ARE THERE ECONOMIC BARRIERS TO VISITING THE DOCTOR?

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ABSTRACT

This paper uses data from the Health Interview Survey to estimate the effect of income on whether an individual visits the doctor in a year, the number of doctor visits in a year, the likelihood of a doctor visit being in an emergency room and the likelihood that a doctor visit is with a medical specialist. Although the effect of income on these outcomes varies with age, the results in this paper suggest that differences in income play a minor role in explaining why some people who need medical care get it while others do not.

Low income children are more likely than high income children with the same health status to have visited a doctor in the last year and low income children visit the doctor as often in a year as high income children with the same health status. Low income children are slightly more likely than high income children with the same health status to visit a doctor in an emergency room and they are less likely to see a pediatrician or other medical specialist.

Low income adults are about as likely as high income adults with the same health status to visit a doctor at least once during a year, but low income adults visit the doctor more frequently than high income adults during a year. Low income adults are about as likely as high income adults with the same health status to visit a doctor in an emergency room and to visit a specialist.

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Over a fifth of the United States population has no health insurance to cover a visit to the doctor, and even those who have private health insurance must often pay part of the expense of a doctor visit themselves. Medicaid payments are so low that many doctors limit the number of Medicaid recipients they will see or refuse to see them altogether. In addition employers and tax policies subsidize health care for affluent and working Americans (Rosenzweig and Schultz 1991). This situation suggests that many low income individuals face higher out-of-pocket medical expenses as well as higher nonmonetary costs for medical care than affluent individuals since they may have to travel farther and wait longer to see a doctor.

Indeed many physicians, policy makers and others claim that one of the most important problems with the U.S. health care system is inequity in access to medical care.[1] Despite concerns about these inequities little is known about the distribution of medical services across income groups or more broadly defined socioeconomic groups.

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[1] For instance, a recent issue of the Journal of the American Medical Association was devoted to discussing policies for caring for the uninsured and underinsured. The first article is typical of many of the others. It notes that the 47 million poor and uninsured children in the U.S. are "neglected at a time when many in the United States enjoy the highest level of health in the history of humanity". It also summarizes the themes of several of the articles by noting that such children "receive no health care at all or only urgent care" (Fulginiti 1991).

In this paper I use data from the Health Interview Survey (HIS) to estimate the effect of income on the number of times an individual visits a doctor in a year, whether an individual has visited a doctor in the last year, the location of doctor visits, and the kind of doctor a patient sees.

INTRODUCTION

Published data from the Health Interview Survey suggest that sometime in the mid-197Øs low income individuals began to visit doctors more often than affluent individuals. Nearly all research based on data collected after 198Ø shows that low income adults visit the doctor more frequently than higher income adults (Andersen et al. 1987; Aday and Andersen 1981; Aday et al. 1984; Freeman et al. 1987; Howell 1981). Some evidence suggests that low income children visit the doctor less frequently than high income children (Freeman et al. 1987; Gortmaker 1981; Kovar 1982; Orr and Miller 1981; Butler et al. 1985). Table 1 shows that by 198Ø, individuals living in families with incomes of $5,ØØØ or less saw a doctor an average of 6.4 times a year. Individuals in families with incomes over $25,ØØØ saw a doctor an average of only 4.8 times a year.

If income were uncorrelated with health, the fact that poor individuals see physicians more often than affluent individuals would strongly suggest that economic barriers to visiting the doctor did not exist. In reality, however, the poor are much more likely than the rich to be sick. Table 1 shows that in 198Ø the lowest income individuals were more than twice as likely to have a limitation of activity due to a chronic illness and they spent over 9 more days in bed due to illness per year than those with incomes over $25,ØØØ. The lowest income

individuals were 3.5 times more likely to report that they were in fair or poor health and they had 44 percent more acute conditions than those with incomes over $25,000.[2] As I show below, these patterns remained much the same through the 1980s.

In order to assess the effect of economic barriers to medical care, therefore, we need to compare the frequency of doctor visits among individuals with the same health status but different incomes.

PREVIOUS RESEARCH

Previous research yields conflicting conclusions about the effect of income on frequency of physician visits among individuals with the same health status (Aday et al. 1984; Kleinman 1981; Davis et al. 1981). Differences in results partly depend on the measure of health status used in the analysis.

