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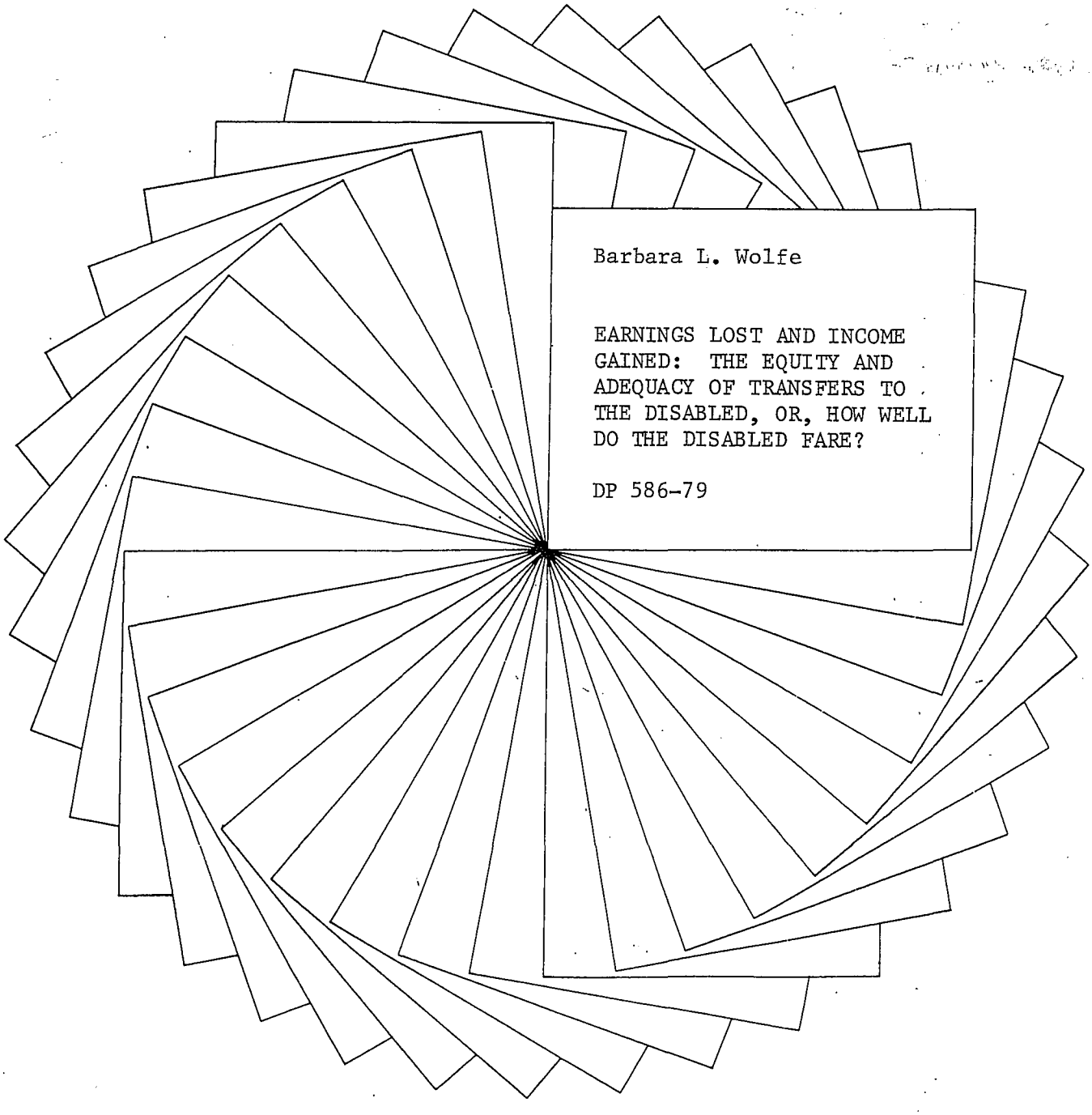

Barbara L. Wolfe

EARNINGS LOST AND INCOME GAINED: THE EQUITY AND ADEQUACY OF TRANSFERS TO THE DISABLED, OR, HOW WELL DO THE DISABLED FARE?

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Earnings Lost and Income Gained: The Equity and Adequacy of Transfers to the Disabled, Or, How Well do the Disabled Fare?

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ABSTRACT

The average earnings of the disabled are much less than those of the nondisabled. A number of transfer programs have been designed to provide income to the disabled. After transfers, the differences in personal and/or family income between disabled and nondisabled, on average, are not so great. However, the disabled still have lower average incomes than others. The incomes and earnings of disabled members of socioeconomic groups defined in terms of race, marital status, and education suggest that those from "lower socioeconomic groups"--those already disadvantaged--are generally worse off than either their nondisabled peers or the disabled of higher socioeconomic groups; that they face a type of double jeopardy. Transfers reduce the impact of their disabilities, but such persons remain relatively worse off than others.

Earnings Lost and Income Gained: The Equity and Adequacy of Transfers to the Disabled; Or, How Well Do The Disabled Fare?

INTRODUCTION

The average earnings of the disabled are considerably less than those of the nondisabled. This is due both to their reduced labor force participation, and to their lower wages. A number of transfer programs have been designed to provide income to the disabled. When these and other items of unearned income are added to their earnings, their incomes, as measured by both personal income and family income, show on average smaller differences from those of the nondisabled. Within this general or average picture, however, a number of larger inequities remain.

The purpose of this paper is to examine these differences in earnings, income and transfers received. In Section 1, a model of the way disability affects earnings and a description of the data are presented. Empirical results in Section 2 compare earnings among both all men and racial subgroups. Personal income including a discussion of transfers is explored and compared in Section 3. The final section discusses family income differences and the transfers families receive, and presents some conclusions which include the policy implications of this research.

1. THE MODEL AND A DESCRIPTION OF THE DATA

Model

Health--measured in terms of chronic or long term conditions--frequently affects earnings. Health defects that occur early in life may influence investment in human capital--including investments in education and the investment of time by parents and teachers. Much of the investment of parents may be health-related--more maintenance related than educationally oriented. Perceptions of job alternatives may further interact to influence all of these investments. And health may affect initial and subsequent job experience.

At a point in time, current health status may affect work effort. Putting this together with the earlier influences, we expect wages to be affected both by an individual's level of skills and by the intensity of his or her work effort. Earnings which equal wages times hours worked will also reflect amount of work effort.

