

# Minnesota Studies in Vocational Rehabilitation:

## ***VII. Factors Related to Employment Success***

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# Factors Related to Employment Success<sup>1</sup>

## Summary

Interview data on a statewide sample of 255 physically handicapped individuals of labor force age were analyzed with particular reference to employment problems of the handicapped.

Median age of the sample was 44 years. Median schooling was 10 years. Three-fourths of the sample were male. Three-fifths were married. Average number of dependents for "heads of households" was 3.5.

The most common disability was orthopedic (35%), with cardiovascular (18%) and generalized and systemic (10%) being the next most frequently occurring conditions. Over half of the physical handicaps were caused by illness, and only 13% by employment accidents. One-third of the sample had been disabled before entering the labor market.

At the time of the survey, 41% of the sample were unemployed, and 15% were looking for work. Of the unemployed, 18% (7% of the total sample) had never held a full-time job, and 42% (17% of the total sample) had not returned to work after their illness or injury. Those handicapped individuals who had returned to work, however, were quite generally able to maintain their occupational status levels, although a third of them suffered a decrease in earnings.

Median wage for presently employed individuals was \$65 per week, compared to \$77 for the total labor force. Median number of hours worked per week was 40 for the sample, 39 for the total labor force. Median length of time on present or last job was over four years, indicating stability in employment for employed handicapped individuals.

More than 90% of individuals with orthopedic and respiratory disabilities who had worked before disablement were able to return to work. In contrast, less than 60% of persons who had worked before disablement and subsequently were handicapped with cardiovascular and neuropsychiatric disabilities were able to return to work.

Among those individuals who had worked before disablement and were able to return to work, four-fifths were generally able to maintain their level within the occupational hierarchy, and more than half were able to maintain or even increase their earning power. However, there was a general feeling among these individuals (who had worked before disable-

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

ment and returned to work) that being physically handicapped had affected their earning capacities.

Among the unemployed individuals, more than half of those with orthopedic disabilities were actively looking for work, compared with only one-fifth of those with cardiovascular diseases. Only one of every five unemployed persons actively looking for work had been unemployed for more than a year, compared to three of every five individuals who were not looking for work.

Sex was found to be a major determinant of employment status. Two-thirds of the men in the sample were employed, compared to only one-third of the women. Three-fourths of the unemployed women and three-fifths of the unemployed men were not actively seeking employment.

Present age was not found to be related to employment status, but age at disablement was. Even with present age equated, being disabled before age 30 was least handicapping and being disabled after age 45 was most handicapping in terms of maintaining employment.

Nature of the disability was a third factor found related to employment status. Respiratory and orthopedic groups had the highest employment rates, while neurological and neuropsychiatric groups had the lowest employment rates among eight major disability groups compared.

Origin of disability, however, was not related to employment status. Neither was the length of time before a disabled worker was able to return to work. Occupation, whether present occupation or occupation before disablement, was not related to employment status.

Education was the fourth factor found related to employment status, with employment rates increasing with higher education. However, education seemed to have little effect on the employment status of individuals beyond age 45.

Finally, economic pressures (as reflected by number of dependents and marital status) seemed to be important motivational factors in the employment of physically handicapped individuals. Only half of those with one or two dependents were employed, compared to more than 80% of those with three or more dependents. Two-thirds of the married persons in the sample were employed, compared to only half of the single individuals.

Implications of the data for determining priorities relative to the expansion of rehabilitation services, and for evaluating counseling, rehabilitation, and placement outcomes were discussed.

## Introduction

One objective of the Industrial Relations Center's program of vocational rehabilitation research is to determine some basic facts concerning the employment of the physically handicapped. Facts are needed on questions such as the following: What are the characteristics of handicapped individuals in the labor force? What factors are related to the employment of handicapped persons? Are there differences between handicapped persons who find employment and those who do not find employment? Are there differences between unemployed handicapped persons who are actively looking for work and those who are not looking for work? What kinds of jobs do persons get who are handicapped *before* entering the labor market; *after* entering the labor market?

A survey of the physically handicapped population of Minnesota was conducted recently by the Industrial Relations Center for the State Legislature's Interim Commission on the Employment of the Handicapped.<sup>2</sup> The survey was designed primarily to determine the size and characteristics of the total handicapped population of the state. However, additional information was obtained on the employment status and personal characteristics of a sample of handicapped individuals of labor force age (14-64 years).<sup>3</sup> This included information such as age at disablement, sources of income, number of dependents, marital status, years of education, and employment history. The present bulletin presents an analysis of this information and findings concerning employment of a sample of physically handicapped individuals.

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<sup>2</sup> *Minnesota Studies in Vocational Rehabilitation: VI. A Survey of the Physically Handicapped in Minnesota*. IRC Bulletin 26, December, 1958. A total of 2,440 households throughout the state were interviewed. These households included 940 rural households and 1,500 urban households. 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 IRC Bulletin 26. The sampling procedure used permitted estimates to be made of the entire handicapped population of the state.

<sup>3</sup> The survey utilized a questionnaire developed in recent research of the rehabilitation project staff at the IRC as described in *Minnesota Studies in Vocational Rehabilitation: V. Methodological Problems in Rehabilitation Research*. IRC Bulletin 25, December, 1958.

## Characteristics of the sample

The survey labor force sample of physically handicapped individuals, which is the subject of this report, included 150 employed and 105 unemployed individuals. Students and housewives were not included in the sample. Ninety-eight of the 150 employed individuals had worked before disablement. Seventy-three of the 105 unemployed individuals had worked before disablement, and of these, 41 had returned to work after disablement. Nineteen unemployed individuals had never had any full-time employment experience. Attempts were made to evaluate the employability of those persons who had not returned to work after disablement or who had never worked full-time, but it was soon evident that proper evaluation required more data than was obtained in the survey. There was reason to believe, however, that most of these individuals were employable with proper (selective) placement; and for those who were not immediately employable, it was reasonable to expect that after vocational rehabilitation services, they would be able to engage in some remunerative occupation.<sup>4</sup>

Table 1 summarizes some personal characteristics of the survey labor force sample. Median age was 44 years. The data show a sex difference in marital status; three of every four physically handicapped men were married while only one in four physically handicapped women was married. Median schooling was 10 years for total, male, and female groups.

