The Case of Disability in the Family: Impact on Health Care Utilization and Expenditures for Nondisabled Members

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SINCE THE EARLY 1980S, INTEREST IN THE emotional, financial, and other forms of stress experienced by families with a disabled member has emerged as a prominent issue in the literature that covers the range of disabling conditions from childhood disability to severe mental illness or dementia (Wikler 1986; Ramey, Krauss, and Simeonsson 1989; Leonard, Brust, and Sapienza 1992; Birenbaum and Cohen 1993; Rubin and Koelln 1993; Heller and Factor 1993; Lieberman and Fisher 1995; Lefley 1987; 1996). Even in coverage of the impact of serious disease or disability on the family that takes the form of a review of the medical literature (Good, Good, and Burr 1983), it clearly emerges that a major illness can lead to more problems for other family members, ranging from emotional difficulties to increased risk of disease, to behavioral problems in children, to name but a few.

Although a substantial portion of the literature that examines disability-related effects on the family focuses on care of the elderly population (Zarit, Reever, and Bach-Peterson 1980; Stone, Cafferata, and Sangl 1987; Schulz, Visintainer, and Williamson 1990; Dura, Stuken-

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berg, and Kiecolt-Glaser 1991; Pillemer and Suito 1996; Stull, Kosloski, and Kercher, 1994), there are also studies that document financial problems and stress among families with disabled children or with a member who is mentally ill (*Family Relations* 1997; Leonard, Brust, and Sapienza 1992; *American Journal on Mental Retardation* 1989). These effects include demands on caregivers' time (Leonard, Brust, and Sapienza 1992; Harris and McHale 1989), disruption of family routines (Singhi, Goyal, Pershad, et al. 1990; Romans-Clarkson, Clarkson, and Dittmer 1986), reduced social and leisure activities (Traustadottir 1991), out-of-pocket expenses for the family member with a disability (Leonard, Brust, and Sapienza 1992; Fujiura, Roccoforte, and Braddock 1994; Clark and Drake 1994), and the health and well-being of caregivers (Barnes, Given, and Given 1992; Lee, Dwyer, and Coward 1993; Dwyer and Coward 1991).

Although much can be learned by studying the primary caregiver individually or by scrutinizing the added expenses of the family member with a chronic condition or disability, there are other ways to examine the impact of the presence of a person with a serious illness or disability on the family. For example, all family members, not just the caregiver, may be influenced in several ways by the presence of a family member with a disability (Zetlin 1986; Seltzer, Greenberg, Krauss, et al. 1997). Both the various levels of involvement in caregiving and the effects of role changes created by the disability of a family member can add to the stress experienced by all family members, not just the primary caregiver. This stress can be linked to the need of some or all family members for more health care, which would increase the medical expenditures and the financial burden for the whole family. In order to analyze these effects, an examination of the health care utilization of all family members, individually as well as collectively, would be required, which would mean using both the person and the family as the units of analysis.

From another perspective, the higher health care expenditures required by the disabled member of the family (Altman and Cornelius 1992) may diminish the amount of time or the resources available to the rest of the family, thus imposing a rationing effect on their use of health services. In this event, total family health care costs, particularly out-of-pocket expenses, could create a financial burden for the family while also increasing health risks for the nondisabled family members whose use of health services is curtailed.

This paper was prepared with two goals in mind: The first was to gain insight into the impact of a disabled member on the families' situation by describing their health care utilization and expenditure patterns. We added to this portrait an examination of the health care expenditures of families that did not have a disabled member. The second purpose was to examine how the presence of a family member with a disability affects the health care use and expenditures of family members without disabilities. By identifying family units with a disabled member, we examined their characteristics as a first step in understanding the family situation. Then family units were disaggregated so that we could analyze individual circumstances within the family context, particularly when that context is characterized by the presence of a disabled family member. We identified as well the nature of health care services used by the other family members who were not disabled and the expenditures for those services.

Data and Methodology

The National Medical Expenditure Survey (NMES) provides a unique vehicle for examining families in which there is a member with a disability because the survey data contain information on health care utilization and expenditures for all family members residing in the sampled residence and, in some instances, outside it. The survey contains detailed sociodemographic characteristics and information on health status as well. The data we used for our study are from the Household Survey Component of the 1987 NMES, which was based on a representative sample of the civilian, noninstitutionalized US population. The Household Survey was fielded in four rounds of personal interviews at four-month intervals during calendar year 1987. Baseline data on household composition, employment, and insurance characteristics were collected during each quarter, as was information on all use of, and expenditures for, health care services during the quarter.

A self-administered questionnaire (SAQ) was used to obtain broad information on health status, health practices, and self-reported disability. Variables measuring disability via role limitations and functional limitations for children, adults aged 18 to 64, and persons aged 65 and over were collected in the SAQ. The SAQ was collected in the third round of data gathering. Other measures of disability, like the ability to perform

activities of daily living (ADLs) and instrumental activities of daily living (IADLs), are also contained in the main body of the NMES and were collected at two points: at the beginning and at the end of the year.

All survey components were designed to provide statistically unbiased national estimates that are representative of the civilian population in the United States in 1987. The Household Survey sample was a stratified, multistage-area probability design that comprised 36,400 individuals in approximately 14,000 households. The overall response rate for the four rounds was 85 percent. The Household Component of the NMES is the source of national estimates of health care use and expenditures, and it is published by the Agency for Health Care Policy and Research in a series of findings and in numerous journals of economics, health services research, sociology, medical, public policy, and public health journals. (For details on the sampling and survey procedures and the questionnaire, see Edwards and Berlin 1989.)

Definition and Measurement of Family

The definition of family was based on health insurance eligibility units (HIEUs). An HIEU corresponds to a group of persons who would most likely be covered together under a typical health insurance policy with family coverage (or single coverage in the case of a single-person unit). Within a family, married persons formed an HIEU, and all unmarried minors were included. Persons aged 19 to 23 who were full-time students at some time during the year, and were not married or separated, were linked to their parents or guardians. Older children and married children living in households were assigned to separate HIEUs. This definition of family most closely resembles the one used in the Current Population Survey (CPS), which does not include cohabitators in the family definition (LaPlante, Carlson, Kaye, et al. 1996). Thus, HIEUs are similar to nuclear families. More important, HIEUs are independent of the effects that a disability would have on other types of family arrangements.

Measures of Disability

Because of the various definitions of disability that prevail in the literature, and their differing impact on the prediction of outcomes, we constructed several measures of disability for this analysis (Altman 1993;

Altman and Barnartt 1996). In some instances, particularly in research on the elderly population, disability is generally defined in terms of either self-care activities (ADLs) or instrumental activities required to maintain basic independent living (IADLs). These measures have been extensively used in the literature on aging (Katz, Ford, Moskowitz, et al. 1963; Spector, Katz, Murphy, et al. 1987; Spector and Kemper 1994). In research on the disabled population as a whole, particularly in the demographic descriptions, disability has more commonly been defined as limitations in major activities, work, or housework for adults, and in the ability to play or go to school for children (LaPlante 1993; LaPlante, Carlson, Kaye, et al. 1996; McNeil 1993).