In its simplest form, assuming wages equal marginal product, the model can be written in the following way:

$$W = f(K,E), \text{ where} \qquad (1)$$

W = individual's wage rate

K = level of human capital

E = intensity of work effort

The level of human capital is a function of both genetic endowment and environmental factors:

$$K = f(G,H,S,X,A,R) \qquad (2)$$

G = genetic factors such as I.Q.

H = long term health status

S = schooling

X = earlier job experience

A = age

R = race

Age, race, and genetic factors are assumed to be exogenous. Sex would also enter the model, but because of additional complications through childbearing and housekeeping, this model is for men only.

It is hypothesized that the partial derivative of poor health on human capital investment is negative.[1] The type of schooling acquired may be limited. (This is less likely to be true more recently with new laws on education.) Further, the influence of health may also limit the type of work and so reduce earlier job experience. Firms may respond to disabilities or perceptions of health limitations by providing less on-the-job training. Poor health may also reduce the hours worked and/or intensity of work effort. This is true with early chronic problems and later disabilities. If the onset of a disease or accident occurs later in life, it may diminish some of the human capital an individual has acquired. Simultaneously or alternatively, it may reduce the intensity of work effort. Thus the model adds the following equations:

$$S = f(G,H,A,R) \qquad (3)$$

$$X = f(G,H,A,R) \quad (4)$$

$$E = f(S,X,H,MS) \quad (5)$$

$$h = f(G,H,A,S,AR,MS,W) \text{ where} \quad (6)$$

h = hours worked where

MS = marital status

Another effect may be to reduce both human capital and/or work intensity in the home. This may further lower the standard of living, create marital or family problems, and, in some cases, result in broken homes. Lowered earnings or earnings capacity may undermine the role of the breadwinner, leading, as unemployment sometimes leads, to marital disruption. Thus we posit that current marital status is affected by health status, or,

$$MS = f(H,A,R,K). \quad (7)$$

Among males in general, being currently married is associated with higher incomes--thus this influence on marital status may further influence income differences.

Since part of the decline in earnings is compensated by transfers and parents may have responded to the child's poor health status by compensating in the form of non-human capital, we are interested in income as a better measure of economic well-being. Income is earnings plus unearned income and transfers:

$$Y = W1 \cdot h + N + T \text{ where} \quad (8)$$

N = unearned income such as dividneds and interest

T = transfers

Our model for these two additional components of income are that transfers compensate for earnings and are affected by age, race, and

marital status. Unearned income is a function of age, race, human capital, genetics, marital status and early work experience.

$$N = f(A,R,K,X,MS,G) \tag{9}$$

$$T = f(W \cdot h,R,A,MS) \tag{10}$$

Government transfers increase incomes of many of those in poor health. And, to the extent these transfers are income- or work-conditioned, they may induce either lower earnings and/or fewer hours worked. Thus we expect the effect of health to be smaller in an equation where the dependent variable is income instead of earnings. We still posit, however, that it will be negative and significant.

This model assumes that the influences of health and race are independent and additive. Yet, our earlier discussion of the model suggests that this is not so for health. It is also hypothesized that it is not so for race.

The model then becomes:

$$Y_i = f_i(W_i \cdot h_i + N_i + T_i) \tag{11}$$

where the subscript refers to a particular race and/or health subgroup.[2]

We wish to explore whether there are further interactions between health status and the racial factor which, we posit, also influences income. In effect, we posit a type of double jeopardy: poor health and non-white race interact to reduce further a person's perceived opportunities, the actual work opportunities available to him and the amount of on-the-job training he receives. These result in a lower investment in human capital.

$$\frac{\partial K}{\partial R} < 0; \quad \frac{\partial Y}{\partial K} > 0 \text{ therefore } \frac{\partial Y}{\partial R} < 0$$

The actual equations estimated will also include a set of variables reflecting region and size of residential area--demand side variables. These are likely to influence earnings, but are, we assume, independent of the effects we are interested in.

Data

The data used are from the 1977 Current Population Survey (CPS). Individuals between the ages of 20-64 who have not been institutionalized and who are not in the military make up the sample. Those younger than 20 are generally dependents or students, while those older than 64 are eligible for a variety of programs because of their age. Using the 1977 CPS, the disabled are defined in three basic categories, according to 1) participation in programs for the disabled, 2) work limitation, and 3) participation in a low-wage sheltered workshop occupation.

Those categorized on the basis of participation in programs designed specifically for the disabled include individuals who receive disability benefits under Social Security; Supplemental Security Income (SSI), an income-tested program; railroad disability annuities; worker's compensation; and veterans' benefits.[3] The percentage of the population aged 20-64 which is defined as disabled, according to program participation, is 7.0%.

Individuals included by work limitation either do not work or are limited in the amount of work they can perform. The attempt is to include those who are unable or ill for substantial periods of time while excluding those who missed work for short periods of time because of short-term, acute illnesses. By this definition, 6.9% of the population is disabled.

It is also desirable to include individuals who work in programs designed especially for the disabled. Many of these may not respond to inquiries directed at work limitations, so an additional definition is used. Individuals whose wage rate is positive but less than $1.00 an hour are included as disabled if their occupation is one that is included in sheltered workshops. A total of 1.46% of individuals aged 20-64 are designated as disabled by this definition.

Using all of these definitions, and counting an individual disabled only once, 12.3% of the population aged 20-46 is designated as disabled. This is equivalent to 14.3 million individuals. 13.5% of males in this age group are so designated. (This compares to 14.0% of all males designated as disabled by the 1972 Survey of the Disabled).

The disabled population tends to be older, less likely to work, and if working, less likely to work full-time than the nondisabled population. As predicted, the disabled are also less likely to be married and tend to have less education than the nondisabled. 57.7% of the disabled are married with spouse present compared to 72.3% of the nondisabled population.

2. FINDINGS

Overview

According to the CPS, among men[4] aged 20-64 in 1976, the average disabled male earned less than 50% of what the average able-bodied man earned: $5870 compared to approximately $12,500. This represents a gap of about $6600--more than the amount the average disabled male earned. The average nonwhite disabled male earned approximately $3380 compared to nearly $6300 earned by the average white disabled male; thus a gap of almost $3000 existed between racial groups.

The average white disabled male earned over $6000 less than his white nondisabled counterpart, $13,000 to $6300. The nonwhite disabled male earned $5000 less than a nondisabled nonwhite male. Thus, earnings were substantially reduced by disabilities. There was a gap of $5000-$6000 for both racial groups, and a further gap among nonwhite disabled males as compared to white disabled males.