Several authors have found that low-income individuals (variously defined) have fewer doctor visits per 100 disability days during a year than higher income individuals (Andersen et al. 1987; Aday and Andersen 1981; Kleinman et al. 1981; Howell 1988). Table 1 yield the same conclusion. Those with incomes under $5,000 average .43 doctor visits per bed disability day while those with incomes over $25,000 average .88 doctor visits per bed disability day. Using this ratio to calculate the effect of income is statistically equivalent to assuming that the elasticity of doctor visits with respect to disability days would be 1 if there were no economic barriers to seeing a physician. If this

[2] However, low income children less than 6 years old appear to be in no worse health than high income children of the same age. For instance, the proportion of children less than 6 years old with a limitation of activity due to a chronic condition is 1.9 percent in the lowest income group and 2.1 percent in the highest. The number of bed days in the last year is 4.5 for children in the lowest income group and 4.2 among those in the highest.

elasticity is less than unity, as seems likely, such a ratio will yield upwardly biased estimates of the effect of income on frequency of doctor visits.

Research that controls respondents' self-reports of health status (usually on a four or five point scale from excellent to poor) also finds that the poor visit doctors less often than the affluent with the same health status (Kleinman et al. 1981; Freeman et al. 1987).

A third possible measure of health status is physicians' judgments about whether a particular symptom requires a visit to the doctor. Aday and Andersen (1981) using data from a national household survey sponsored by the Center for Health Administration Studies found that in 1976 respondents at all income levels saw a doctor less often given their symptoms than a panel of doctors judged appropriate. However, income had no effect on the likelihood that a respondent who "should" have seen a doctor did.

Research that controls the presence of a chronic condition usually finds that income does not affect an individual's chances of seeing a doctor. For instance, Freeman et al. (1987) found that low-income respondents with a chronic illness were about as likely to have visited a physician in the previous year as the average respondent with a chronic illness. Freeman et al. also found that 85 percent of low-income respondents with hypertension compared to 8Ø percent of all respondents with hypertension had their blood pressure checked in 1985.

Thus, research that controls the use-disability ratio or self-reported health status usually concludes that poor adults visit the doctor less than affluent adults who report the same health status. But research that controls chronic conditions and research that control

doctor's judgments about the necessity of a doctor visit concludes that poor adults visit the doctor as often as affluent adults with the same health problems.

Unfortunately most of the research that tries to assess the effect of income on frequency of doctor visits suffers from serious methodological shortcomings. Previous research assumes the following model:

$$D = a + X_1 I + X_2 H + e$$

where D is doctor visits, I is income, H is health status, and I and H are uncorrelated with the error term.

There are at least three likely sources of bias in this model. First, health status is likely to affect current income. OLS models which ignore this source of endogeneity will produce biased and inconsistent estimates of the effect of income on frequency of doctor visits.

Second, results appear to be sensitive to the choice of a health status measure. Many aspects of health status lead one to visit a doctor and the measures of health status included in the HIS are only moderately correlated with one another suggesting that they tap different aspects of health.[3] Thus, it is not surprising that estimates of the effect of income on frequency of doctor visits vary depending on what measure of health status is controlled. Estimates that control several measures of health status may better tap the need for health care than those that control only one measure [4].

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[3] The HIS file used in this analysis includes measures of the number of acute conditions, the number of chronic conditions, whether the individual has a limitation of activity due to a chronic condition, the number of days in the previous year an individual went to bed because of illness and self-reported health status. Among children less than 6

Third, research that has tried to estimate the effect of income on use of physician services fails to control important exogenous characteristics of individuals such as their age and education, thus confounding these with the effect of income. Research that controls exogenous characteristics such as age and race yield conflicting conclusions about the effect of income on frequency of doctor visits, depending on the estimation procedure (Kleinman et al. 1981; Rossiter and Wilensky 1983; Wolfe 198Ø).

DATA AND METHODS

The HIS is a multi-stage probability sample of the US population. It has been administered annually by the National Center for Health Statistics (NCHS) since the late 195Øs, although the methodology has change over this period. I use data on 91,562 respondents to the

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years old the correlation between parents' reports of the child's health status and their report of the number of chronic conditions the child has is .237. the correlation between parents' reports of health status and bed days is .227. Correlations among health status measures increase with age, but even among the elderly the correlation between self-reported health status and number of bed days is only .3Ø4 and between self-reported health status and chronic conditions is .463.