A focus on major activities alone, however, does not lend itself to the broader definition of disability used in some recent legislation, such as, for example, the Americans with Disabilities Act (see Appendix). The literature has also included limitations in activities other than major ones in order to bridge that gap, at least partially. Those broader measures of disability are frequently found in national statistics examining epidemiological questions, issues of national concern, such as insurance coverage or access to health care, and descriptions of families with a disabled member (LaPlante 1993; McNeil 1993; LaPlante, Carlson, Kaye, et al. 1996; Krauss, Simeonsson, and Ramey 1989).

We use all three types of measures in our analysis in order to present a fuller picture of the three major levels of disability and their potential impact on family health care. The first measure we constructed identifies any person who has had difficulty in at least one ADL or IADL during the year, and it represents those with the most serious limitations. The questions associated with this measure can be found in the Appendix.

The second and third measures of disability are similar to those found regularly in the NHIS. The second one is based on two questions from the SAQ that ascertain whether an individual, aged five and older, is kept from work, housework, or school, or is limited in the kind or amounts of work, housework, or schoolwork he or she can do for reasons of health. Questions about children between the ages of one and four are based on limitations in ability to play. Parents were used as proxy respondents for children on the SAQs; and children under one year of age were not included. These constructions represent the definition of disability associated with limitations in major activities and are based on questions that can be found in the Appendix.

The third measure builds on the second, and it adds another two questions in order to identify limitations beyond those associated with major activities. This measure refers to limitations in roles other than those associated with work or school. All adults answered these questions, so the measure applies to them uniformly. For children between the ages of one and seventeen, the difference in meaning between major and nonmajor activities is less clear, so the same data that were applied to this group in the second measure were used in the third.

Because questions about ADLs and IADLs are more commonly used to represent disability among persons aged 65 and over, the work/activity limitation measure was examined for its inclusion of persons over 65 with ADLs or IADLs. The work/activity limitation measure was found to represent all but 0.8 percent of persons over age 65 with at least one ADL or IADL.

Utilization and Expenditure Measures

The variable that was used to reflect the family utilization of health care was the total number of visits to the doctor made by each family member during the year. Doctor visits were used because they represent the most common entrée into the health care system and because they frequently serve not only physical health needs but also mental health purposes. Total family-level health care expenditures for the year were also used as a dependent variable because those totals represent all contact by all members with the health care system: doctor visits, hospital utilization, ambulatory visits, emergency-room visits, to name the most common entry points. Total health care expenditures for individuals were used for the regression analyses.

The measure of financial burden for families was the ratio of out-of-pocket expenditures for health care to the total family income (Dicker and Sunshine 1988). Out-of-pocket expenditures were measured by identifying the payments for care that were not covered by third-party payers or any other form of insurance, which could take the form of the actual copayment amounts or other portions of payment for insured procedures, visits, hospitalizations, equipment, and total payments for care or equipment not covered by insurance. Excluded from this category were premium costs for any insurance held by the family or individual.

Family-Level Variables

Other variables used in the analysis were total family income and health insurance status. The health insurance measures are full year and hierarchical, in that they represent any private coverage during the year, any public coverage with no private coverage, and lack of insurance altogether. If insurance status was unreported in the NMES, we identified the individual's insurance status as missing. Location variables indicated the census region in which the family was living and whether the area was metropolitan or rural.

Several family variables were also created to reflect the sociodemographic characteristics of the family or the head of household. In HIEUs with two parents present, the head of household was defined as the parent who worked; when both parents worked, the parent with the highest wage was selected. In the descriptive tables, age corresponds to age of the head of household. For the multivariate models, categorical age values were used. Families were identified by their makeup: a single person; a single person with children; a married couple without children; or a married couple with children. Because of the focus in this investigation on persons without disabilities who were members of families that include a person with a disability, the analysis was limited to persons whose family was composed of more than one member, resulting in a total sample size of 7,956 families. The size of the family was also included in the multivariate analysis. Families were identified as well by the racial makeup of the family members: either all family members were white or nonwhite or the family consisted of members of different racial backgrounds, identified in this analysis as "mixed race."

Individual Variables

The multivariate analysis includes characteristics of the nondisabled family members. Health status was indicated by either a self-reported or a proxy-reported response to a question on general health. The measure of employment indicated whether or not the individual was currently employed, and marital status reflected his or her status as married, widowed, divorced or separated, or never married. Another variable indicated the method of transportation used by the individual when visiting a physician: walking, driving, being driven, or relying on public transportation.

Analysis

The analysis of the data is divided into two parts. The first section, which is descriptive, identifies the number of families with and without a disabled member based on the three definitions of disability. Additionally, it describes the mean utilization of health care based on the total number of doctor visits per family and the mean total expenditures for health care for these families. The financial burden of all health care for families is also examined in the light of the different definitions of disability. Results are reported if they achieve a .05 level of significance or better, using an asymptotic, large-sample *z*-score test.

The second part of the analysis examines the impact of having a family member with a disability on the utilization and expenditures of family members without a disability. We used probit models to examine the effects of both family and individual characteristics on the probabilities of visiting a doctor and of having a medical expenditure. For persons who made visits, and for those who incurred expenditures, we then ran ordinary least square (OLS) regressions on the log of the number of doctor visits and the log of expenditures. Because family characteristics can affect individual family members differently, depending on their ages, we carried out this analysis separately for children, adults, and adults aged 65 and older. Results are reported if they achieve a .05 level of significance or better, unless otherwise specified (*t*-test).

Results

Families

There were approximately 62.6 million multiperson families, as defined here by the HIEUs, in the United States in 1987. The CPS reports that there were 64 million multiperson families in 1987. The slight discrepancy between the CPS number and ours is most likely a result of our use of the HIEU to define families. Of our total, 6.9 percent had at least one family member with an ADL or IADL limitation; 29 percent had a family member with a work, school, housework, or play limitation; and 47.8 percent had a family member with a major or nonmajor activity limitation, including difficulty with a function. Some families had two or more members with a disability.

Of families reporting any member with ADLs or IADLs, 14.7 percent had two or more members with a disability; among families reporting

any member with a work limitation, 21.6 percent had two or more members with a disability; and among families reporting any member with major and nonmajor activity limitations, 37.8 percent had two or more members with a disability (calculated from numbers in the appendix table).