We hypothesize that these results combine the effects of investment in human capital, intensity of work effort, hours worked[5] and any discrimination in the marketplace toward the disabled. In order to separate out some of these effects, Table 1 first presents average earnings by education for white and nonwhite disabled and nondisabled males, and second, average earnings by age group. From panel 1, we can see that for every education level the disabled earn less than the able-bodied of the same race. The nonwhite disabled earn the least at every education level. The gaps within racial groups tend to be larger at lower levels of education. More education does seem to increase income for all groups (with only one exception, discussed below), but large gaps are found between the disabled and the nondisabled at every education level. Thus, even though differences in amounts of education may partially "explain" the large earnings differences, much of the difference remains, and will be explored below. Looking at the results by age groups, for every age group the disabled earn less than the nondisabled and the differences are most pronounced at older ages. For most groups, the highest average earnings are for the age group 35-44 and 45-54. Nonwhite disabled men, however, show a decreasing average income from youngest to oldest age groups.

A number of transfer programs are designed to provide income to the disabled. Thus, we would expect personal income[6] to show smaller gaps

Table 1

Average Earnings and Personal Income
of Disabled and Nondisabled Males

	Disabled		Nondisabled	
	White	Nonwhite	White	Nonwhite
Earnings				
By Education:				
All	$ 6,292	$ 3,381	$12,956	$ 8,497
Under 8 years	2,226	1,133	8,319	6,848
8 years	3,616	1,185	9,899	7,784
9-11 years	4,729	2,566	10,501	7,691
12 years	7,086	4,497	12,297	8,346
13-15 years	8,057	7,486	11,655	7,726
16+ years	11,811	9,748	18,384	13,188
By Age:				
20-34	7,068	4,863	10,013	6,812
35-44	7,559	4,419	16,178	10,608
45-54	6,973	2,815	16,090	10,496
55-64	4,455	1,548	13,189	8,628
Personal Income				
By Education:				
All	9,127	5,431	13,806	8,933
Under 8 years	4,800	3,033	8,908	7,157
8 years	6,765	3,477	10,778	7,691
9-11 years	7,210	4,035	11,153	8,052
12 years	9,738	6,888	13,077	8,747
13-15 years	11,052	9,916	12,477	8,317
16+ years	15,593	12,069	19,542	13,725
By Age:				
20-34	8,795	6,353	10,399	7,123
35-44	9,809	6,946	16,858	10,961
45-54	10,021	4,707	17,123	11,064
55-64	8,674	4,241	15,389	9,566

Data Source: 1977 CPS: noninstitutionalized males aged 20-64

between the disabled and the nondisabled than they would without such programs. Average personal income is nearly $8600 among the disabled, compared to $13,285 among the nondisabled. This represents both a smaller absolute gap (approximately $4700) and a smaller percentage difference than comparing earnings. It is a large difference nevertheless.

As can be seen in Table 1, the average personal income is $5431 among nonwhites, $9127 among whites. Thus, comparing across racial groups, the dollar gap is larger comparing personal income than comparing earnings.

Personal income is only slightly greater than average earnings among the nondisabled: $13,800 and $8933 for white and nonwhite respectively.

Table 1 also presents mean personal income by education level for white and nonwhite disabled, and for white and nonwhite nondisabled. Except for the group with 13-15 years of education among the nondisabled, personal income increases as education increases. The personal incomes of the white disabled are above those of the nonwhite disabled at every education level.

Comparing within racial subgroups, the nondisabled have higher personal incomes with one exception, as noted above, nonwhites with 13-15 years of education. The pattern of earnings--highest among white nondisabled, then nonwhite nondisabled, then white disabled and the lowest among nonwhite disabled--is not as clear when comparing personal income. White nondisabled remain clearly highest, nonwhite disabled lowest, but white disabled and nonwhite nondisabled change rankings. Among higher education groups--high school graduates and above--white disabled

have higher personal incomes than nonwhite nondisabled. The reverse is true among those with less education.

Looking at personal income differences by age, for all groups except the nonwhite disabled, average personal incomes are highest for the 45-54 age group. Older disabled nonwhite males appear to do worst in terms of personal income. The age grouping highlights the fact that when we compare the white disabled and the nonwhite nondisabled, the white disabled within the youngest age group have the higher earnings and personal income, whereas among older individuals the reverse is true.

Overall, the largest difference is between the earnings of white nondisabled and those of nonwhite disabled, which are nearly four times as great. The differences among racial groups are smaller. Among whites, the nondisabled earn on average two times as much as the disabled, while among nonwhites, the nondisabled earn on average 2.5 times as much. Personal income differences are smaller. White nondisabled males average 2.5 times the personal income of nonwhite disabled males. The differences among racial groups, comparing nondisabled and disabled, are nearly the same: 1.5 among whites, 1.6 among nonwhites.

These differences may reflect a number of other factors which are, in a sense, independent of the disability question. These include region, and size of area. In the regression analyses below these factors are controlled for.

Regression Results

1. Education

Equation 2 of the model above suggests that health status is likely to influence the amount of acquired human capital, and our empirical results show such a relationship. We measure health status by disability, human capital by education. Among males aged 20-64 (see Table 2, column 4--All Males), the negative association is approximately one and a third years; i.e., a disabled person is expected to have one and a third years less education than an "equivalent" nondisabled person. (Equivalent is defined in terms of age, region of country and size or type of area in which persons reside.) Without the additional controls, the difference as measured by means is slightly greater, 1.6 years: 12.4 years of education for nondisabled persons as compared to 10.8 for disabled persons.

Race is likely to influence the amount of education acquired; nonwhites have tended to receive less education than whites. What is not clear is what additional influence we expect the joint association of race and disability to have with acquired education. Our empirical results (see Table 2) suggest a further negative interaction; a negative association of disability with education, a negative association of being nonwhite with education, and a further negative association from the interaction of being nonwhite and disabled. Thus, a disabled nonwhite male is expected to have two and two-thirds years less education than a

Table 2

"Influence" of Disability on Education:
Years of Education as Dependent Variable

	White Males	Nonwhite Males	All Males
Disability	-1.35 (27.7)	-1.39 (10.46)	-1.33 (27.16)
Age	-.06 (42.85)	-.12 (29.74)	-.06 (50.51)
Nonwhite			-1.08 (18.79)
Nonwhite × Disability			-.33 (2.38)
Adj. R^2	.10	.27	.13

Data Source: 1977 CPS: noninstitutionalized males aged 20-64

t-statistics in parentheses.

Note: Regressions include 9 regions and sizes of area, and whether or not individual is a veteran.

nondisabled white male: approximately one and a third from disability, one from race, and an additional third of a year from the interaction.