[4] There is one other possible source of bias in OLS estimates of the effect of income on doctor visits, namely that visiting a doctor affects health status. Visiting the doctor increases one's awareness of health problems and with luck, improves health status. I estimated a two-stage-least-squares model to account for this source of endogeneity, using a list of 15 acute conditions and bed days as identifying instruments for self-reported health status. This proved to be a weak instrument for health status and the TSLS model with instruments for both income and health status did not produce results substantially different from those presented in this paper. This source of endogeneity is more important for some measures of health status than for others. It is likely that visiting the doctor increases awareness of chronic conditions, but visiting a doctor probably has a smaller effect on behavioral responses to physical conditions. It is also likely that doctor visits affect knowledge of acute conditions conditions less than knowledge of chronic conditions, since they are usually not diagnosed by doctors. Self-reported health status may be influenced by knowledge of chronic conditions. Using a variety of health status measures may minimize this source of bias.

1980 Health Interview Survey (HIS) who have complete data on the variables used in this analysis[5].

Although the HIS provides detailed information on many aspects of health status and doctor visits for a very large sample, the data are available in a form that makes it difficult to exploit these benefits. I have merged data from several HIS files, creating a unique data set that allows me to estimate the effect of individual characteristics on particular kinds of doctor visits and to control specific health conditions. Comparable data are not available for more recent years. I present evidence below that suggests that the results presented in this paper are likely to hold for later years as well [6].

Doctor Visits. The HIS counts visits to doctors offices, house calls, visits to clinics, and visits to emergency rooms, and even telephone calls to a physician as a doctor visit.[7] These are not equivalent in terms of cost and may not be equivalent in terms of quality. However, while visits to doctors' offices suggest a regular source of care, it is not obvious that such visits produce better

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[5] In 1980 the HIS was administered to 102,629 persons in 39,226 households. I eliminated all respondents for whom complete data were not available. See NCHS (1981) for a complete description of the sampling and data collection procedures.

[6] The HIS public use tapes include several files. What NCHS calls the "person" file includes demographic and health related data for individual respondents. Respondents are asked whether they have visited a doctor in the two weeks prior to the interview. If they have, they are asked a series of questions about the doctor visit. These data are contained in a "doctor visit" file in which each record is a doctor visit. Respondents are also asked if they have a chronic condition or if they have had an acute condition in the previous two weeks. If they have such conditions they are asked a series of questions about these condition. These data are contained in the "condition file" in which each record is a condition. I have merged these three files to create the data set used in this paper. Although more recent HIS data are available, merging these files is time consuming and costly so I have not replicated it for later years.

outcomes than visits to clinics or even emergency rooms. Therefore, I count all doctor visits as equivalent regardless of their location. Below I discuss the effect of income on the location of doctor visits.[8]

Health Status. there is no consensus on how to assess an individual's need for a doctor visit. I control several measures of health status, namely self-reported health status (coded from excellent to poor), the number of days a respondent spent wholly or partly in bed due to illness during the last year, the number of chronic conditions from which the respondent suffers, and the number of acute conditions that the respondent had in the last two weeks.[9] These measures are conceptually quite different from one another. Self-reported health status is a subjective measure while bed days is a behavioral response to physical conditions. Chronic conditions are generally conditions diagnosed by physicians and can vary immensely in severity.

There is one potentially serious problem with the measure of acute conditions. The HIS asks about acute conditions that have occurred in the two weeks prior to the interview, not in the last year. I use acute conditions in the past two weeks as a proxy for acute conditions in the last year, but the correlation between these measures is obviously not perfect.[10] I include this measure because respondents who have not seen

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[7] HIS does not count visits made by doctors to hospitalized patients as a doctor visit.

[8] All values for children less than 15 years old are reported by their parents or another adult in the family.

[9] HIS also asks about limitation of activity due to a chronic condition. This is a frequently used measure of health status. However, it is strongly correlated with number of chronic conditions. Number of chronic conditions is more strongly correlated with frequency of doctor visits than is limitation of activity so I include only number of chronic conditions.

a doctor recently may mistakenly classify symptoms of a chronic condition as an acute condition. (The Appendix includes an explanation of all variables used in this analysis.)

I also control several exogenous characteristics of individuals that might affect doctor visits, including respondent's age, race, sex, living in a rural area and the education of the head of the family. I also estimate the effect of health insurance on the frequency of doctor visits.

I first use OLS to estimate the effect of income on the frequency of doctor visits among those with a doctor visit in the last year. [11] Since the OLS results are likely to be biased for the reasons discussed above, I use an instrumental variable to take account of the endogeneity of income. In the first state of a two-stage-least-squares (TSLS) regression I calculate a predicted value for income by regressing income on all of the exogenous variables in the OLS model. I include the occupation of the head of the household and his or her work status as identifying instruments. In the second stage of the TSLS model I estimate the effect of income on doctor visits substituting this predicted value of income for the measured value.