The proportion of families with a disabled member changes according to other family characteristics and the definition of disability that is used. In table 1, we note that, among poor families, 9.6 percent have one or more members with an ADL or IADL; 39.1 percent have one or more family member(s) with a limitation in work activities; and 50.6 percent have one or more family members with work or other activity limitations. Among high-income families, smaller proportions are noted in every measure of disability: 4.4 percent have members with ADLs or IADLs; 23.2 percent, with limitations in work activities; and 45.8 percent, with limitations in work and other activities.

A glance at the insurance status of families with a disabled member reveals that the largest proportion has public insurance coverage: 16.7 percent of publicly insured families have a member with an ADL or IADL; 48.4 percent, a person with limitations in major activities; and 62 percent, someone with a limitation in a major or nonmajor activity. Even among families who are uninsured, 42.2 percent have one family member with a disability in work or other activities. However, families with public health insurance are significantly more likely to have a member with a disability, regardless of the definition used.

The age of the head of household and the type of family structure are related to the presence of a disabled family member. Families composed of a married couple without children are significantly more likely to have a family member with a disability than are other types of family structures. Twelve percent of families who are married and have no children at home have a member with an ADL or IADL, and almost 61 percent of such families have a member with a limitation in either work or other activities. The proportion of families with a disabled member also increases steadily with the rise in age of the head of household. Depending on how broad a definition of disability is used, this can mean that between 23.7 percent and 80 percent, or more, of families aged 65 and above have a member with some form of disability. There is no significant difference among racial groups in the proportion of families with a disabled member.

Family utilization of health care services, and expenditures for them, are influenced by the presence of a family member with a disability.

TABLE 1
Sociodemographic Characteristics of Families with and without a Disabled Member

			ADL/IADL definition of disability ^a		Work limitation definition of disability ^b		Work and activity limitation definition of disability ^c	
			No disabled family member	One or more members disabled	No disabled family member	One or more members disabled	No disabled family member	One or more members disabled
	All families							
Total (in thousands)	62,560		58,255	4,305	44,397	18,163	32,640	29,920
	100%		93.1%	6.9%	71.0%	29.0%	52.2%	47.8%
Income status								
Poor	6,764	100%	90.4%	9.6%	60.9%	39.1%	49.4%	50.6%
Near poor	2,556	100%	89.7	10.3	64.4	35.6	49.9	50.1
Low income	8,154	100%	88.9	11.1	61.5	38.5	46.2	53.8
Middle income	21,540	100%	93.2	6.7	72.0	28.0	43.4	46.6
High income	23,540	100%	95.6	4.4	76.8	23.2	54.2	45.8
Insurance status								
Private	49,160	100%	94.2%	5.8%	73.4%	26.6%	53.0%	47.0
Public	6,032	100%	83.3	16.7	51.6	48.4	38.0	62.0
Uninsured	7,365	100%	94.4	5.8*	71.4	28.6	58.8	42.2

Family type								
Single with children	1,002	100%	96.7%	3.3%*	74.9%	25.1%	63.8%	36.2%
Married with children	25,870	100%	97.0	3.0*	77.4	22.6%	61.0	39.0
Married without children	26,660	100%	88.0	12.0	63.3	36.7%	39.2	60.8
Head of household age								
<25	3,113	100%	98.9%	1.1%*	87.3%	12.7%	77.2%	22.8%
25–34	15,460	100%	98.0	2.0*	82.0	18.0	71.1	28.9
35–54	26,180	100%	96.4	3.6	75.8	24.2	57.4	42.6
55–64	8,717	100%	90.1	9.9	60.0	40.0	32.0	68.0
65+	9,090	100%	76.3	23.7	43.3	56.7	15.7	84.3
Race								
White	50,830	100%	92.9%	7.1%	71.0%	29.0%	51.0%	49.0%
Nonwhite	10,090	100%	93.8	6.2	70.2	29.8	57.3	42.7
Mixed race family	1,639	100%	94.2	5.8*	73.7	26.3	56.8	43.2

^aDisability definition based on difficulty with ADLs or IADLs.

^bDisability definition based on limitations or inability to work, go to school, or do housework.

^cDisability definition based on work limitation definition plus difficulty with moderate or vigorous activities because of a health problem.

*Relative Standard Error > .30.

Source: Agency for Health Care Policy and Research (1987).

Table 2 reports that the mean number of yearly physician visits for all families is nine. For families whose disabled member has an ADL or IADL, the mean number of visits per year is 14.5, significantly greater than for families without a disabled member. The same is true for each of the other definitions of disability.

Mean medical expenditures are significantly greater for families with a disabled member than for families with no disabled member for each definition of disability. Families who have a member with a limitation in ADLs or IADLs spend about three times more yearly than do families without a disability (\$10,547 versus \$3,371). Even the mean expenditures of families whose disabled member is limited in his or her ability to work or perform other activities are about two times higher than those of families who do not have a disabled member who is defined in that way (\$5,278 versus \$2,569). A look at the mean expenditures for the nondisabled persons in families with a disabled member reveals that their costs are small relative to the total costs for the complete family.

If we attempt to measure the financial burden that families experience when they have a member with a disability, we find that the ratio of out-of-pocket expenditures to total family income is generally higher than that of families without a disabled member. On average, families spend about 4.6 percent of their total income on medical expenses. For families with a member who has an ADL or IADL limitation, out-of-pocket expenditures are more than two and one-half times that of a family without a disabled member (11.2 percent versus 4.1 percent). Families with a member who has a work or activity limitation spend about twice as much out of pocket as a family without a disabled member (6.2 percent versus 3.1 percent). The differences in financial burden also depend on the family's income and insurance status and on the age of the head of household. The use of mean indicators here masks the effects of limited income on this out-of-pocket ratio. For poor families with a family member who is limited in ADLs or IADLs, out-of-pocket expenditures account for about 22 percent of income, or about six times the proportion paid out of pocket by a high-income family (data not shown).

Nondisabled Individuals in the Family

In the context of increased health care utilization and expenditures among families with a member who has a disability, our concern is with family members who are not identified as having a disability. Through regression analysis, we are able to control for known effects on health

TABLE 2
Physician Visits, Medical Expenditures and Ratio of Out-of-Pocket Expenditures to Family Income
for Families with and without a Disabled Member

	All families	ADL/IADL definition of disability ^a		Work limitation definition of disability ^b		Work and activity limitation definition of disability ^c	
		No disabled family member	One or more members disabled	No disabled family member	One or more members disabled	No disabled family member	One or more members disabled
Total (in thousands)	62,560	58,255	4,305	44,397	18,163	32,640	29,982
	100%	93.1%	6.9%	71.0%	29.0%	52.2%	47.8%
Mean number of physician visits	9.0	8.6	14.5	7.8	12.1	7.3	10.9
Mean medical expenditures							
All family members	\$3,864	\$3,371	\$10,547	\$2,823	\$6,412	\$2,569	\$5,278
All nondisabled family members ^d		—	1,716	—	1,508	—	985
Mean out-of-pocket expenditures as percent of total family income	4.6%	4.1%	11.2%	3.6%	7.0%	3.1%	6.2%

^aDisability definition based on difficulty with ADLs or IADLs.