Health status, then, indirectly enters the model through education, and verifies this aspect of the model. The association is large and significant, and has implications relevant to our discussion of earnings and income below.

2. Marital Status

Another hypothesis of our model is that the disabled are less likely to be currently married than the nondisabled. We posited that this would particularly occur for individuals whose disability occurred later than childhood. Since we do not have age of onset of disability, we cannot explicitly test this. Our model suggests that disability would create difficulties within marriage and thus may lead to marital dissolution--but the percentage never-married would be unaffected by this occurrence. Thus, one of the implications is that the percentage of never-married individuals is likely to be similar in both groups. This is the case. The percentage of never-married males is nearly identical, 18% for both disabled and nondisabled. The second implication is that looking cross-sectionally, we expect a negative coefficient on disability when we look at the probability of being currently married. The results in Table 3 verify this.[7] The coefficient on being disabled is negative and significant. The findings also suggest a pattern of "double jeopardy" similar to that pertaining for education: nonwhites are less likely to be currently married than whites; disabled nonwhites even less likely.

Again, in our results on earnings and personal income we will want to refer to this, since currently being married has a positive association with both of these income measures.

Table 3

Regression Results on Being Married,
Spouse Present, for Males

	Ordinary least Squares
Disability	-.09 (13.68)
Age	.01 (70.03)
Nonwhite	-.10 (13.58)
Nonwhite × Disability	-.06 (3.48)
Education	.003 (4.81)
Adj. R^2	.13

Data Source: 1977 CPS: 1977 CPS: noninstitutionalized males aged 20-64

t-statistics in parentheses

Note: Regressions include region and size of area.

3. Earnings

As hypothesized, consistent with cross-tabulation results, disability has a large negative effect on earnings. As can be seen in Table 4, equation 1, the impact among white disabled males is slightly over $7000, the effect on black disabled males nearly $10,000 (-7044.6 - 3780.4 + 1184.5) compared to the average earnings of all men aged 20-64. The equation controls for the factors expected to affect earnings (hours and wage in the above model), and demand side factors. These are gross estimates--they include the direct effects from disability and indirect effects through human capital, and marital status. In a sense they may be a good approximation of the full impact of disability on earnings, since we hypothesized that disability affects human capital (education) and marital status.

The models are specified separately for whites and nonwhites since, generally, these models will differ structurally. Not surprisingly, the coefficient on disability is larger among whites--average earnings are higher than among blacks, but as a percentage of average earnings within a racial subgroup, the black disabled "lose" more (58% versus 68%).

While equation 1 presents the "gross effect" of disability on earnings, the additional equations include variables traditionally found to effect earnings. Two of these, marital status and education, we hypothesized are influenced by disability, so that the coefficient on disability in equation 2 represents a "net effect." We posit that it is an underestimate of the association between disability and earnings which must include the indirect effects. Even controlling for these additional factors, disability is still associated with a large negative effect on

Table 4

Comparative Regression Results on Earnings
of Males 20-64

Variables	Equation 1			Equation 2			Equation 3		
	White	Nonwhite	All	White	Nonwhite	All	White	Nonwhite	All
Disability	-7082.9	-5438.5	-7044.6	-5669.9	-4417.5	-5725.2	-3440.9	-4631.1	-3772.9
	(51.47)	(19.96)	(52.38)	(44.28)	(17.13)	(45.75)	(8.16)	(6.81)	(9.81)
Age	193.7	97.3	183.3	148.9	86.8	145.3	147.3	87.1	143.8
	(51.76)	(12.01)	(53.00)	(35.19)	(8.67)	(36.87)	(34.74)	(8.67)	(36.41)
Education				965.2	539.5	919.4	996.1	535.2	947.3
				(70.15)	(17.80)	(72.36)	(67.13)	(16.31)	(69.04)
Veteran				1178.9	820.7	1152.5	1224.7	814.5	1193.9
				(12.95)	(3.92)	(13.61)	(13.40	(3.88)	(14.05)
Married, sp. pres.				1396.9	2513.0	1630.9	1382.3	2513.2	1623.0
				(4.64)	(6.46)	(6.45)	(4.59)	(6.46)	(6.42)
Widow				-380.0	-1030.7	-521.2	-377.7	-1033.6	-513.8
				(.68)	(1.33)	(1.09)	(.68)	(1.33)	(1.08)
Divorced				-524.5	1610.6	-223.4	-548.1	1609.2	-236.7
				(1.50)	(2.99)	(.74)	(1.56)	(2.99)	(.79)
Never married				-3397.2	-1327.5	-2980.0	-3451.1	-1322.6	-3022.6
				(10.85)	(3.21)	(11.30)	(11.02)	(3.20)	(11.47)
Dis. × Educ.							-198.4	21.9	-173.7
							(5.55)	(.34)	(5.37)
Nonwhite			-3780.4			-2230.2			-2191.1
			(23.99)			(15.26)			(14.97)
Nonwhite × Dis.			1184.5			1715.1			1439.8
			(3.14)			(4.95)			(7.28)
Adj. R^2	.16	.17	.17	.29	.29	.30	.29	.29	.30

Data Source: 1977 CPS: noninstitutionalized males 20-64.

Notes: Sample sizes for white males 36045, for nonwhite males 4068. The means for the dependent variables are: Whites, $12,210; Nonwhites, $7981; and all, $11,781. The specific is not log linear since individuals without earnings are included.

All regressions include 9 regions, size of community, numbers of children < 6 and 7-12, and number of adults in household. t-statistics in parentheses.

earnings, which is still less than the gross (direct plus indirect) effect. Among white disabled the effect is approximately $5700, among black disabled nearly $6300. (Controlling for these other factors has sharply reduced the incremental effect of the interaction of race and disability.) The separate racial equations show similarly reduced coefficients (and the percentile reductions are now closer, 46% and 55% respectively).

Following our model, however, we can add to our insight into the "pathways" of disability's influence on earnings. Earlier (Table 2) we estimated the associations between education and disability. To the extent that these are accurate, the disabled have one and one-third years less education than their nondisabled racial peers; multiplying this times the education coefficients in Table 4 suggests that, on average, an additional $1290 less in earnings for white disabled and $725 less for black disabled may be associated with the influence of disability on education.

Following a similar procedure, we suggested in Table 3 that the disabled had .09 less probability of being currently married than the nondisabled. On average, then, this would be associated with an expected reduced income of $125 among white disabled, and an expected reduced income of $225 among black disabled. Thus, we can break down the gross effect (direct and indirect) into influences through education and marital status, and a large net (direct) effect. In equation 3 we take the analysis one step further by examing the interaction between disability and education. This is an attempt to separate the effect of years of education from 1) the possibility that opportunities facing

disabled educated individuals differ and 2) our inability to measure quality of education which may have been lower for a disabled individual.