Income may be more important for the first doctor visit in a year than for subsequent visits. Individuals with no regular source of care

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[10] When I regress number of doctor visits in the past year on first income and then income and acute conditions, the change in the income coefficient is about the same magnitude as the change in the income coefficient when I use logistic regress to regress likelihood of visiting a doctor in the past two weeks on first income then income and acute conditions. This suggests that this source of measurement error may be modest.

[11] I use the sampling weights provided by NCHS in all analyses in this paper. These weights correct for sample selection but do not correct for design effects, consequently, standard errors are likely to be somewhat underestimated.

may have to invest time in finding a doctor who will see them. Poor respondents with no insurance or with only Medicaid may have a difficult time finding a doctor willing to see them. Doctors often charge more for an initial visit than for follow up visits. Among those who are ambivalent about whether they need to see a doctor, those with low income may postpone a visit longer than those with high income. Low income individuals may be less likely to visit a doctor for routine check-ups or initial diagnosis even if they are no less likely to return for treatment of a serious condition. Consequently, I also estimate the effect of income on the likelihood that an individual has seen a doctor at least once in the last year.

The effect of income on frequency of doctor visits is likely to vary by age. Nearly everyone over 65 years old is covered by Medicare, and there are more programs to provide free or reduced cost care for young children (for instance, through the federal Maternal and Child Health program and local public health departments) than for nonelderly adults. The medical consequences of health status measures may also vary by age. Furthermore, since children's health is less likely than adults' health to affect family income, income is more likely to be exogenous among children than among adults.[12] Consequently, I estimate the effect of income on frequency of doctor visits separately for young children (under 6 years old), older children (6 to 19 years), nonelderly adults (19 to 65 years), and the elderly (over 65 years old).

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[12] In some cases children's health probably does affect parent's income since if children are very ill one parent may have to forgo work away from home to take care of the child. In less extreme cases a parent may have to take a lower paying job with more flexible schedule or closer to home to meet the child's health needs.

RESULTS

Table 2 shows means and standard deviations for each variable used in this analysis by age. In 1980 among individuals who had visited a doctor in the last year, the elderly had the most doctor visits and older children had the fewest. Because of Medicare the elderly are nearly all covered by health insurance. But, over 15 percent of young children had no health insurance. Not surprisingly, the elderly are in worse health than the nonelderly. Means and standard deviations are nearly identical for the sample who have visited a doctor in the previous year.

Frequency of Doctor Visits in the Last Year. Table 3 shows the effect of income on the frequency of doctor visits during the last year among respondents who have contacted a doctor at least once during that time by age groups. These estimates control four measures of health status, health insurance coverage and exogenous characteristics of individuals. I also estimated this model without controlling health insurance on the grounds that health insurance is endogenous with respect to income. Since there are no substantive changes in the results when I control insurance, I present the results that include insurance since its coefficient is of interest.

The results in Table 3 suggest that income has a small positive and statistically significant effect on the frequency of doctor visits among young children. This result suggests that reducing income from the mean to half the mean reduces the frequency of doctor visits by 4.7 percent among those in this age group. The effect of income is very small and statistically insignificant among older children. Low income adults visit the doctor more often than affluent adults, but this difference is

not statistically significant.

Permanent income might be expected to have a greater effect than current income on frequency of doctor visit. Since education is at least in part a proxy for permanent income, a large education effect would lend credibility to this notion. However, the coefficients for education levels are small and mostly statistically insignificant. If education was mainly a proxy for permanent income, we would expect its effect increase monotonically, but this is the case only among nonelderly adults. Education may reflect differences in knowledge of disease, differences in experiences with doctors or other factors unrelated to income. This seem especially likely since at least among young children and nonelderly adults, high school education increases the frequency of doctor visits, but additional education provides little additional increase.

Racial differences in the frequently of doctor visits could also suggest that permanent income is more important than current income to the frequency of doctor visits. While blacks of all ages visit the doctor less frequently than whites, this coefficient is statistically significant only among older children. The results for older children are troubling, but they do not suggest that either long term income or race per se has a consistent effect on frequency of doctor visits.