^bDisability definition based on limitations or inability to work, go to school, or do housework.

^cDisability definition based on work limitation definition plus difficulty with moderate or vigorous activities because of a health problem.

^dIn families with a disabled member.

care utilization and expenditure patterns among these individual family members while, at the same time, pinpointing the effects of the presence of a family member with a disability (Hahn and Lefkowitz 1992; Cornelius, Beauregard, and Cohen 1991; Taylor and Banthin 1994). Because age groups vary in their health care needs, we conducted separate examinations within this population for children, adults aged 18 to 64, and adults 65 and older.

Because a preliminary descriptive analyses (not reported here) showed few differences in the patterns of utilization, expenditures, and out-of-pocket payments among the populations defined by the three definitions of disability, the regression analysis reported here focused on the definition of the disabled population that limits work or a major activity. If we consider these definitions as representing various levels of severity, the one we have chosen represents the middle level. The regression analyses that were run on the populations used all three definitions to verify that approach, and, indeed, they showed little difference in outcomes; therefore, we chose to report on the work or major activity limitation definition as the most representative. Definitions of disability that emphasize ADLs and IADLs are more likely to represent problems experienced by the older population, possibly leading to underestimates of the experiences of families with younger members who may have serious, but less severe, limitations. Although the broader definition of disability that includes limitations on both work and other activities gives the widest representation within the population, nevertheless, by its very nature, it includes many persons whose limitations are much less severe, thereby leading us to underestimate the effects of the presence of a seriously disabled person on his or her other family members.

In addition to the sociodemographic and health status variables that have been linked to health services utilization, several variables were added to this analysis, including the presence—or absence—in the household of another adult who was not a member of the HIEU. In some instances, when a family member is disabled, additional help is needed, and other relatives or hired help may move into the household. We have included this contingency, as it might have an impact on the nondisabled family members. We also identified the disabled person's gender or relative age (adult or child) in the event that these factors affected their nondisabled family members in different ways. An interaction variable was also added, based on the fact that families with a disabled member are disproportionately poor and an income status below the poverty level disproportionately affects utilization and expenditures.

Children

In table 3 we report the changes in marginal probabilities from the probit models and the regression coefficients from the OLS models for disability, interacted disability, and poverty status variables for children without disability. Normally we would expect that factors influencing children's access to health care, particularly children older than three, would be controlled primarily by their health and socioeconomic status. However, the findings reported in table 3 show that, after controlling for classic variables influencing health care utilization and expenditures (see table 4 for complete model results), children who live with a disabled adult female family member have a 7.5 percentage point greater probability of having a physician visit than children living in a family without a disabled female ($P > .1$). Additionally, whereas the effects of the disabled person's being an adult male or child are not statistically significant, the changes in marginal probabilities are positive. Among children who have physician visits, being part of the family of an adult, of either sex, with a disability is related to increased numbers of such visits, after controlling for other factors (male with disability, $P < .10$; female with disability, $P < .05$).

Although having an adult disabled family member is positively related to children's visits to a doctor, this factor is not significantly related to expenditures for all their medical care. Children in families with any disabled member are not significantly more likely than other children either to have any medical expenditures during the year (table 3) or to have higher levels of medical expenditures.

The combined effect of having a disabled family member and a low income is not significantly associated with the probability of a physician visit, the number of physician visits, or the expenditures for the child, although the sign of the coefficients suggests that this effect was worth consideration.

Adults

Among adults aged 18 to 64, the effect of having a family member with a disability is positively associated with the probability of visiting a physician when the person with the disability is either a child or an adult female. (Changes in marginal effects from the probit models and OLS estimates for variables of interest are reported in table 5; coefficient estimates for the full models for adults are reported in table 6.) An

TABLE 3
Marginal Effects of Probability of Doctor Visits, Weighted Least Squares Regression of Number of Doctor Visits,
Marginal Effects of Probability of Expenditures, and Weighted Least Squares Regression of Total Expenditure
among Children, Aged 1 to 17, without a Disability^{a,b}

	Marginal change in probability of visits	Number of visits ^c	Marginal change in probability of any medical expenditures	Total medical expenditures ^d
Disabled family member				
Adult male (adult male without disability omitted)	.058	.156*	.019	.121
Adult female (adult female without disability omitted)	.075*	.191**	.019	.001
Child (child without disability omitted)	.018	.067	.020	.067
Interaction between having a disabled family member and family income				
Disabled member/poor	-.064	-.040	-.021	.178
Disabled member/near poor	.016	-.030	.004	-.071
Disabled member/low income	-.060	-.068	.016	-.079
Disabled member/middle income (disabled member/high income omitted)	-.033	-.047	-.013	.048

^aDefinition of disability used in this analysis is the limitation or inability of the family member to work at a job, do housework, go to school or participate in normal play activities.

^bThis table depicts the disability-related variables from four regression analyses that controlled for age, race, gender, insurance status, other adult present, income, health status, family size, and location (region and metropolitan statistical area).

^cFor persons with at least one doctor visit during the year.

^dFor persons with any medical expenditures during the year.
**** $P \leq .0001$; *** $P \leq .005$; ** $P \leq .05$; * $P = .051$ to $.10$.

examination of the number of physician visits reveals that the presence in the family of a disabled member who is a child significantly increases the number of visits.

The effects on outcomes for adults in families with a disabled member are compounded by the income level and the presence of the disabled person. In addition to the basic effects of various levels of income on utilization, there is a further, discernible impact on families whose incomes fall below the poverty level. Compared with high-income families who have a disabled family member, adults in a poor family with a disabled member have a 16 percentage point lower probability of a physician visit. This occurs in addition to the reduced probability of a visit associated with having an income below the poverty level (table 6). A similar effect is also implied for adults in near-poor or middle-income families with a disabled member ($P < .1$). However, the combined effect of low income and having a family member with a disability is not associated with a reduction in the number of visits made by an adult, but, rather, with a reduced likelihood of making any visits at all.

If the family member with a disability is either a child ($P < .1$) or an adult female ($P < .05$), the probability that other family members will incur medical expenditures is also increased. Nonetheless, poor persons with a disabled family member who are less likely to visit a physician because of their reduced income are also less likely than high-income persons with a disabled family member to have any medical expenditures.

The level of medical expenditures for adults with these expenses is higher in families where the person with a disability is an adult female ($P < .1$). However, if a family is poor, or near poor, and they have a family member with a disability, the amount of medical expenditures for the nondisabled family members is reduced ($P < .05$), not increased.