Again the direct (or residual) income effect of disability itself is reduced, but it remains large and negative: among disabled whites it amounts to nearly $3770, among blacks to $4500, according to the combined results in equation 3. In the separate racial equations the pattern is not quite so clear. The net effect of disability is smaller among whites but slightly greater among blacks. Among blacks there appears to be no significant additional interaction between education and disability on earnings, so that the results are quite close to equation 2. But among whites there appear to be additional influences of the sort noted above. Thus, among disabled whites, an additional year of education is associated with a smaller increment in earnings than among able-bodied whites--the difference, on average, is nearly $200. Among whites, then, we have some evidence that our model, which suggested that disability affects amount of education, the quality of education and/or opportunities, is confirmed. Among blacks the influence appears limited to amount of education--but this may reflect limited opportunities traditionally facing many blacks. Thus we have further broken down the path by which we arrive at our association of disability with earnings.

3. PERSONAL INCOME

We expect personal income to show far less impact of disability[8] than earnings. We posit that the earnings of the disabled will be less than those of the nondisabled, due partially to reduced human capital and

partially to limited opportunities, less intensity of work effort, and/or few hours worked. Various institutions have designed programs to compensate the disabled for this loss or reduction in their earning power. These include veterans' compensation, workmen's compensation, disability insurance paid through Social Security, railroad compensation, Supplemental Security Income, and a number of other smaller programs. Adding these and other sources of unearned income to earnings, we have personal income.

We expect unearned income to be relatively high for the disabled, since many programs are designed to meet their needs, and since able-bodied fulltime earners receive few, if any, government transfers. Table 5 briefly summarizes the mean transfers received by disabled and non-disabled by age and by race. As hypothesized, the average transfers received by the disabled are far larger than those received by the non-disabled for every age group. There is no overall pattern among the nondisabled except that on average males in the oldest included age group receive higher transfer payments. Among the nondisabled, except among 35-44-year-olds, nonwhites receive lower average benefits. We also hypothesized the possible substitution of capital for human inputs by parents of the disabled. This combination of earned and unearned income will reduce the coefficient on the disability variable, compared to our earnings result.

As can be seen in Table 6, the impact of disability on personal income is negative, large and significant. The coefficient is approximately $1700 less than the coefficient on earnings, suggesting that there is some "compensation" being paid and that, in terms of income, the disabled are not as badly off as they are in terms of earnings. The large coefficient suggests they remain considerably worse off than their able-bodied counterparts.

Table 5

Cross-Tabulation:
Mean Transfers Received by Age Groups

	Disabled		Nondisabled	
Age	White	Nonwhite	White	Nonwhite
20-34	$1531	$1390	$193	$220
35-44	1783	2116	133	146
45-54	2053	1668	104	177
55-64	2480	2344	355	286

Date Source: 1977 CPS: noninstitutionalized males aged 20-64

Comparative Regression Results on Personal Income of Males Aged 20-64

	Equation 1			Equation 2			Equation 3a			Equation 3b		
Variables	White	Nonwhite	All	White	Nonwhite	All	White	Nonwhite	All	White	Nonwhite	All
Disability	-5303.2	-3840.9	-5251.8	-3790.9	-2773.5	-3839.7	-5277.8	-3749.6	-5325.6	5369.0	-3775.4	-5419.5
	(36.59)	(13.92)	(37.14)	(28.16)	(10.69)	(29.26)	(24.98)	(10.34)	(26.96)	(25.40)	(10.44)	(27.43)
Age	231.5	112.8	218.8	189.1	104.8	183.5	196.5	110.3	190.7			
	(58.73)	(13.75)	(60.17)	(42.50)	(10.41)	(44.40)	(44.07)	(10.95)	(46.04)			
Education				1044.2	576.8	995.9	1028.1	565.3	980.7			
				(72.21)	(18.93)	(74.75)	(70.90)	(18.56)	(73.42)			
Veteran				1236.9	1000.3	1226.4	991.9	682.9	976.0			
				(12.93)	(18.93)	(13.81)	(10.18)	(3.15)	(10.79)			
Married, sp. pres.				1527.2	2676.8	1784.6	1452.8	2581.9	1714.3			
				(4.82)	(4.76)	(6.73)	(4.60)	(6.62)	(6.49)			
Widow				80.4	-865.6	-152.0	196.9	-726.2	-22.8			
				(.14)	(1.11)	(.30)	(.34)	(.93)	(.05)			
Divorced				-571.9	1565.0	-259.1	-555.2	1590.6	-234.5			
				(1.55)	(2.89)	(.82)	(1.51)	(2.95)	(.74)			
Never Married				-3274.5	-1179.8	-2826.5	-3181.5	-1139.4	-2735.2			
				(9.95)	(18.93)	(10.23)	(9.69)	(2.75)	(9.92)			
KID 0-6				512.2	80.9	457.9						
				(7.09)	(2.53)	(6.86)						
KID 7-12				1086.7	410.9	1009.7						
				(16.52)	(2.97)	(16.60)						
No. adults				155.2	-131.7	122.4						
				(4.82)	(1.38)	(2.29)						
SSI recip.							765.8	234.5	740.1	909.8	202.4	845.4
							(1.44)	(.34)	(1.63)	(1.71)	(.30)	(1.86)
SS/RR recip.							-1563.8	-648.2	-1445.6	2366.1	3731.3	2595.0
							(4.95)	(1.18)	(5.07)	(4.12)	(3.37)	(4.93)
SS/RR × not work										-5187.5	-5416.0	-5281.5
										(8.19)	(4.54)	(9.14)
WC recip.							3319.4	2772.1	3240.5	3406.8	2749.0	3317.3
							(9.26)	(3.67)	(9.79)	(9.51)	(3.65)	(10.03)
VP recip.							3479.2	3367.1	3457.8	3632.0	3445.7	3605.6
							(12.22)	(5.76)	(13.19)	(12.74)	(5.91)	(13.74)
Nonwhite			-4020.6			-2371.3			-2438.1			
			(24.26)			(15.47)			(15.95)			
Nonwhite × dis.			847.7			1415.9			1956.2			
			(2.14)			(3.90)			(5.37)			
Adj. R^2	.14	.15	.16	.28	.28	.29	.29	.29	.30	.29	.29	.30

Data Source: 1977 CPS: noninstitutionalized males aged 20-64.

