	14	13.5
Mental retardation	199	16	18	16
Diseases of the central nervous system	31	17.5	15	4.5
Paraplegia	39	17.5	9	7.5

Arbitrarily defining groups ranking in the upper third as most easy to rehabilitate and those ranking in the lower third as most difficult to rehabilitate, Table 25 shows the following:

1. Using the criteria of length of rehabilitation period and wage at closure, the groups most easy to rehabilitate are counselees with:

   amputation of the upper extremities
   amputation of the lower extremities
   deformities or injuries of the back
   deafness, with speech impairment
   tuberculosis

   The groups most difficult to rehabilitate are counselees with:

   impairment of the lower extremities
   diseases of the central nervous system
   epilepsy
   mental retardation

2. Using the criteria of length of rehabilitation period and amount of "self help" in job finding, the groups most easy to rehabilitate are counselees with:

   amputation of the upper extremities
   amputation of the lower extremities
   deformities or injuries of the back

   The groups most difficult to rehabilitate are counselees with:
   epilepsy
   mental retardation

3. Using the criteria of wage at closure and amount of "self help" in job finding, the groups most easy to rehabilitate are counselees with:

   amputation of the upper extremities
   amputation of the lower extremities
   deformities or injuries of the back
   diabetes

   The groups most difficult to rehabilitate are counselees with:

   deafness, without speech impairment
   epilepsy
   mental retardation

All three criteria agree on three groups as most easy to rehabilitate: counselees with amputation of the upper extremity, with amputation of the lower extremity and with deformities or injuries of the back. All three

criteria also agree that the two groups most difficult to rehabilitate are counselees with epilepsy or mental retardation.

Obviously, the determination of rehabilitation ease or difficulty presented above suffers from several weaknesses. To mention a few, factors such as age, education, and employment history, which were found related to selection of individuals for rehabilitation, were not taken into account. Type of training received, which determines in part the job obtained at closure, was not equated for the different disability groups. Some disability groups consisted of only a few individuals. The rankings were based on group averages and did not take group variability into consideration. These deficiencies notwithstanding, it has been indicated that an empirical method of determining the ease or difficulty of rehabilitation may be feasible. It is suggested that experimentation with these and other criteria, and with refined data obtained through more controlled methods of data-collecting, could be undertaken to establish the handicapping severity of a disability in relation to specific occupations.

Appendix

IRC OVR Project

Confidential

Date of closure_____ 19__

Name_____

1. Minneapolis_____ St. Paul_____
2. If previously rehabilitated:
   Month_____ Year_____
4. Vet_____ Non-Vet_____
6. Months, "acceptance to closure" ____
7. Age at acceptance ____
8. Number of dependents at acceptance ____
9. Male, 1, Female, 2 ____
10. White, 1, Negro, 2, Other 3 ____
11. Single, 1, Married, 2, Other 3 ____
12. Education: ____
13. Employment history:

    _____ Code _____ Code _____ Code

14. Source of support at acceptance:

Weekly Amount		Major Source	
$1_____	4_____	1_____	5_____
2_____	5_____	2_____	6_____
3_____	6_____	3_____	7_____
		4_____	8_____

15. Origin of disability:

1_____	5_____
2_____	6_____
3_____	7_____
4_____	8_____

16. Age at disablement _____
18. Diagnosis of disability (describe fully)
    _____ Code
    _____
19. Extent of involvement of disability:
    _____
    _____
20. Employment objective _____
    _____
21. Training agency (Vocational course):

X_____	4_____	7_____
1_____	5_____	8_____
2_____	6_____	9_____
3_____		

22. Employment status at closure:

1_____	4_____
2_____	5_____
3_____	6_____

23. Job or occupation at closure:
    _____
24. Wage at closure (weekly) _____
25. How client got rehabilitation job:

1_____	5_____
2_____	6_____
3_____	7_____
4_____	

Total cost of services $_____

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