Older Adults

Analysis of the senior population excluded the indicator that the disabled family member was a child because this situation occurred so seldom. Only eight families of persons over the age of 65 indicated a family member with a disability under age 18, a number too small for arriving at accurate estimates.

Having an adult family member with a disability does not increase or decrease the probability that an adult aged 65 or over will have a physician visit. (See table 7 for marginal and OLS results for variables of interest; see table 8 for full model results.) A combination of level of

TABLE 4
Coefficient Estimates and Standard Errors from Probit and OLS Regressions for Children, Aged 1 to 17, without a Disability

Independent variables	<i>P</i> (any expenditure)		OLS log(EXP)		<i>P</i> (any visits)		OLS log(visits)	
	Coeff	SE	Coeff	SE	Coeff	SE	Coeff	SE
Female	0.0230	0.0393	0.0160	0.0420	0.0332	0.0344	0.0217	0.0243
City	0.0053	0.0628	-0.0216	0.0502	-0.0661	0.0509	-0.0341	0.0345
Insurance								
Private	0.3453	0.0568	0.4071	0.0586	0.2489	0.0567	0.1901	0.0368
Public	0.4689	0.0868	0.4661	0.0877	0.2474	0.0697	0.2682	0.0514
Missing	0.5300	0.4375	0.8025	0.6977	-0.3842	0.4054	0.0406	0.2871
White	0.4828	0.0466	0.3131	0.0489	0.3562	0.0447	0.1921	0.0380
Age 1 to 3	0.1544	0.0634	-0.1013	0.0667	0.3697	0.0533	0.3130	0.0364
Poor	-0.6955	0.0881	-0.6264	0.0936	-0.4200	0.0845	-0.2519	0.0530
Near poor	-0.6874	0.1214	-0.4075	0.1426	-0.5388	0.0950	-0.1176	0.0678
Low income	-0.5673	0.0882	-0.4691	0.0863	-0.3132	0.0715	-0.1443	0.0528
Middle income	-0.3257	0.0790	-0.2963	0.0505	-0.1818	0.0584	-0.0550	0.0391
Adult present not in HIEU	-0.1119	0.0738	-0.0493	0.0658	-0.0847	0.0662	-0.0034	0.0438

Adult male with disability	0.0799	0.1218	0.1214	0.1183	0.1596	0.1086	0.1562	0.0849
Adult female with disability	0.0814	0.1463	0.0006	0.1102	0.2080	0.1222	0.1906	0.0835
Child with disability	0.0844	0.1387	0.0668	0.1171	0.0492	0.1110	0.0673	0.0771
Interaction disability								
Poor	-0.0864	0.1288	0.1785	0.1187	-0.1723	0.1087	-0.0405	0.0765
Near poor	0.0183	0.1815	-0.0709	0.1943	0.0438	0.1481	-0.0305	0.1055
Low income	0.0660	0.1354	-0.0786	0.1313	-0.1604	0.1203	-0.0680	0.0798
Middle income	-0.0533	0.1583	0.0476	0.1210	-0.0881	0.1172	-0.0469	0.0992
Family size	-0.1061	0.0192	-0.0850	0.0150	-0.0825	0.0147	-0.0476	0.0095
Health status: fair/poor	0.1767	0.0935	0.7264	0.1043	0.3177	0.0772	0.3688	0.0734
Northeast	0.1195	0.0764	0.1408	0.0591	0.0125	0.0638	0.0436	0.0416
South	-0.1842	0.0614	-0.0447	0.0603	-0.2695	0.0584	0.0634	0.0357
West	0.0417	0.0801	0.0779	0.0651	-0.1113	0.0681	0.0534	0.0436
Constant	1.2143	0.1359	5.3236	0.1217	0.5733	0.1123	0.6272	0.0788
$F(24,78)$ or R^2	22		0.08		26		0.08	
N	6,895		5,409		6,895		4,142	
N weighted	54,639,000		44,439,216		54,639,068		34,675,753	

Abbreviation: OLS log(EXP) = ordinary least squares log(expenditure).

TABLE 5
 Marginal Effects of Probability of Doctor Visits, Weighted Least Squares Regression of Number of Doctor Visits,
 Marginal Effects of Probability of Expenditures, and Weighted Least Squares Regression of Total Expenditure
 among Adults, Aged 18 to 64, without a Disability^{a,b}

	Marginal change in probability of visits	Number of visits ^c	Marginal change in probability of any medical expenditures	Total medical expenditures ^d
Disabled family member				
Adult male (adult male without disability omitted)	.047	.086	.026	.089
Adult female (adult female without disability omitted)	.069**	.064	.047**	.169*
Child (child without disability omitted)	.089**	.116**	.043*	.090
Interaction between having a disabled family member and family income				
Disabled member/poor	-.156***	-.132	-.123****	-.273**
Disabled member/near poor	-.133*	-.051	-.024	-.388**
Disabled member/low income	-.014	-.008	.003	.054
Disabled member/middle income (disabled member/high income omitted)	-.070*	.005	-.044*	-.006

^aDefinition of disability used in this analysis is the limitation or inability of family member to work at a job, do housework, go to school, or participate in normal play activities.
^bThis table depicts the disability-related variables from four regression analyses that controlled for age, race, gender, marital status, presence of other adult, mode of transportation, income, insurance status, employment status, family size, health status, location (region and metropolitan statistical area), and presence of children in family.
^cFor persons with at least one doctor visit during the year.
^dFor persons with any medical expenditures during the year.
 **** $P \leq .0001$; *** $P \leq .005$; ** $P \leq .05$; * $P = .051$ to $.10$.

income and the presence of a disabled family member is not a factor in either the probability of visiting a physician or the number of visits.

Among nondisabled seniors, the probability of incurring any medical expenditures is also not influenced by having a family member with a disability. However, there are some other reportable relationships between having a disabled family member and the level of expenditures. Individuals aged 65 and over who belong to families in which the adult female is disabled spend less on medical care than families in which the adult female is not disabled. In many instances, older persons live in two-person households, so this would indicate that older males tend to have lower medical expenditures when their spouse is disabled, although the reverse is not the case.

Unlike other groups, older persons with middle incomes and a disabled family member spend more on medical care than do high-income families with a disabled member.

Discussion

Disability affects not only the individual with a chronic condition or impairment but also the circumstances of other family members, particularly the person who has been designated as the primary caregiver. Based on three separate measures of disability designed to identify, first, persons, and then families with a disabled member, we have analyzed the ways in which the presence of a disabled person affects the health utilization and medical expenditures of other family members. The results indicate that it is possible to define some effects and also that other forms of analysis must be devised in order to explore this question further.