N = white 36045, black 4068, for a total of 40113

t-statistics in parentheses

Note: The means for the dependent variables are: whites $13,183; nonwhites, $8,697; all, $12,728. All regressions have the following

Among white males, the disabled appear to have incomes some $5280 less than their able-bodied peers--after controlling for demand side factors, for other adults and children in the household, and for age. Similarly, among black males, the disabled appear to have personal incomes averaging $3850 less than those of their nondisabled peers. Compared to all men aged 20-64, black disabled males have incomes some $8400 less--a large significant difference but less than the earnings differential. The decline represents a smaller percentage decline among nonwhites than among whites: using equation 1 for all men suggests that the personal income differential is 75% of the earnings differential for whites, 87% for nonwhites. Again, these are "gross" differences, where education and marital status have not been controlled for. Thus these estimates incorporate the influence of differences on human capital and any positive influence of marriage on personal earnings. Equation 2, Table 6, presents results controlling for education and marital status. Again, the direct coefficients on disability are reduced. Looking at the racial subgroups, the coefficient suggests that the direct association of personal income and disability is now over $3800 among white males--a $1500 "reduction," and nearly $2800 among nonwhite males--nearly an $1100 reduction in the disability coefficient.

Tracing through the influence of reduced education and lower probability of being married, we find that the expected reduction from education among the disabled amounts to nearly $1400 for a white disabled male and over $750 for a nonwhite disabled male. Following this procedure, in regard to reduced probability of being married, we can account for nearly $150 among disabled whites and $250 among disabled nonwhites.

(The marital status coefficients are quite similar in both the earnings and personal income equations; thus the expected reductions are almost the same.)

Thus, again we have gained some insight into the impact of disability by looking at a gross estimate without controlling for a number of factors which we hypothesize are influenced by disability, and a net or direct estimate where we control for at least some of the affected factors.

All these results suggest that, although some income is gained through a variety of sources, the incomes of the disabled are far below those of the nondisabled, and that the nonwhite disabled have, on average, incomes considerably below all of the other three subgroups under discussion. The gap has been closed somewhat; comparing disabled to nondisabled (column 4), the figures after including income transfers are $5250 (down from $7000) among disabled whites, and $8400 (down from $10,000) among disabled blacks. The absolute amount of the reduction is greater for whites than nonwhites. Both $8400 and $5250 suggest the disabled have considerably reduced incomes associated with their disability—even after transfers.

In equation 3 of Table 6, the various large transfer programs directed at the disabled are included in an attempt to see how receiving benefits from any of the programs for the disabled influences personal income. (The disabled considered here continue to be only those who are not institutionalized.)

Once receipt of transfer funds for disability are included, the coefficient on disability increases and not surprisingly comes much

closer to the comparable results on earnings found in Table 4, equation 2.

The included transfer programs (which were used as part of the definition of disability) are Supplemental Security Income (SSI), Social Security disability insurance (SS), veterans' disability programs (VP), railroad disability annuities (RR), and workmen's compensation (WC). Over two-thirds of the disabled identified receive some form of transfer payments designed for the disabled.[9] Less than 10% receive SSI payments--a federal means-tested social welfare program specifically designed to provide income to the disabled who are poor. Twenty-two percent receive Social Security disability insurance or railroad benefits[10]--work-conditioned programs which require certain amounts of work coverage. The mean amount received by disabled males is $2900. Nonwhite males receive, on average, $2600; 23% of them receive such benefits. These disability insurance payments are tied to previous earnings and adjusted for family size. There are limits on the amount an individual can earn while receiving SS-DI. Veterans' disability payments, paid to eligible veterans and dependents, do not have an income or work test. Workmen's compensation programs provide income to workers impaired on the job. They are state-run programs which compensate specified injuries and occupational diseases. In most states, benefits are related to a worker's salary. Details of the percentage of the disabled receiving payments and the amounts received are shown in Table 7.

A somewhat lower percentage of nonwhite than white males receive these payments, although the average amounts received are quite similar.

Table 7

Transfers Received by Disabled
Males Aged 20-64

Transfer Source	White Males	Nonwhite Males	All
SS/RR			
% receiving	21.5%	23.2%	21.7%
Mean amount	$2956	$2600	$2900
SSI			
% receiving	5.8%	13.6%	6.9%
Mean amount	$1422	$1445	$1430
WC, VP or UI			
% receiving	53.5%	39.1%	51.4%
Mean amount	$1918	$2023	$1930
All transfers due to disability			
% receiving	68.5%	60.4%	67.3%
Mean amount	$2430	$2422	$2429
All public transfers			
% receiving	77.9%	72.6%	77.1%
Mean amount	$2516	$2492	$2513

Data Source: 1977 CPS: noninstitutionalized males aged 20-64

Notes: Transfers due to disability are the sum of SS/RR, SSI, VP and WC.

All public transfers are the sum of above plus welfare and unemployment insurance.

The difference appears to stem from the receipt of WC, VP and unemployment insurance.[11] Due to data limitations, we cannot explore the amount received separately under these programs, but we can analyze receipt or nonreceipt. Some 11.0% of the nonwhite disabled receive WC, while 21.8% receive VP. Among whites the percentages are 15.7% and 33.9% respectively. The veterans' program is considerably larger, and much larger among whites. Thus, white disabled males appear one and a half times as likely to receive veterans' disability benefits, and 1.4 times as likely to receive workmen's compensation, as nonwhite disabled males.

There is evidence of some limited overlap between programs. These are detailed in Table 8. The largest overlap in receipts from more than one program occurs between VP and SS/RR; some 3.9% of white disabled males and 3.7% of nonwhite disabled males receive payments under both these programs.

Regarding the other programs, nonwhites seem slightly more likely to receive SS or RR than whites, but the average amount is $350 below what disabled whites receive. Overall, whether we only look at transfers received through programs for the disabled or also add welfare and unemployment, fewer disabled nonwhites receive payments than disabled whites. We have no way of knowing from these data whether any of this is due to eligibility criteria, racial differences in reporting disability, differential knowledge of the programs or of their eligibility criteria, or discrimination; but further investigation of this difference appears to be an important item for policymakers.