About one-third of the sample were not considered "heads of households." Another 9% were responsible only for themselves. Average number of dependents including self was 2.86 for the male group, 0.79 for the female group, and 2.35 for the total sample. For those classified as heads of households, the average number of dependents (including self) was 3.45.

Table 1 also compares the survey labor force sample of physically handicapped persons with the state's total civilian labor force in 1950. The data show that the survey labor force sample was older than the total labor force. There were fewer married women and more widowed, divorced, or separated women in the survey sample than in the total labor force. More of the survey sample had an education of less than 7 years than did the total labor force. However, the median education of the survey sample was comparable to that of the total labor force.

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<sup>4</sup>In the February 1949 Survey of Disability conducted jointly by the Census Bureau, the Public Health Service, the Office of Vocational Rehabilitation, the Bureau of Old Age and Survivors Insurance and the Division of Statistics, Office of the Commissioner for Social Security, it was estimated that 60% of the chronic disabled were immediately employable with selective placement, 33% were "age-placement problems," and only about 7% were severely disabled and needed vocational rehabilitation before they could be placed in remunerative occupations. No estimates were given on the proportion of the "age-placement problem" group which would need vocational rehabilitation services.

Table 1

Characteristics of 1958 survey labor force sample  
and 1950 total labor force

Characteristics	Survey labor force sample <sup>a</sup>			Total labor force <sup>b</sup>		
	Male (N=192)	Female (N=63)	Total (N=255)	Male	Female	Total
Per cent						
Age:						
14-24 .....	13	16	13	18	39	20
25-44 .....	37	33	37	47	56	46
45-64 .....	50	51	50	35	5	34
Marital status:						
Single .....	21	38	25	24	40	28
Married .....	75	27	63	71	44	64
Other .....	4	32	11	5	16	8
No information .....	1	3	1			
Education:						
1- 6 .....	10	16	11	8	6	7
7- 9 .....	36	27	34	45	37	41
10-12 .....	39	41	39	33	41	37
13+ .....	14	16	14	14	16	15
No information .....	2	0	2	0	0	0
Veterans: .....	33	0	25			
Employed: .....	67	33	59	96	97	96
Number of dependents including self:						
1 .....	5	21	9			
2 .....	19	14	18			
3 .....	13	5	11			
4 .....	14	2	11			
5 .....	12	0	9			
6 or more .....	14	1	10			
Not head or no information .....	23	57	32			

<sup>a</sup> Data from 1958 survey of physically handicapped in Minnesota.

<sup>b</sup> 1950 census data.

The largest difference between the two groups was in employment status. The data show 59% of the survey labor force sample were employed and 41% unemployed. If the unemployed group were restricted to those persons who were actively looking for work, then the percentages change to 81% employed and 19% unemployed. During the same period, unemployment in Minnesota for the total labor force was only 5.9%.<sup>5</sup>

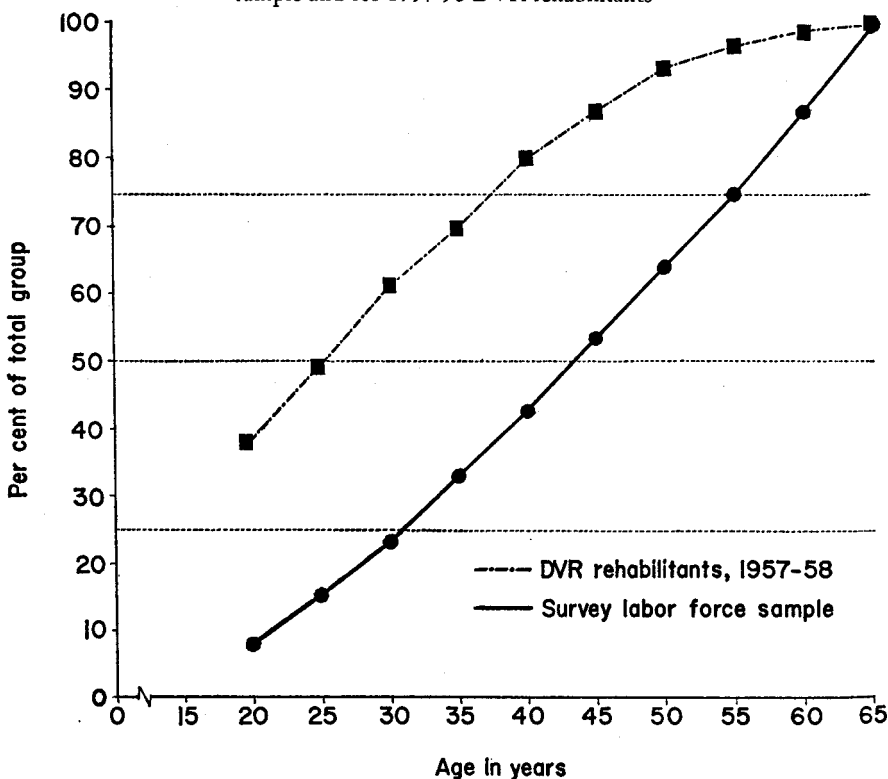
<sup>5</sup> *Employment Trends*, Department of Employment Security, St. Paul, Minnesota. August-September, 1958.

These data compare with the 22% unemployment found in a follow-up study of a group of handicapped persons who had received services from either the Division of Vocational Rehabilitation (DVR) or the State Employment Service (ES) at a time when unemployment in the total labor force was 8.9%.<sup>6</sup>

Figure 1 shows that, within the survey labor force sample, physical disabilities occurred as a straight line function of age. The cumulative percentage distribution of the physically handicapped population rehabilitated by DVR in 1957-58 is also shown. Half of the DVR rehabilitant population was 25 years or younger at acceptance, compared to 13% of the survey sample. Half of the survey sample was 44 years and older, com-

Figure 1

Cumulative age distributions for survey labor force sample and for 1957-58 DVR rehabilitants



<sup>6</sup> See Minnesota Studies in Vocational Rehabilitation: III. A Follow-up Study of Placement Success.

pared to about 17% of the DVR rehabilitant population. These facts suggest that older handicapped persons may not be aware of the availability of state rehabilitation services and/or that the state agency has concentrated too much of its effort at case finding in the younger age groups.