Depending on the definition of disability used, between 7 percent and 48 percent of all multiperson families have one or more members with a disability. This indicates that many people can be affected by the stress of caregiving, role change, or financial burden that can occur when an individual in the family has a disability. The findings that these proportions are greater among families with low incomes, and that as many as 5.8 to 42 percent of uninsured families have a disabled member, indicate the seriousness of the problem and highlight the need to consider the person with a disability not only as an isolated case, but also within the family context, when changes in health care policy are contemplated.

TABLE 6
Coefficient Estimates and Standard Errors from Probit and OLS Regressions for Adults, Aged 18 to 64, without a Disability

Independent variables	<i>P</i> (any expenditure)		OLS log(EXP)		<i>P</i> (any visits)		OLS log(visits)	
	Coeff	SE	Coeff	SE	Coeff	SE	Coeff	SE
Female	0.4925	0.0309	0.4299	0.0324	0.4983	0.0279	.2693	.0215
City	−0.0704	0.0425	0.0507	0.0395	−0.0763	0.0356	−.0150	.0271
Insurance								
Private	0.4211	0.0453	0.3667	0.0526	0.3496	0.0460	.1665	.0373
Public	0.4621	0.0754	0.4532	0.0759	0.2566	0.0650	.1610	.0627
Missing	1.2249	0.5683	−0.3399	1.2763	−0.3718	0.6560	−.1650	.3025
White	0.2738	0.0389	0.1315	0.0379	0.1751	0.0388	.0729	.0235
Age 18–25	0.0512	0.0469	0.0013	0.0599	0.0661	0.0433	−.0116	.0363
Age 35–54	−0.0320	0.0452	0.0054	0.0383	0.0163	0.0357	−.0696	.0255
Age 55–64	0.1722	0.0664	0.2449	0.0514	0.2058	0.0483	.0490	.0345
Poor	−0.1615	0.0756	−0.1955	0.0699	−0.0445	0.0674	−.0486	.0582
Near poor	−0.4125	0.0915	−0.1086	0.0919	−0.2000	0.0749	−.0723	.0693
Low income	−0.3419	0.0624	−0.2495	0.0652	−0.1777	0.0578	−.0750	.0482
Middle income	−0.1744	0.0476	−0.1527	0.0390	−0.0939	0.0375	−.0370	.0266
Adult present not in HIEU	−0.1420	0.0447	0.0129	0.0444	−0.1085	0.0384	−.0046	.0336
Married	0.1048	0.0450	0.2076	0.0436	0.1327	0.0415	.08669	.0333
Marital status missing	−0.4040	0.3838	0.9256	0.5999	0.6014	0.4917	.20479	.2246
Walk to doctor	−0.0987	0.0990	−0.2406	0.0921	−0.0918	0.0728	−.0223	.0625

Driven to doctor	-0.2049	0.0769	-0.0526	0.0757	-0.2428	0.0681	-.0287	.0611
Public transport to doctor	-0.1937	0.1018	0.2654	0.1703	-0.2670	0.0898	.0951	.0844
Trans missing	-0.5650	0.0404	-0.2259	0.0407	-0.5366	0.0372	-.1832	.0309
Adult male with disability	0.0979	0.1073	0.0894	0.0833	0.1308	0.0854	.0859	.0528
Adult female with disability	0.2277	0.1047	0.1691	0.0903	0.1924	0.0935	.0642	.0620
Child with disability	0.2053	0.1107	0.0903	0.0945	0.2515	0.0871	.1156	.0577
Interaction disability:								
Poor	-0.5338	0.1122	-0.2726	0.1354	-0.4196	0.1102	-.1319	.1191
Near poor	-0.1028	0.2351	-0.3881	0.1926	-0.3563	0.1932	-.0514	.1229
Low income	0.0141	0.1134	0.0542	0.1157	-0.0367	0.1081	-.0078	.0670
Middle income	-0.1913	0.1117	-0.0055	0.0864	-0.1891	0.0987	.0053	.0594
Employed	0.0383	0.0409	-0.1838	0.0430	0.0157	0.0336	-.1372	.0280
Family size	-0.0557	0.0129	-0.0445	0.0161	-0.0486	0.0108	-.0245	.0107
Health status: fair/poor	0.1647	0.0567	0.4252	0.0543	0.2050	0.0435	.2448	.0332
Northeast	0.0814	0.0493	0.0681	0.0464	0.0079	0.0405	.0295	.0318
South	-0.0656	0.0471	-0.0166	0.0449	-0.0404	0.0385	-.0267	.0275
West	0.1057	0.0486	0.1543	0.0455	0.0363	0.0460	.0201	.0323
Children	0.2138	0.0441	0.0277	0.0405	0.1079	0.0357	.0176	.0317
Constant	0.4609	0.1010	5.3743	0.1160	-0.1279	0.0868	.7715	.0782
$F(34,68)/R^2$	45		.08		45		.07	
N	12,530		10,096		12,530		7,750	
N weighted	105,800,000		87,047,215		105,800,000		67,189,097	

Abbreviation: see table 4.

TABLE 7
 Marginal Effects of Probability of Doctor Visits, Weighted Least Squares Regression of Number of Doctor Visits,
 Marginal Effects of Probability of Expenditures, and Weighted Least Squares Regression of Total Expenditure
 among Seniors, Aged 65 and Over, without Disability^{a,b}

	Marginal change in probability of visits	Number of visits ^c	Marginal change in probability of any medical expenditures	Total medical expenditures ^d
Disabled family member				
Adult male (adult male without disability omitted)	-.040	-.130	-.003	-.189
Adult female (adult female without disability omitted)	.009	-.123	.015	-.281**
Interaction between having a disabled family member and family income				
Disabled member/poor	.013	.142	-.096	.183
Disabled member/near poor	-.051	-.021	-.028	.014
Disabled member/low income	-.018	-.016	-.010	-.026
Disabled member/middle income (disabled member/high income omitted)	.011	.194	-.032	.308*

^aDefinition of disability used in this analysis is the limitation or inability of family member to work at a job, do housework, go to school or participate in normal play activities.

^bThis table depicts the disability related variables from four regression analyses that controlled for age, race, gender, marital status, mode of transportation, income, employment status, health status, family size, presence of children in the family and location (region and metropolitan statistical area).

^cFor persons with at least one doctor visit during the year.

^dFor persons with any medical expenditures during the year.

**** $P \leq .0001$; *** $P \leq .005$; ** $P \leq .05$; * $P = .051$ to $.10$.

This analysis of financial burden among families indicates the need to examine existing health care resource boundaries and how they are experienced by families. It is likely that the doubling or tripling of medical expenditures in families with one or more disabled members, compared with families that have none, reflects the higher use of medical resources by the family member with a disability. Nonetheless, the total can also include increased utilization by other family members. Whether there is less of an ability to accommodate the needs of the other members of the family partly depends on the size of the available resources for medical expenditures: the generosity of insurance coverage and the cumulative effects of insurance premiums, deductibles, and copayments. The fact that the number of visits to physicians by poor families totals 56 to 68 percent of the visits made by high-income families with a disabled member, or that uninsured families make about one-half the number of visits of insured families, suggests that the size of the medical care resources could be critical to adequate health care for *all* family members in these situations. (Data discussed in this paragraph are derived from descriptive analyses not reported in this paper. Please contact BMA for copies of those tables.)