The regression results of Table 9 permit us to proceed further in terms of our analyses of transfers received. Equation 1 does not include

Table 8

Overlap of Programs

Program	% White Males Receiving	% Nonwhite Males Receiving
VP and WC	.8	.7
VP and SS/RR	3.8	3.4
VP and SSI	.3	.5
VP, WC, and SS/RR	.1	.3
WC and SS/RR	1.1	.1
WC and SSI	.1	.3
SS/RR and SSI	1.8	3.6
SS/RR, SSI, and VP	.04	0

Data Source: 1977 CPS: noninstitutionalized males aged 20-64

Table 9

Regression Results on Transfers Received
by Disabled Males Aged 20-62

Variables	Equation 1		Equation 2	
	Disability Transfers	All Transfers	Disability Transfers	All Transfers
Age	9.31 (3.42)	24.7 (8.65)	-5.6 (2.30)	11.6 (4.32)
Nonwhite	25.7 (.28)	-13.0 (.14)	-14.9 (.19)	-49.4 (.57)
Education	-19.6 (2.17)	-23.7 (2.51)	17.3 (2.20)	7.9 (.91)
Married, sp. pres.	172.0 (1.67)	221.2 (2.05)	83.0 (.84)	109.9 (1.01)
Widow	53.2 (.23)	-17.9 (.08)	684.2 (12.11)	25.8 (.12)
Never Married	-1.6 (.01)	-20.9 (.17)	-75.0 (.70)	-64.6 (.55)
KID 0-6	-7.8 (.15)	136.3 (2.43)	48.1 (1.04)	183.1 (3.59)
KID 7-12	84.5 (1.79)	146.4 (2.96)	114.9 (2.82)	171.2 (3.80)
No. Adults	-74.5 (2.01)	-131.2 (3.39)	-31.1 (.78)	-74.1 (1.69)
Veteran	594.3 (9.12)	257.2 (3.77)	684.2 (.56)	330.7 (5.30)
Head household			220.6 (1.80)	291.6 (2.15)
No earnings			3011.3 (42.2)	2587.0 (32.85)
Adj. R^2	.03	.04	.28	.20

Data Source: 1977 CPS: noninstitutionalized males aged 20-64.

Notes: Sample size for disabled males 5268, total 5268. The regressions have the following additional variables: 9 regions and size of community. t-statistics in parentheses.

whether or not an individual works (which might be considered endogenous since transfers are frequently work- or income tested). These results--for all transfers and transfers only for disabilities--show that age is positively associated with disability transfers, and being a veteran is positively associated. Race is not associated and education appears negatively associated.

Equation 2 adds a control for whether or not an individual works. This is clearly--and not surprisingly--the most significant variable in the equation. The changes in some of the other variables are most interesting for they suggest that work status is an important omitted variable correlated with many of the included variables, and this is particularly so in the equation for disability transfers. Education changes from a negative association to a positive association: the causality is likely to be that 1) the disabled with the lowest education are least likely to work (and have the lowest opportunity cost); 2) once the work relationship is controlled, those with higher education may be more aware of transfers and how to apply and also have higher wage rates so receive higher benefits. Age also changes sign, presumably for similar reasons: 1) older men may be less likely to work (and have lower opportunity costs); and 2) once the work relationship is controlled, younger men may be more likely to collect higher transfers because of their wage rates while working.

Returning to our regression analyses of personal income (Table 6, equation 3), we focus on the relationship between the transfer programs and personal income. SSI is designed to supplement the income of the poor among the disabled, and the results reported here suggest that

among the receivers it is succeeding. The insignificance of the variable indicates that receipt through this program is not associated with personal income. Given eligibility criteria, if it were unsuccessful--that is, if it failed to increase incomes up the levels received by other disabled individuals--we would expect a negative and significant coefficient. Non-significance, then, can be viewed as indicating the accomplishment of the objective for receivers.

The programs with the most positive association with personal income are, in order, veterans' payments and worker's compensation for both whites and nonwhites. Veterans' payments do not require a work or income test; therefore the largest positive result on receipt of these benefits was hypothesized. The veterans' program is considered by many to be a generous one.

The worker's compensation results suggest that receivers are somewhat adequately compensated for their disabilities. One way of addressing the question to what extent they are compensated is to compare the disability and WC coefficients. These suggest "compensation" on the order of two-thirds of the income differential between disabled and non-disabled among white males and three-quarters among nonwhite males, according to their racial subgroup. Nonwhites are less likely to be receivers than whites, however.

The SS/RR findings are more puzzling. They are not significant among nonwhites, but are negative among white males. The average amount received by recipients is the largest of all programs; over a fifth of the disabled receive payments under these programs. (RR is quite small, so the discussion focuses on SS-DI.) The explanation is likely to lie

in the association between not working and receipt of these benefits: among white disabled males receiving SS/RR, 78% are not working. This compares to 21% among receivers of VP, WC and VI, and to 73% among SSI recipients. It is also likely that the number not working is associated with severity of disability--a factor these data do not provide. We do however know if the individual worked at all--and combining this with being eligible for disability insurance (SS/RR) we can regard the combinations as a proxy for severe disability. Thus we might expect a negative coefficient; indicating severity. Using this "explanation" in equation 3b, receipt of SS/RR is made to interact with not working. When this is done, we find that nonworkers (the more severely disabled) show a negative association (-5187.5 + 2366.1 or -2821.4 for whites), while workers (the less severely disabled) show a positive association between receipt of disability payments such as SS/RR, and personal income.

None of these programs by themselves fully compensate (in income terms) for the expected loss in income from disability. Among non-whites they come close to compensating for the additional impact of disability, but not to making up the much larger difference from the average income of all males. We do not expect these programs to make disabled incomes equal to nondisabled. First, there are work disincentive problems present in any transfer program. Second, many of these transfers are not taxed while other earnings and income is taxable so we may underestimate the actual compensation. In addition, however, the disabled may have greater needs in terms of medical care, special attention, and equipment. While medicaid or veterans' health benefits may partially compensate, it is unlikely that all of these additional needs are met--so the disabled may be relatively worse off than this picture suggests.

4. FAMILY INCOME AND CONCLUSIONS

Finally, in order to get a different perspective on the impact of disability on the economic well-being of the disabled, we look at family units. Since family income is the variable of interest, we move to an analysis which includes family receipts from any of the four transfer programs directed at the disabled, and specify which, if any, adult in the family is disabled--we separate male heads, female heads and other adults. As reported in Table 10, the largest coefficient on disability is for male heads. Since male heads of household are generally the prime breadwinners and tend to have the highest incomes, this is expected. The disability of a female head is negative and significant but smaller. Another adult being disabled is large, negative and significant--larger than if the female head is disabled. Its interpretation should probably be combined with the positive effect of having an additional adult in the household to derive the net effect. One should also note that female headship has a very large negative association with family income and that the disability coefficient is incremental beyond this.

The pattern of association between receipt of transfers is similar but not identical to the analysis for personal income. The largest positive coefficient is for receipt of worker's compensation, and this is especially so for nonwhite families.