Children who live in big families visit the doctor less often than children who live in small families with the same income. These results imply that when family size doubles income must nearly triple for young children to maintain the same number of doctor visits. Thus, the income-to-needs ratio or some other measure of income adjusted for family size would have a larger positive effect on frequency of doctor

visits among children than unadjusted income. However, the implied family size adjustment is so large that the difference in frequency of doctor visits between large and small families is unlikely to be entirely due to income constraint.

While family size has a substantial effect on how often children see a doctor, it has a small and statistically insignificant effect on how often nonelderly adults visit a doctor. This too suggests that income constraint is not the entire explanation for the fact that children from big families see the doctor less often than children from small families. Parents presumably learn to evaluate the need for medical care from the experiences of each child so younger children see the doctor less often than first children. There may also be economies of scale in doctor visits, such that parents get instructions on how to handle conditions common to several children during a visit for any one child. This does not, however, explain why the elderly living in large families visit the doctor less often than those living in small families. The elderly who live alone may require more doctor visits than those who live with a spouse or other family members who can provide basic care-giving services such as monitoring medications and preparing nutritious meals. The elderly who live with other family members may also be less likely to visit the doctor for social and emotional support.

Among all age groups respondents living in rural areas visit the doctor less often than respondents living in urban areas, although this effect is not statistically significant among older children or the elderly. This result is consistent with other research suggesting that travel time is a significant constraint on access to medical care (Acton

1975).

Since nearly all elderly individuals are covered by Medicaid, it is not surprising that the estimated effect of health insurance is statistically insignificant. However, it is surprising that health insurance has only a small and statistically insignificant effect on the frequency of doctor visits among both young and older children. In fact, among children, living in a rural area decreases the frequency of doctor visits more than having no health insurance. Nonelderly adults who are insured average .419 more doctor visits than those with the same income and health status who are not insured.

The small effect of income on use of physician services could reflect the fact that many low income families are covered by Medicaid and most high income families are covered by private insurance.[13] If health insurance tends to equalize the out-of-pocket cost of a doctor visit, we would not expect income to have a large effect on frequency of doctor visits among those who are insured, but we would expect it to affect frequency of doctor visits among those who are not insured. To test this hypothesis, I re-estimated the equations in Table 3 including a variable for the interaction of income and health insurance. This interaction term was not statistically significant for any age group. Thus, the effect of income is not significantly different among insured and uninsured individuals.

Income would have a weak effect on doctor visits among the uninsured if they were in much better health than the insured and

[13] The small income effect could also mean that income has a nonlinear relationship with frequency of doctor visits. However, when I included a quadratic term in the equations shown in Table 3, it was statistically insignificant for all age groups.

consequently seldom visited the doctor. But uninsured respondents are sicker than insured respondents (Aday and Andersen 1984; Davis and Rowland 1983; Hadley and Steinberg 1991). For instance, among respondents aged 6 to 19 years, those who are insured average .Ø74 chronic conditions, while those who are uninsured average .273 chronic conditions. About 5 percent of insured respondents, but 27.3 percent of uninsured respondents, have a limitation of activity due to a chronic condition. Nonetheless, among all age groups, the mean number of doctor visits among the uninsured (3.22) is slightly less than the mean number of doctor visits among the insured (3.91). Consequently, the uninsured visit the doctor less often than those with the same health status who are insured. But income is not an important determinant of frequency of doctor visits among either those with or those without insurance [14].

There are two hypothesis that suggest that the effect of income is differs by health status. The first is that healthy low income individuals visit the doctor as often as healthy high income individuals since neither visits the doctor often. But when low income individuals get sick they postpone seeing a doctor for a longer time than affluent individuals. In this case income would have a greater effect among sick than among healthy individuals (Richardson 197Ø). The second hypothesis is that once people are sick, income has little effect on frequency of doctor visits because nearly everyone will find a way to see a doctor if

[14] Insurance affects the frequency of doctor visits for specific conditions. For instance, among respondents aged 6 to 19, those with insurance see the doctor significantly more than those with no insurance for chronic mental conditions, chronic respiratory conditions and chronic circulatory conditions. But those who are insured see the doctor significantly less than those who are uninsured for acute conditions and chronic genitourinary conditions.

a doctor says they should. But among healthy individuals the poor visit the doctor less often than the rich, especially for preventive and elective medical procedures (Davis et al. 1981).

I tested these hypotheses by including the interaction of income and self-reported health status in the equations shown in Table 3. The interaction term was not statistically significant for any age group suggesting that the effect of income on frequency of doctor visits is not markedly different among the sick than among the healthy.