The meaning of possible limitations on health care resources at the family level emerges when we examine the access, utilization, and expenditures for individual, nondisabled family members in a family that has a disabled member, particularly in the case of adults. Low income, lack of insurance, and increased family size are factors that are known to limit visits to physicians. Even when controlling for known barriers to care, evidence from this study indicates that adults with a disabled family member, whose incomes are below or near poverty, experience rationing of their health care, are less likely to visit a physician, and have lower levels of medical expenditures.

Rationing of household medical care resources has the sharpest impact on the population that is most likely to be eligible, or is close to eligibility, for public insurance: those who fall near or below the poverty line. It is possible that public programs are insuring only the individual with a disability, leaving the rest of the family to manage on restrictive private policies or without any insurance at all. Adjusting income-level criteria when a family member is disabled or allowing buy-in opportunities (similar to those in the Medicare program that are now being considered for near-elderly persons) are two possible approaches to this problem. Proposals for returning persons on Social Security Disability Insurance to work also contain Medicare buy-in recommendations. It

TABLE 8
Coefficient Estimates and Standard Errors from Probit and OLS Regressions for Adults, Aged 65 and Over, without a Disability

Independent variables	<i>P</i> (any expenditure)		OLS log(EXP)		<i>P</i> (any visits)		OLS log(visits)	
	Coeff	SE	Coeff	SE	Coeff	SE	Coeff	SE
Female	0.2997	0.1213	-0.2278	0.0926	0.2603	0.0902	-0.1034	0.0583
City	-0.0740	0.0949	0.1812	0.1011	0.0028	0.0767	0.0817	0.0486
White	0.1725	0.1237	0.2120	0.1460	0.2203	0.1185	0.1350	0.0772
Age >74	0.2550	0.1171	0.1504	0.0901	0.2308	0.1039	0.0859	0.0542
Poor	-0.0303	0.3183	-0.0732	0.3627	0.0310	0.2126	-0.2872	0.1632
Near poor	-0.8543	0.2637	-0.3873	0.3140	-0.5580	0.3560	-0.2254	0.2579
Low income	-0.4396	0.1694	-0.2849	0.1780	-0.1626	0.1364	-0.1441	0.0934
Middle income	-0.2309	0.1358	-0.2577	0.1058	-0.1143	0.1050	-0.1183	0.0666
Adult present not in HIEU	0.0048	0.1710	0.1066	0.1490	-0.0271	0.1364	0.1233	0.0876
Married	0.4784	0.1574	-0.1184	0.1600	0.2594	0.1353	-0.0193	0.0975
Walk to doctor	-0.4726	0.2097	-0.7422	0.1857	-0.1371	0.2423	-0.2161	0.1012
Driven to doctor	-0.2141	0.1574	0.0879	0.1232	-0.0541	0.1034	-0.0642	0.0804
Public transport to doctor	-0.3809	0.2646	-0.1765	0.2196	-0.4867	0.2399	-0.2655	0.1384
Missing transport	-1.1175	0.1397	-0.6228	0.1875	-1.1020	0.1153	-0.3460	0.1146

Adult male with disability	-0.0210	0.2627	-0.1890	0.1417	-0.1427	0.1792	-0.1304	0.0982
Adult female with disability	0.1276	0.2313	-0.2808	0.1415	0.0349	0.1435	-0.1233	0.1007
Interaction disability:								
Poor	-0.5329	0.5095	0.1833	0.4449	0.0487	0.3806	0.1423	0.2478
Near poor	-0.1559	0.4047	0.0139	0.6380	-0.1767	0.4438	-0.0212	0.3460
Low income	-0.0794	0.3039	-0.0261	0.3134	-0.0646	0.2701	-0.0157	0.1486
Middle income	-0.2587	0.2529	0.3079	0.1681	0.0401	0.2160	0.1939	0.1284
Employed	-0.1273	0.1478	-0.1645	0.1106	-0.0842	0.1200	-0.1985	0.0627
Family size	-0.1972	0.0514	-0.2037	0.0774	-0.1493	0.0537	-0.1208	0.0426
Health status: fair/poor	0.3589	0.1213	0.4424	0.1133	0.2535	0.0889	0.2992	0.0495
Northeast	0.0866	0.1275	-0.0049	0.1163	0.0731	0.1012	-0.0383	0.0812
South	0.0640	0.1212	-0.1131	0.1059	-0.0604	0.0951	-0.0010	0.0602
West	0.2740	0.1505	0.1206	0.1197	0.1190	0.1136	0.0690	0.0634
Children present	0.6998	0.3556	0.0390	0.2662	0.3682	0.2897	0.2606	0.2036
Constant	1.4787	0.2504	7.1067	0.2453	0.8485	0.2300	1.5475	0.1823
$F(27,75)$ or R^2	5.9		0.07		7.05		0.07	
N	1,910		1,735		1,913		1,516	
N weighted	10,291,444		9,325,325		10,308,080		8,174,125	

Abbreviation: see table 4.

may be necessary to consider covering complete family insurance needs in order to make such proposals workable.

Overall, evidence remains that, regardless of income level, being in a family with a disabled member contributes to increased utilization. For adults and children, having a family member with a disability appears to increase the probability of seeing a physician, and for adults this situation is also associated with more physician visits, particularly when the family member with a disability is a child. Among adults, increased utilization is also linked to a higher probability of having medical expenditures, although actual increases in expenditures are only significant when the disabled family member is the female adult. This may mean that the increased utilization is nominal, rather than being associated with serious illness or other care needs, but that when the mother is disabled, the impact on her husband and/or children is notable. Whether the increased utilization is a reflection of more concern for preventive care by parents or physicians, and more familiarity and comfort with the health care system, or is a result of stress-related health problems, was not clarified by our analysis and thus remains a question that requires further research.

The findings for adults aged 65 or over reveal fewer effects of having a family member with a disability. Rather than increased probability of a physician visit, the data show no notable impact when the disabled family member is either the adult male or female. Nor is there an effect on number of visits. However, if the adult female in an older family is disabled, one or more family members (probably an older male) spend less on medical care. Because Medicare creates a resource base for this population to access the health care system, a decrease in visits is not as likely to be tied to limited resources.