Veterans' payments have a positive association for both subgroups but are somewhat larger among whites. SSI is not significant among non-whites--possibly indicating, as suggested above, that it achieves its goals among receivers. However, among whites the coefficient is negative and significant--possibly indicating less success.

Table 10

Comparative Regression Results on Income of Families with Heads Aged 20-64

	Equation 1			Equation 2			Equation 3		
	White	Nonwhite	All	White	Nonwhite	All	White	Nonwhite	All
Male head dis.	-5246.0 (31.51)	-4096.4 (11.97)	-5137.6 (31.74)	-4043.4 (26.15)	-3114.1 (9.69)	-4049.8 (26.95)	-5010.5 (24.43)	-4137.7 (10.72)	-5089.1 (26.29)
Female head dis.	-3400.7 (11.76)	-1705.2 (4.44)	-3521.8 (12.67)	-1643.8 (5.96)	-1076.7 (2.93)	-1793.4 (6.79)	-1112.5 (3.69)	-1331.8 (3.21)	-1450.8 (5.10)
Other adult dis.	-3119.2 (14.97)	-3460.2 (8.37)	-2975.6 (14.72)	-2115.1 (11.04)	-2636.9 (6.87)	-2026.5 (10.89)	-1909.7 (9.61)	-2826.0 (7.15)	-1896.8 (9.90)
No. adults				5019.1 (55.20)	4001.6 (26.79)	4833.6 (59.86)	5000.6 (55.13)	3983.4 (26.67)	4814.4 (59.77)
Female Head	-5890.5 (37.62)	-4645.0 (18.21)	-5660.1 (40.78)	-3156.4 (16.99)	-2206.3 (6.99)	-2938.2 (17.77)	-3297.5 (17.77)	-2280.1 (7.22)	-3065.8 (18.56)
Married, sp. pres.				1793.6 (6.53)	3214.1 (8.38)	2156.3 (9.30)	1747.8 (6.38)	3180.4 (8.30)	2111.3 (9.13)
Widow				- 140.7 (.45)	633.8 (1.49)	- 30.7 (.12)	- 48.1 (.15)	466.4 (1.08)	26.3 (.10)
Divorced				- 15.8 (.05)	1051.3 (2.93)	158.1 (.71)	- 4.1 (.02)	1040.6 (2.91)	160.7 (.72)
Never Married				-1370.3 (5.16)	18.4 (.05)	-987.7 (4.48)	-1313.7 (4.97)	21.8 (.07)	-938.4 (4.27)
Educ. (Head)				1192.3 (79.91)	764.3 (24.94)	1142.7 (83.88)	1178.6 (78.96)	754.6 (24.60)	1130.6 (82.94)
Veteran				1438.7 (13.60)	1488.2 (5.96)	1472.4 (14.98)	1228.2 (11.45)	1310.3 (5.13)	1268.4 (12.72)
SSI							-1857.2 (4.58)	- 269.2 (.54)	-1308.0 (3.86)
SS/RR							-1531.2 (6.91)	183.9 (.47)	-1308.4 (6.57)
VP							2311.6 (9.56)	2198.0 (4.41)	2308.5 (10.41)
WC							3018.1 (9.21)	3369.4 (4.67)	3034.3 (10.03)
Nonwhite			-2802.0 (16.81)			-1243.4 (8.03)			-1277.0 (8.27)
Nonwhite × MH dis.			64.5 (.15)			894.3 (2.10)			1400.8 (3.23)
Nonwhite × FH dis.			1588.8 (3.06)			1209.2 (2.53)			1407.1 (2.94)
Nonwhite × other dis.			-1927.5 (3.44)			-1413.1 (2.75)			-1351.4 (2.63)
Adj. R^2	.27	.38	.29	.39	.47	.41	.39	.48	.41

Data Source: 1977 CPS: noninstitutionalized males aged 20-64.

Notes: Sample sizes for white families equals 39,088, for nonwhite families 5154, with a total for all families of 44242. The means for the dependent variables are: whites, $16,209; nonwhites, $11,197 and all, $15,625, t-statistics in parentheses.

Again SS/RR is not significant among nonwhites, but is negative among whites. This is probably due to the omitted variable--severity and not working.

Overall, it appears that most disabled males and their families are considerably worse off in terms of income than their nondisabled counterparts, at least in pre-tax terms. Even looking only at the "net" impact of disability, after its effects on education and marital status are taken out, a disabled male has lower personal income than his nondisabled counterpart. In terms of family income the same results apply; on average. In addition, a family with a disabled female head appears worse off than one headed by a disabled male. (We combine the coefficients on female headship and female head disabled). After transfers are added, little difference remains between male or female disabled head.

This analysis has left out several important transfers--most particularly Medicaid and Medicare benefits. This is unfortunate since they are important parts of the transfer system particularly for individuals in poor health. However, balancing this (to some extent) are the greater needs of some of the disabled for special equipment, care, treatments. Part of their income is spent on special items necessary for their care.

What all of this suggests is that the disabled have lower earnings and lower personal income than the able-bodied. Nonwhite disabled males have the lowest earnings and incomes compared to the average male, through a combination of the effects of disability and race. Furthermore, as hypothesized, disability appears to reduce education (human capital) and lower the probability of being currently married. Both of these are

associated with income and earnings. They represent indirect effects which further reduce the earnings and income of the disabled compared to nondisabled.

Compensation through transfers somewhat reduces the impact of disability but such compensation is limited, especially for nonwhites.

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NOTES

[1]This is somewhat in contrast to the arguments of Becker and Tomes, and of Behrman, et. al., that parents seek to endow children equally. This may be true, but the argument presented here in effect deals with the rate of return to a unit of investment.

[2]In actual empirical work, stratification is for racial subgroups, while health is made to interact with variables thought to be influenced--marital status, for example. This is done to isolate the influence of the variable of primary interest--health.

[3]For a detailed discussion of the definitions see Wolfe (1979).

[4]This includes all non-institutionalized, non-military men. Non-workers are included.

[5]This may reflect choice.

[6]This includes such items of unearned income as government transfers, income from rent, interest and dividends not adjusted for underreporting.

[7]This equation was also run as a dichotomous logit model, which constrains the dependent variable to be between 0 and 1. The results suggest a strong negative association between disability and being currently married, spouse present.

[8]One should be cautious in analyzing these results since receipt of transfers is one of the definitions for disability used in this study.

[9]Again, caution is necessary due to the definition used.

[10]The CPS data do not permit differentiation between the sums paid by these two programs.

[11]These are combined since the amounts paid under them are reported together.