A listing of disabilities for the survey labor force sample is shown in Table 2. Orthopedic disabilities accounted for 35% of the total, with cardiovascular and generalized and systemic disabilities being the next most frequently occurring conditions.

Table 2

Distribution of disabilities for survey labor force sample and for 1957-1958 DVR rehabilitants

Disability	Survey labor force sample (N=255)	DVR rehabilitants* (N=951)
	Per cent	
Orthopedic .....	35	34
Visual .....	5	**
Hearing and speech .....	4	7
Cardiovascular .....	18	6
Respiratory .....	4	15
Neurological .....	8	10
Neuropsychiatric .....	6	10
Generalized or systemic .....	10	6
Gastro-intestinal .....	5	**
Genito-urinary .....	1	**
Mental retardation .....	2	8
Miscellaneous .....	2	4

\* From *Disability and rehabilitation, Annual Report, 1957-58*. Division of Vocational Rehabilitation, State Board of Vocational Rehabilitation, St. Paul, Minnesota.

\*\* These categories were not available from the DVR data.

Table 2 also shows the disability distribution of the DVR rehabilitant (closed-rehabilitated) population in 1957-58. If counselee groups accepted for rehabilitation were representative of the handicapped population, Table 2 would suggest that the state agency meets with more success in rehabilitating certain disability groups (such as respiratory) and with relatively less success with other groups (such as cardiovascular.) If, however, this was not true and the closed-rehabilitated groups were representative of counselee groups at acceptance, then Table 2 suggests that DVR tends to concentrate services on some disability groups to the probable disadvantage of other disability groups.

Origin of disability in the survey labor force sample is shown in Table 3. Over half of the physical handicaps were caused by illness, and only 13% were the result of employment accidents.



Table 3

Distribution of origin of disability for  
survey labor force sample

Origin of disability	Male		Female		Total	
	N	%	N	%	N	%
Illness .....	98	51	48	76	146	57
Employment accident .....	30	16	2	3	32	13
Other accident .....	22	11	9	14	31	12
Present at birth .....	20	10	4	6	24	9
War injury/illness .....	21	11	0	0	21	8
Don't know .....	1	1	0	0	1	**
Total .....	192	100	63	99 <sup>a</sup>	255	99 <sup>a</sup>

<sup>a</sup> Percentages were rounded off to the nearest whole number.

\*\* Less than 0.5%.

Table 4 shows the occupational distribution of present or last jobs for persons in the survey labor force sample who were working at the time of the survey or had worked since disablement. For comparison, figures are also given for 1957-58 DVR rehabilitants and for the state's 1950 total labor force. The survey labor force sample approximates the state's total labor force except in the semiskilled and unskilled occupational groups. The DVR rehabilitant population differs from both the survey sample and the total labor force by having proportionately more in the clerical and sales occupations and proportionately less in the agricultural occupations.

Table 4

Distribution of occupations for survey labor force sample,  
1957-1958 DVR rehabilitants, and state's total labor force

Occupation	Survey labor force sample <sup>a</sup> (N=193)	DVR reha- bilitants <sup>b</sup> (N=904)	State total labor force <sup>c</sup>
		Per cent	
Professional and managerial .....	16	18	17
Clerical and sales .....	20	31	19
Service .....	12	11	9
Agricultural and kindred .....	20	5	22
Skilled .....	13	14	12
Semi-skilled .....	9	16	14
Unskilled .....	9	5	5
No information .....	1	0	2

<sup>a</sup> Excludes 62 individuals who had not worked since disablement or had never worked.<sup>b</sup> From *Disability and rehabilitation, Annual Report, 1957-58*. Division of Vocational Rehabilitation, State Board of Vocational Rehabilitation, St. Paul, Minn.<sup>c</sup> From 1950 Census reports.

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Table 5 lists the sources of income for the group. It will be noted that 35% of the sample (including almost half of the female handicapped in the sample) relied to some extent on other members of their families. Another 11% (including one-fourth of the female handicapped) depended on public agency assistance. One-fourth of the sample (most of these male) received benefits from social security, unemployment compensation, workmen's compensation and veterans' pension.

It is quite clear from the data presented above that (1) unemployment as a problem is particularly acute among the physically handicapped, and (2) there is a need to expand rehabilitation services among certain disability, age, and occupational groups.

Table 5  
Distribution of sources of income in the survey labor  
force sample

Sources of income	Male (N=192)	Female (N=63)	Total group
	Per cent		
Wages .....	67	33	57
Wife's (or husband's) earnings .....	17	2	13
Other family members' earnings .....	13	48	22
Veteran's pensions <sup>a</sup> .....	16	0	12
Unemployment compensation .....	5	0	4
Workmen's compensation .....	4	3	4
Private insurance and/or company pension .....	4	2	4
Public agency assistance .....	7	25	11
Private agency assistance .....	0	0	0
Social security .....	3	10	4
Rent and/or interest .....	10	8	10
Other .....	6	10	7
No answer .....	4	5	4
Average number of sources of income for those reporting .....	1.60 sources	1.52 sources	1.58 sources

NOTE: More than one source can be reported.

<sup>a</sup> Includes disability compensation.

## Labor market participation

Data on the survey labor force sample are useful in obtaining some idea of how physically handicapped individuals, most of them without the benefit of counseling and rehabilitation services, are able to compete in the labor market. Moreover, since the sample was drawn randomly from the general population, data on the sample can also serve as "base rates" against which counseling, placement, and rehabilitation outcomes may be compared.

The employment rates for the sample have already been discussed: 59% were employed at the time of the survey, and 41% were unemployed. Of the unemployed, only 34% had worked at all in the year just preceding the survey (21% had worked on full-time jobs for some period of time, while 13% had worked on part-time jobs). Of some interest is the fact that 6% of the unemployed group considered themselves "retired" even though they had not yet reached age 65. Of even more interest and importance is the finding that only 15% of the unemployed group had been unemployed for 6 months or less; the majority, 64%, had been unemployed for a year or more.