The differences in effects of the stress of having a disabled family member on young to middle-aged families, compared with older families, may reflect the differences in lifetime caregiving (when a child or young adult is the person with a disability) versus caregiving at the end of life. Caregiving for different types of conditions, such as physical disabilities versus mental health or cognitive limitation problems, have also been shown to have different effects on families (Greenberg, Seltzer, Krauss, et al. 1997). Numerous programs exist to relieve the stress of caregiving, and many were designed for specific conditions. However, they do not necessarily include the whole family, nor do they necessarily focus on the family problems that may result from changes in roles and expectations. Also, various types of disabling conditions require different interventions.

Parents of children with developmental disabilities experience considerable stress when they have to plan for the future, and they need programs that provide reliable independent living situations for the time when the individual can no longer live at home. The long waiting lists to receive these services, the vulnerability of such services to variable funding, and the obstacles to the ability to find and maintain reliable, well-trained staff no doubt contribute to stress for older parents (Lefley 1997). Families that must care for a severely ill member who requires constant supervision or actual physical care would benefit from frequent use of respite care. These types of services are not available, reliable, or inexpensive enough to permit them to become a normal, flexible component of the family resource system. Although some respite services provide crucial support to families of a disabled person, the lack of subsidies, of a well-trained work force, and of uniform availability across geographic areas makes them an unreliable relief alternative for many families. The emphasis by most insurance programs, including Medicare, on the medical nature of home care is detrimental to an equally pressing need for assistance with the more mundane tasks essential to maintaining family functioning.

The results of this analysis indicate that both stress-related health care needs and resource limitations may be factors in the health care utilization and expenditures for nondisabled persons in families with disabled members. Children and seniors are least affected by the presence of a disabled family member, and the impact appears to be greatest for adults between the ages of 18 and 64, particularly when the disabled member is a child. Organizations and businesses in some instances are recognizing the added stress a disabled family member may have on an employee, and many are beginning to organize programs to provide support, but more resources and programs are still needed. In addition to attempts to address the stress elements, health policy planners and health insurance programs must recognize the potential rationing effect that occurs when one family member uses the bulk of health care resources.

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Appendix

Definition of Disability in the Americans with Disabilities Act

The ADA defines disability as follows: Disability means, with respect to an individual: (1) a physical or mental impairment that substantially limits one or more of the major life activities of such an individual; (2) a record of such an impairment; or (3) being regarded as having such an impairment.

This analysis is unable to ascertain whether the covered entity regards the individual as having such impairment; it can only measure the

presence of disability based on self-report or proxy report from a co-resident of the sampled dwelling unit.

Questions Used to Construct Disability Measures

ADL and IADL Measure

The ADL and IADL measure was based on questions asked of the respondent about any difficulty he or she might experience in performing an everyday activity without help because of a mental or physical health problem. Activities included were:

- Bathing
- Dressing
- Using the toilet
- Getting in or out of bed or chairs
- Feeding self
- Using the telephone
- Keeping track of expenses or paying bills
- Shopping for personal items
- Getting around the community, driving, or using public transportation
- Preparing meals
- Doing light housework

A positive reply to any one of these items, indicating difficulty or necessity for help, included the respondent in the ADL/IADL measure.

Work/Activity Limitations

The measure for disability based on work limitations for adults and seniors was derived from two questions (#1 and #2). Activity limitations added questions 3 and 4 to the first two.

Work Limitation. The respondent answered either of the following two questions positively:

1. Are you unable to do certain *kinds* or *amounts* of work, housework, or schoolwork because of your health?

2. Does your health keep you from working at a job, doing work around the house, or going to school?

Work and Activity Limitation. The respondent answered positively to either of the previous questions or to one of the following two questions.

3. Does your health limit the kinds or amounts of *vigorous* activities you can do, such as running, lifting heavy objects, or participating in strenuous sports?
4. Does your health limit the kinds or amounts of *moderate* activities you can do, such as moving a table, carrying groceries, or bowling?

Activity/School Limitations

The measure for children aged five to seventeen was created from the following four questions:

1. Does this child attend a special school or special classes because of any impairment or health problem?
2. Does this child need to attend a special school or special classes because of any impairment or health problem?
3. Is this child limited in school attendance or unable to attend school because of his or her health?
4. Is this child limited in any way in any activities because of an impairment or health problem?

The measure for children aged one to four was created from the following three questions:

1. During the past three months, has this child been able to take part at all in the usual kind of play activities done by most children this age?
2. During the past three months, has this child been limited in the kind or amount of play activities he or she can do because of any impairments or health problems?
3. Is the child limited in any way in any activities because of an impairment or health problem?

TABLE 1A
Sociodemographic Characteristics of Families with One and More than One Disabled Member

	All families	ADL/IADL definition ^a		Work limitation definition ^b		Work and activity limitation definition ^c	
		One member disabled	More than one member disabled	One member disabled	More than one member disabled	One member disabled	More than one member disabled
Total (in thousands)	62,560	3,671	634	14,240	3,923	18,620	11,300
	100%	100%	100%	100%	100%	100%	100%
Income status							
Poor	10.8%	14.9%	16.2%	13.6%	17.8%	12.5%	9.6%
Near poor	4.1	6.2	5.9	4.6	6.4	4.0	4.7
Low income	13.0	19.5	29.3	15.9	22.3	12.7	17.9
Middle income	34.4	34.0	33.1	33.2	32.8	32.9	34.7
High income	37.6	25.4	15.6	32.6	20.6	37.8	33.2
Insurance							
Private	78.6%	66.6%	64.3%	73.7%	65.7%	76.6%	78.1%
Public	9.6	22.0	31.3	14.3	22.5	12.2	13.1
Uninsured	11.8	11.4	4.4*	12.0	11.6	11.0	8.8

Family type							
Single/with children	16.0%	9.1%	0.0%*	14.7%	10.5%	16.2%	5.4%
Married/with children	41.4	18.4	14.7	33.1	29.3	38.3	26.3
Married/no children	42.6	72.5	85.3	52.2	60.2	45.5	68.4
Head of household age							
<25	5.0%	1.0%	0.0%*	2.7%	0.2%*	3.4%	0.6%*
25–34	24.7	8.0	1.9*	16.6	10.7	19.5	7.3
35–54	41.8	23.6	12.2	36.1	30.4	4.0	27.9
55–64	13.9	21.6	10.6	19.8	17.1	18.1	22.6
65+	14.5	45.8	75.3	24.8	41.6	15.9	41.6
Race							
White	77.6%	81.1%	84.3%	81.8%	78.3%	81.8%	85.5%
Nonwhite	19.1	16.3	13.7	15.9	18.9	15.8	12.2
Mixed race	3.3	2.6*	2.0*	2.3	2.8	2.4	2.3

^aDisability definition based on difficulty with ADLs or IADLs.

^bDisability definition based on limitations or inability to work, go to school, or do housework.

^cDisability definition based on work limitation definition plus difficulties with moderate or vigorous activities because of a health problem.

*Relative Standard Error > .30.

Source: Agency for Health Care Policy and Research 1987.