Considering the sample as a whole, 7% had never held a full-time job, and 17% had not returned to work since becoming handicapped. The cross-sectional nature of the survey must be considered in interpreting the latter finding, since some of the persons in the sample were only recently disabled and were still in the period of convalescence.

Thirty-three unemployed persons (13% of the total sample) were looking for work at the time of the survey. Eighteen persons (5% of the total sample) were employed for less than 35 hours a week. Five of this group of part-time employed individuals, and one person working full-time were also looking for more satisfactory employment. Altogether, 15% of the total survey labor force sample were actively looking for work.

The median wage earned by the employed group was \$65 per week for a median of 40 hours worked. This compares unfavorably with wage rates for the total labor force. For comparable occupations, the average wage was \$77 for a 39-hour work week.<sup>7</sup>

The median length of time employed on the present (or last) job was over four years. This points to considerable stability of employment among these individuals.

An indication of the degree of handicap imposed by the different disabilities on the labor market participation of physically handicapped per-

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<sup>7</sup> Computed from *Employment Trends*, Minnesota Department of Employment Security, August-September, 1958. Data on manufacturing and trade occupations.

sons is shown in Tables 6 and 7. Table 6 shows the proportion of individuals within each disability group who returned to work after disablement. It would seem, from the data in Table 6, that being handicapped by a respiratory or orthopedic disability was not as serious as being handicapped by cardiovascular and neuropsychiatric disabilities, in terms of being able to return to work after disablement. A sex difference in the proportion returning to work is also apparent, probably reflecting a dif-

Table 6

Per cent of handicapped individuals who returned to work  
after disablement, by disability group

Disability group	Male		Female		Total	
	N	% of N returning to work	N	% of N returning to work	N	% of N returning to work
Respiratory .....	8	100	1	100	9	100
Orthopedic .....	59	97	8	50	67	91
Visual, hearing and speech ..	8	75	0	.....	8	75
Neurological .....	6	83	5	60	11	73
Generalized and systemic .....	13	69	3	67	16	69
Gastro-intestinal .....	11	73	1	0	12	67
Cardiovascular .....	25	64	9	56	34	62
Neuropsychiatric .....	10	60	1	0	11	55
Other <sup>a</sup> .....	3	100	3	33	6	67
Total .....	143	83	31	51	174	77

<sup>a</sup> Includes skin and allergy, genito-urinary, and mental retardation disability groups.

Table 7

Present employment status of persons who returned  
to work after disablement, by disability group

Disability group	Male		Female		Total	
	N	% of N employed	N	% of N employed	N	% of N employed
Visual, hearing and speech .....	6	100	0	.....	6	100
Respiratory .....	8	88	1	100	9	89
Cardiovascular .....	16	88	5	60	21	81
Gastro-intestinal .....	8	75	0	.....	8	75
Orthopedic .....	57	75	4	50	61	74
Generalized and systemic .....	9	78	2	50	11	73
Neuropsychiatric .....	6	67	0	.....	6	67
Neurological .....	5	80	3	33	8	63
Other <sup>a</sup> .....	3	67	1	0	4	50
Total .....	118	79	16	50	134	75

<sup>a</sup> Includes skin and allergy, genito-urinary, and mental retardation disability groups.

ference in the economic pressures to return to work after disablement. More than four-fifths of the males returned to work, compared with half of the females.

Table 7 shows the present employment status of individuals in each disability group who returned to work after disablement. Individuals with respiratory diseases were able to maintain a relatively high level of employment. Only 62% of those with cardiovascular disabilities were able to return to work after disablement, but of those who did, 81% were able to maintain employment. In contrast, 70% of those with neurological disabilities were able to return to work after disablement, but only half of these were able to maintain employment. While the data presented in Tables 6 and 7 are by no means definitive, they do suggest a line of investigation which would help in determining priorities for expansion of rehabilitation services.

In order to obtain some general idea of the movement of handicapped individuals within the labor market, data were collected on three positions which were considered to be important in judging the ability of a handicapped person to maintain a given level within the occupational hierarchy.<sup>8</sup> These positions were: (a) job held prior to disablement; (b) first job held after disablement; and (c) present job (or last job for those who were unemployed at the time of the survey). Data on these three jobs were not available for all individuals. About 33% of the sample were disabled *before* entering the labor market. Another 24% of the sample had never worked on a full-time job or had not returned to work since becoming disabled. Furthermore, a few jobs were unclassifiable because of insufficient information.

For those in the sample for whom data on the three jobs were available, Tables 8, 9, and 10 show their movements within the job hierarchy as classified according to broad D.O.T. (Dictionary of Occupational Titles) categories. It is apparent from these tables that these persons were remarkably stable in their employment.

Table 11 presents a summary of these tables.<sup>9</sup> For those who were disabled *after* entering the labor market, 80% returned to a job at the same level (usually the same job held prior to disablement) or to a higher-level job. Present (or last) jobs were at the same level or higher than: (a) job before disablement, for 81% of the group, and (b) first job after disablement, for 93% of the group. These high percentages indicate that

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<sup>8</sup> Maintaining a given level in the occupational hierarchy is to be distinguished from maintaining employment status. The latter aspect is discussed in the section which follows.

<sup>9</sup> The summary table reflects the judgments of three members of the research staff who are familiar with the Dictionary of Occupational Titles. There was agreement among all three judges on 39 of the 49 possible comparisons. The comparisons for which there was disagreement among the judges generally involved the agricultural occupations.

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Table 8

Comparison of job held before disablement with first job held after disablement

Job before disablement	First job after disablement							Total
	(0-) <sup>a</sup>	(1-)	(2-)	(3-)	(4-, 5-)	(6-, 7-)	(8-, 9-)	
Professional ..... (0-) <sup>a</sup>	<b>10</b>	2		3				15
Clerical, sales .... (1-)		<b>11</b>	2		1		1	15
Service ..... (2-)	3	2	<b>8</b>		3	1	5	22
Agriculture ..... (3-)		2	1	<b>26</b>	2	1	1	33
Skilled ..... (4-, 5-)		1	2	1	<b>7</b>	2	1	14
Semiskilled ..... (6-, 7-)				1	2	<b>10</b>	1	14
Unskilled ..... (8-, 9-)		3	2	2		2	<b>4</b>	13
Total .....	13	21	15	33	15	16	13	126 <sup>b</sup>

<sup>a</sup> D.O.T. classification code number.

<sup>b</sup> Data are on all individuals for whom comparisons were possible.

Table 9

Comparison of job held before disablement with present or last job held

Job before disablement	Present or last job							Total
	(0-) <sup>a</sup>	(1-)	(2-)	(3-)	(4-, 5-)	(6-, 7-)	(8-, 9-)	
Professional ..... (0-) <sup>a</sup>	<b>10</b>	2		2			1	15
Clerical, sales .... (1-)	1	<b>11</b>			1		1	14
Service ..... (2-)	6	2	<b>8</b>	1	4	1	2	24
Agriculture ..... (3-)	1	3		<b>25</b>	3	1		33
Skilled ..... (4-, 5-)	1	2	3	1	<b>5</b>	2		14
Semiskilled ..... (6-, 7-)		2		1	5	<b>6</b>	1	15
Unskilled ..... (8-, 9-)		2		3	2	1	<b>6</b>	14
Total .....	19	24	11	33	20	11	11	129 <sup>b</sup>

<sup>a</sup> D.O.T. classification code number.

<sup>b</sup> Data are on all individuals for whom comparisons were possible.

individuals who had worked before becoming handicapped were generally able to maintain their level within the occupational hierarchy.

Earnings are another objective indicator of the effect of a physical handicap on the ability of a person to compete in the labor market. Table 12 compares earnings on the first job after disablement with earnings on the job held before disablement. About 53% of the group indicated that their earnings after disablement were the same or better than before disablement. While there was a tendency for generalized and systemic, neuropsychiatric, and neurological disabilities to have more of an unfavorable effect on earnings, there were no statistically significant differences among the various disability groups in the proportion of those earning

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Table 10

Comparison of first job after disablement with present or last job held

First job after disablement	Present or last job							Total
	(0-) <sup>a</sup>	(1-)	(2-)	(3-)	(4-, 5-)	(6-, 7-)	(8-, 9-)	
Professional .....(0-) <sup>a</sup>	<b>17</b>	<b>1</b>						18
Clerical, sales ... (1-)	6	<b>27</b>	2				3	38
Service ..... (2-)		1	<b>16</b>		2		3	22
Agriculture ..... (3-)	2		1	<b>36</b>	1			40
Skilled ..... (4-, 5-)	1	3	1	1	<b>16</b>			22
Semiskilled ..... (6-, 7-)		2	1		3	<b>13</b>	1	20
Unskilled ..... (8-, 9-)	1	2	1		2	1	<b>10</b>	17
Total .....	27	36	22	37	24	14	17	177 <sup>b</sup>

<sup>a</sup> D.O.T. classification code number.

<sup>b</sup> Data are on all individuals for whom comparisons were possible.

Table 11

Occupational success based on job comparisons

Job comparison	Same level	Higher level <sup>a</sup>	Lower level <sup>b</sup>	Not deter- minable
Per cent				
Job after disablement versus job before disablement .....	67	13	12	8
Present (last) job versus job before disablement .....	59	22	10	9
Present (last) job versus job after disablement .....	80	13	5	2

<sup>a</sup> The first job in the comparison is of a higher level than the second job.

<sup>b</sup> The first job in the comparison is of a lower level than the second job.

Table 12

Earnings on first job after disability compared with  
earnings on job before disability

Disability	N	More	Same	Less	Don't know
Per cent <sup>a</sup>					
Respiratory .....	9	44	22	33	0
Visual, hearing and speech .....	6	33	33	33	0
Cardiovascular .....	21	10	48	33	10
Orthopedic .....	61	18	34	34	13
Neurological .....	8	13	25	50	13
Generalized and systemic .....	11	9	27	55	9
Neuropsychiatric .....	6	0	33	50	17
Other <sup>b</sup> .....	12	17	50	17	17
Total .....	134	17	36	36	11

<sup>a</sup> Rounded off to the nearest whole number.

<sup>b</sup> Includes skin-allergy, genito-urinary, gastro-intestinal, and mental retardation groups.

the same or more and those earning less after disablement as before disablement.

In connection with the above findings, it is interesting to note that 69% of the entire group felt that their disability had affected their overall earning capacity, while only 25% felt that it had not. Actually, the majority of the group seemed to have been able to maintain their job status and pay levels. This self-perceived restriction on earning capacity probably refers to the limitation of their job mobility. In most cases, after becoming handicapped, the individual returned to the job he held before disablement.

As a final point in this study of the labor market participation of handicapped persons, characteristics of unemployed individuals who were actively looking for work were compared with those of unemployed individuals who were not looking for work. No differences between the two groups were found in age, sex, age at disablement, education, number of dependents, occupation, having had employment experience before disablement, and number of months before returning to work after disablement. However, the two groups differed significantly in their disability distributions. While 33% of the total unemployed group were looking for work, 52% of the orthopedic group, but only 19% of the cardiovascular group and 15% of the generalized and systemic group, were looking for work. Furthermore, the two groups differed in the length of time the individuals had been out of work at the time of the survey. Only one-fifth of those who were looking for work had been out of work for more than one year, compared to 55% of those who were not looking for work.

The data presented above clearly picture the hard realities which the physically handicapped face in the labor market. The one encouraging finding, however, was the fact that most individuals who worked before disablement were able to maintain their occupational status levels and, to a lesser extent, their earning capacities.



## Characteristics related to employment status

Employment of the physically handicapped is influenced by many factors. Some factors, such as morale, amount of vocational preparation and motivation to work, are presumably amenable to change. The rehabilitation counselor and the rehabilitation agency work with the handicapped person in effecting desirable changes in these factors.

Employment of the physically handicapped is also affected by some factors which cannot be changed by counselor or agency.<sup>10</sup> Such factors as sex, present age, age at disablement, and nature and origin of the disability are limitations which circumscribe the work of the counselor and the agency. It is obviously important to investigate the effect such factors have on the employment of the physically handicapped. The section which follows presents data bearing on this general problem.<sup>11</sup>

Sex is one factor of considerable significance in any study of employment. Table 13 gives data on the employment status of male and female groups in the survey labor force sample. The most significant difference between the two groups was the proportion of employment and unemployment. Two-thirds of the men were employed compared with one-third of the women. No statistically significant differences between the

Table 13  
Employment status for male, female, and total survey  
labor force samples

Employment status	Male		Female		Total	
	N	%	N	%	N	%
Employed: .....	129	67	21	33	150	59
Unemployed:						
Looking for work						
With work experience .....	23	12	9	14	32	12
Without work experience .....	1	1	1	2	2	1
Total looking .....	24	13	10	16	32	13
Not looking for work						
With work experience .....	28	15	22	35	50	20
Without work experience .....	10	5	10	16	20	8
Total not looking .....	38	20	32	51	70	28
No information .....	1				1	
Total unemployed .....	63	33	42	67	105	41
Total sample .....	192	100	63	100	255	100

<sup>10</sup> These factors are the "givens" in a counseling situation. Some are unchanging, such as sex or age at disablement. Some may change, such as severity of disablement (in a "progressive" disability.) Finally, some do change, such as present age.

<sup>11</sup> The chi square test of independence was the statistical technique used in all of the analyses reported in this section.

# FACTORS RELATED TO EMPLOYMENT SUCCESS

sexes were found in the proportions of the unemployed (a) who were looking for work compared with those not looking for work, and (b) who had work experience compared with those who did not have work experience.

Table 13 also shows that one-half of the total female sample (three fourths of the unemployed females in the sample) were not looking for work. This compares with one-fifth of the total male sample (or three-fifths of the unemployed males). Among the individuals who were not looking for work, 74% of the males and 69% of the females have had work experience.

Age is another factor commonly thought of as related to employment of the physically handicapped. Table 14 shows the percentage of employment among handicapped persons in different age categories at the time of the survey. While those between the ages of 20 and 34 had a higher rate of employment, age was not found to be statistically related to employment status. The effect of age on employment status was also determined for each of the three largest disability groups. No relationship was found between the two factors for orthopedics, cardiovasculars, or those with generalized or systemic diseases.

Table 14  
Employment status as related to present age

Present age group	Male		Female		Total	
	N	% of N employed	N	% of N employed	N	% of N employed
14-19 years	11	64	5	20	16	50
20-24 years	14	86	4	25	18	72
25-29 years	15	80	5	40	20	70
30-34 years	20	80	4	50	24	75
35-39 years	17	65	8	13	25	48
40-44 years	21	67	4	25	25	60
45-49 years	21	76	14	36	35	60
50-54 years	20	55	4	25	24	50
55-59 years	25	52	6	67	31	55
60-64 years	28	61	9	33	37	54
Total	192	67	63	33	255	59

Another factor considered to have implications for employment among the handicapped is age at which disablement occurs. Table 15 shows the percentage of employment for handicapped persons grouped according to the age at which they became handicapped. When the individuals were grouped into those disabled before age 30, those disabled between 30 and 44 years, and those disabled at age 45 or later, statistically signi-

Table 15

Employment status as related to age at disablement

Age at disablement	Male		Female		Total	
	N	% of N employed	N	% of N employed	N	% of N employed
0-14 years .....	39	72	23	30	62	56
15-19 years .....	18	72	4	25	22	64
20-24 years .....	22	91	6	33	28	79
25-29 years .....	19	79	2	50	21	76
30-34 years .....	12	58	4	50	16	56
35-39 years .....	17	65	5	20	22	55
40-44 years .....	12	75	3	33	15	67
45-49 years .....	21	62	9	22	30	50
50-54 years .....	13	38	2	50	15	40
55-59 years .....	13	38	3	67	16	44
60-64 years .....	5	40	1	0	6	33
Don't know .....	1	100	1	100	2	100
Total .....	192	67	63	33	255	59

ficant differences in the proportion of employment in the three groups were found. In the total sample, 65% of those disabled before age 30 were employed, compared with 58% for those disabled between 30 and 44, and 45% for those disabled at age 45 or later. (These differences are significant at the .05 level.) The corresponding percentages for the male group are 78%, 66%, and 48% respectively (significant at the .01 level). No significant differences in employment status were found for females in the three age-at-disablement groups. There is some evidence, therefore, that the age at which disablement occurs may have important bearing on the employment prospects of the physically handicapped individual, with those disabled later in life having more employment difficulty.

Table 16 shows the relation between age at disablement and employment status in three age groups (i.e., present age). The data again suggest that, regardless of present age, becoming disabled before age 30 is least handicapping in terms of maintaining employment. Table 16 also indicates that becoming disabled after age 45 has serious implications regarding employment prospects. However, the relationship between age at disablement and employment status when present age is equated is statistically significant only for the male group (at the .02 level) and not for the total sample. Data on the female group were not tested for statistical significance due to the small number of cases in some of the categories used.

A study of a single disability group emphasizes the importance of age at disablement in affecting employment. Within the orthopedic group,

# FACTORS RELATED TO EMPLOYMENT SUCCESS

Table 16

Employment status as related to age  
at disablement and present age

Age at disablement	Present age					
	14-29		30-44		45-64	
	N	% of N employed	N	% of N employed	N	% of N employed
Male:						
0-29 .....	39	77	41	73	18	89
30-44 .....			17	65	24	67
45-64 .....					52	48
Female:						
0-29 .....	14	29	12	33	9	33
30-44 .....			4	0	8	50
45-64 .....					15	33
Total:						
0-29 .....	53	64	53	64	27	70
30-44 .....			21	52	32	63
45-64 .....					67	45

NOTE: Does not include two individuals for whom information on age at disablement was not obtained.

80% of those disabled before age 30 were employed at the time of the survey, while only 58% of those disabled after age 30 were employed. This difference is statistically significant (.05 level).

Employment status in the different disability groups is shown in Table 17. The disability groups are listed in the order of per cent employed, thus providing a rough index of the handicapping nature of the

Table 17

Employment status as related to disability

Disability	Male		Female		Total	
	N	% of N employed	N	% of N employed	N	% of N employed
Respiratory .....	9	89	2	100	11	91
Visual, hearing and speech .....	19	84	5	20	24	71
Orthopedic .....	72	76	18	44	90	70
Cardiovascular .....	32	63	14	36	46	54
Gastro-intestinal .....	11	55	1	0	12	50
Generalized or systemic .....	18	61	7	14	25	48
Neuropsychiatric .....	12	42	3	33	15	40
Neurological .....	11	36	10	30	21	38
Other* .....	8	38	3	0	11	27
Total .....	192	67	63	33	255	59

\* Includes skin and allergy, genito-urinary, mental retardation and miscellaneous disabilities.

illness or injury with reference to employment. Differences in employment status among the disability groups were pronounced in both the total sample (statistical significance at the .01 level) and in the male group (statistical significance at the .05 level). Employment status differences were not tested in the female group due to insufficient number of cases.

It should be noted that persons with respiratory disabilities had approximately the same rate of employment as the total labor force in general. This suggests that arrested respiratory disabilities may not, in fact, be employment handicaps, and that rehabilitation agencies might better use their facilities to serve other types of cases. Visual, hearing and speech, and orthopedic disabilities seem to be equally handicapping. The most handicapping conditions in terms of maintaining employment were neurological and neuropsychiatric disabilities.

It might be noted, in connection with the foregoing observations, that 56% of the individuals rehabilitated by DVR in 1957-58 had respiratory, orthopedic, and hearing disabilities,<sup>12</sup> while only 20% had the more handicapping neurological and neuropsychiatric disabilities. Although the DVR may select cases in proportion to the incidence of the disabilities in the population, Table 17 shows that the need for vocational rehabilitation services differs with the kind of disability. Some consideration should perhaps be given to accepting more persons from the more vocationally handicapping disability classifications.

No differences in employment status were found among disability sub-groups when individuals were grouped into three age groups: 14 to 29 years, 30 to 44 years, and 45 to 64 years. While there was a tendency for unemployment in the different disability sub-groups to increase in the young (14 to 29 years) and older worker (45 to 64 years) groups, the trend was not consistent, and the differences not statistically significant.

Employment status for different ages at disablement was investigated in three age groups within a single disability group (orthopedic). The data suggested a curvilinear relationship between age at disablement and employment status. For male and total groups alike,<sup>13</sup> the more recent the disablement, the higher was the proportion of unemployment. Unemployment was likewise higher when disablement occurred during childhood. These trends, however, were not statistically significant.

Employment status as it relates to the origin of the disability is shown in Table 18. While there were no statistically significant differences among the numbers employed and unemployed in the different cate-

<sup>12</sup> Visually handicapped individuals are served by a different state agency.

<sup>13</sup> Data on the female handicapped were not analyzed statistically due to an insufficient number of cases.

Table 18

Employment status as related to origin of disability

Origin of disability	Male		Female		Total	
	N	% of N employed	N	% of N employed	N	% of N employed
Employment accident .....	30	73	2	50	32	72
War injury/illness .....	21	62	0	.....	21	62
Illness .....	98	67	48	33	146	56
Other accident .....	22	73	9	22	31	58
Present at birth .....	20	60	4	50	24	58
Don't know .....	1	0	0	.....	1	0
Total .....	192	67	63	33	255	59

gories, persons who were injured in employment accidents had the highest rate of employment, and individuals born with disabilities had the lowest rate of employment. Evidence here supports a finding reported in an earlier publication of this series that congenital disabilities are the most handicapping.<sup>14</sup>

Table 19 shows employment status as related to the number of months before an individual returns to work after disablement, for those individuals in the survey sample who had worked before disablement and had returned to work. No significant differences in employment status were found among the different groups. Even within single disability groups,

Table 19

Employment status as related to number of months before the handicapped worker returned to work<sup>a</sup>

Number of months before returning to work	Male		Female		Total	
	N	% of N employed	N	% of N employed	N	% of N employed
Less than 1 .....	21	81	2	100	23	83
1-3 .....	32	88	6	50	38	82
4-6 .....	16	75	2	100	18	78
7-12 .....	19	80	5	20	24	67
13-24 .....	9	67	0	.....	9	67
25+ .....	13	77	0	.....	13	77
Don't know .....	8	50	1	0	9	44
Total .....	118	78	16	50	134	75

<sup>a</sup> Data are on individuals who worked before disablement and returned to work after disablement.

<sup>14</sup> See *Minnesota Studies in Vocational Rehabilitation: IV. A Study of 1,637 DVR Counseles.* Bulletin 24, November 1958.

no relationship was found between employment status and number of months before returning to work. There is no evidence from these data, therefore, that severity of disability (as reflected by the number of months it takes an individual to return to work) was related to the employment status of the physically handicapped.<sup>15</sup>

Table 20 shows the employment status of individuals who had worked after disablement, when these individuals were grouped according to their present occupations. It is apparent from Table 12 that there were no significant differences in employment status among the various occupational groups. It is interesting to note that disability was just as vocationally handicapping (in terms of maintaining employment) in the more sedentary "white-collar" occupations as it was in the more physically demanding "blue-collar" occupations.<sup>16</sup>

Table 20

Employment status as related to present occupation

Present occupation	Male		Female		Total	
	N	% of N employed	N	% of N employed	N	% of N employed
Professional and managerial ...	25	84	6	100	31	87
Clerical and sales .....	26	85	11	45	37	73
Service .....	15	80	10	30	25	60
Agricultural and kindred .....	39	77	0	.....	39	77
Skilled .....	22	82	3	100	25	84
Semi-skilled .....	14	86	3	67	17	82
Unskilled .....	15	93	3	67	18	89
Total .....	156	83	36	58	192	78

NOTE: Data are on individuals who worked *after* disablement.

No significant differences in employment status among occupational subgroupings were found when individuals were initially grouped (a) into three broad age groupings (14 to 29 years, 30 to 44 years, and 45 to 64 years); and (b) according to disability. There is no evidence from the data on hand, therefore, that employment status was related to these factors in combination, i.e., age and occupation, and disability and occupation—whether for total sample or for male individuals only.

Table 21 shows present employment status for individuals who had worked before disablement, when these individuals were grouped according

<sup>15</sup> An interesting related finding was the lack of relationship ( $r = +.09$ ) between age at disablement and the number of months before returning to work for 42 presently employed orthopedically handicapped individuals.

<sup>16</sup> This observation, however, should be weighed against differences in employment opportunities between "white-collar" and "blue-collar" occupations.

to their occupations. No significant differences in employment status among the various occupational groups were found. In other words, there is no evidence from these data that becoming physically handicapped had any more effect on the subsequent employment status of unskilled or agricultural workers (where the physical demands were heavy) than it had on the employment status of clerical workers (where physical demands were relatively lighter).

Table 21

Employment status as related to occupation before disablement

Occupation before disablement	Male		Female		Total	
	N	% of N employed	N	% of N employed	N	% of N employed
Professional and managerial.....	18	61	1	0	19	58
Clerical and sales .....	11	82	10	20	21	52
Service .....	26	58	11	27	37	49
Agricultural and kindred.....	36	72	1	0	37	70
Skilled .....	18	61	2	50	20	60
Semi-skilled .....	14	79	3	33	17	71
Unskilled .....	17	47	3	33	20	45
Not classifiable .....	3	67	0	.....	3	67
Total .....	143	65	31	26	174	58

Where individuals were first grouped by age (into the three age categories used in previous analyses) or by disability, no significant differences in employment status were found among occupational sub-groups.

The negative findings reported above are not to be construed as proof of the absence of the relationships under study. With the number of cases available, larger differences than those observed are required to demonstrate statistical significance.<sup>17</sup> It should be noted, moreover, that the differences observed were in the expected direction, i.e., toward demonstrating the existence of the relationship.

Table 22 shows the employment status of physically handicapped individuals in relation to the amount of education they have had. There were significant differences (at the .01 level) in the proportion of employed individuals in the various levels of education, with employment rates increasing considerably with higher education. However, these results may reflect, to some extent, the possibility that failure to obtain an education may be related to the severity of disablement.

<sup>17</sup> From another point of view, with the differences observed, a greater number of cases than that available are required to demonstrate statistical significance.



Table 22

Employment status as related to education

Years of education	Male		Female		Total	
	N	% of N employed	N	% of N employed	N	% of N employed
Grade School (0-6) .....	19	32	10	20	29	28
Junior High (7-9) .....	69	62	18	39	87	57
High School (10-12) .....	75	75	25	24	100	62
College (13+) .....	26	85	10	60	36	78
No information .....	3	67			3	67
Total .....	192	67	63	33	255	59

While education was related to the employment status of handicapped individuals generally, it did not seem to be a significant factor in the employment of the older (45 to 64 years) handicapped worker. When the data shown in Table 23 were tested for statistical significance, education was found related to employment status in the 14-to-44 age group (both male and total samples) but not in the 45-to-64 age group (again, in both male and total samples).

Table 23

Employment status as related to education and age

Years of education	Male				Total			
	Age: 14 to 44		45 to 64		14 to 44		45 to 64	
	N	% of N employed	N	% of N employed	N	% of N employed	N	% of N employed
Grade School (0-6) .....	7	14	12	42	11	9	18	39
Junior High (7-9) .....	19	63	50	62	25	56	62	58
High School (10-12) .....	58	79	17	59	74	66	26	50
College (13+) .....	14	93	12	75	18	89	18	67
No information .....	0		3	67	0		3	67

When individuals were grouped according to occupation, no relationship was found between education and employment status within occupational groupings. Similar negative results were obtained within disability groupings when individuals were grouped according to disability.

About a third of the men in the survey sample were veterans. Of these, 60% were employed. Being a veteran did not seem to improve the employment prospects of the physically handicapped.

Table 24 shows the relationship between having dependents and employment status. There was a significant trend for employment rates to increase consistently with number of dependents until four dependents were reached, with rates decreasing somewhat with more dependents to support. There is a suggestion here that number of dependents is a subtle indicator of motivation to maintain employment. A similar finding was reported in an earlier publication of this series.<sup>18</sup>

Table 24

Employment status as related to number of dependents

Number of dependents	Male		Female		Total	
	N	% of N employed	N	% of N employed	N	% of N employed
1 .....	9	22	13	54	22	41
2 .....	37	54	9	56	46	54
3 .....	25	72	3	0	28	64
4 .....	26	92	1	0	27	89
5 .....	23	78	0	.....	23	78
6 or more .....	27	78	1	0	28	75

The relationship between number of dependents and employment status is emphasized in the study of single disability groups. Among orthopedically handicapped males, 53% of those with one or two dependents (including self) were employed, while 81% of those with three or more dependents were employed. The corresponding figures for the total orthopedic group were 58% and 79% respectively. Other disability groups showed the same trends, but the number of cases was too small to warrant statistical significance tests.

The percentage of employment for different marital status groups is shown in Table 25. The differences in employment rates among the three groups were statistically significant. Employment was highest for married individuals, supporting the general inference that economic pressures (as reflected in marital status and number of dependents) are important motivational factors to consider in the study of employment among the physically handicapped.

In summary, sex, age at disablement, nature of the disability, education, number of dependents, and marital status were significantly related to present employment status. Present age, type of occupation, origin of disability, number of months before returning to work after disable-

<sup>18</sup> See *Minnesota Studies in Vocational Rehabilitation: IV. A Study of 1,637 DVR Counselees*. IRC Bulletin 24, November, 1958.

Table 25

## Employment as related to marital status

Marital status	Male		Female		Total	
	N	% of N employed	N	% of N employed	N	% of N employed
Single .....	40	60	24	38	64	52
Married .....	144	71	17	29	161	66
Other .....	8	38	22	32	30	33
Total .....	192	67	63	33	255	59

ment, and veteran status were not found to be significantly related to employment status. However, with the exception of the last variable (veteran status), data on these non-significant variables showed slight trends indicating the need for further investigation into their pertinence to employment problems of the physically handicapped.

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