TSLS Estimates As noted above the OLS results are likely to be biased. Table 4 shows the results of the two-stage-least-square regressions. Income has a small and statistically insignificant effect on frequency of doctor visits among all age groups except nonelderly adults. Low income nonelderly adults visit the doctor more often than high income nonelderly adults.[15]

Both the OLS and TSLS models show that income has a very weak and statistically insignificant effect on the frequency of doctor visits. In addition both show that health insurance has no statistically significant effect on the frequency of doctor visits among children. Both models yielded mixed results about the effect of race and education depending on the age of the individual. The effect of these broader measures of socioeconomic status are especially weak and unreliable among the elderly and young children.

Quality of Doctor Visits. A plausible hypothesis about why the poor visit the doctor as often as the rich is that the poor receive

[15] The difference among children between the income coefficients in the OLS and TSLS models is surprising. This could be because children's health affects adults' income more than expected but it could also be due to random measurement errors.

lower quality medical care. If this were the case, the poor might pay less for a doctor visit but each doctor visit would be less beneficial which could in turn lead to additional visits. The HIS includes no direct measures of the quality of a doctor visit, but it does include two indirect measures. The first is the location of a doctor visit and the second is the type of doctor visited.

There is no empirical evidence to suggest that patients who visit clinics or emergency rooms have worse outcomes than those who visit a doctor's office. Nonetheless most health care workers believe that clinics and emergency room provide worse care because they provide less continuity of care. Visits to clinics are presumably cheaper than visits to private doctors' offices, and although the cost of emergency room visits is high, the out-of-pocket cost to the patient may be low if the visit is to a public hospital. Consequently, most analysts assume that low income individuals are more likely than high income individuals to use the emergency room as a source of primary care (e.g. Kleinman et al. 1981; Friedman 1991; Maurer 1991) and to visit clinics rather than doctors' offices.

Table 5 shows the location of doctor visits by income and age for those who visited a doctor in the two weeks prior to the HIS interview. As expected low income respondents are less likely than high income respondents to visit a doctor's office and more likely to visit a clinic. This is not surprising since public policy has explicitly favored clinics over private doctors as a source of care for the poor. However, it is somewhat surprising that this pattern holds for the elderly since, they nearly all have Medicare and Medicare co-payments were small in 1980. This suggests that the low income families tendency

to use a clinic rather than a private physician may not be entirely explained by income constraints. Table 5 also shows that low income children are more likely than high income children to visit an emergency room. Low income adults are also more likely than high income adults to visit an emergency room, but these differences are small and not monotonic.

A second indirect measure of the quality of doctor visits is whether a respondent visits a specialist or general practitioner. Table 5 shows the percent of doctor visits in the two weeks prior to the HIS interview that were to general practitioners or internists by age and income groups. It also shows the percent of visits to pediatricians among children. Low income children are much less likely than high income children to visit a specialist. Most of this difference is because low income children are less likely to visit a pediatrician. [16]

Since low income respondents are sicker than high income respondents, they may require emergency treatment more often than high income respondents. They may also require the services of a specialist more often. Using logistic regression I estimated the effect of income on the likelihood that a respondent who visited a doctor in the two weeks prior to the HIS interview visited an emergency room. I control the same exogenous characteristics of respondents that I controlled in Table 3. I also control the same health status measures except that I substitute the number of bed days in the two weeks prior to the HIS

[16] Low income parents of young children are much less likely than high income parents to know what kind of a doctor their child had seen. If this were because they took their children to a clinic or an emergency room where they had never seen the doctor before we would expect the same pattern to occur among older children but it does not. This may mean that parents of young children are themselves young and inexperienced.

interview for the number of bed days in the previous year.

These results, presented in Table 6, show that when one controls health status low income individuals are more likely than high income individuals with the same measured health status to have visited an emergency room, but the difference is small for all age groups. Although insured respondents are less likely than uninsured respondents to visit an emergency room, this difference is also small and statistically insignificant except among the elderly, nearly all of whom have insurance.

Among all age groups individuals in families whose head has had at least some college are less likely to visit an emergency room than those in families whose head has less education, but this is statistically significant only among young children and nonelderly adults. Among nonelderly adults blacks are more likely than nonblacks with the same income and measured health status to visit the emergency room.

Table 6 shows that low income children are less likely than high income children to visit a specialist. The results imply that reducing income from the mean to half the mean income (and evaluating the other variables at their mean) decreases a young child's chance of seeing a specialist by 11.5 percent. The effect of income on adults' chances of seeing a specialist is small and not statistically significant.

Health insurance has only a small and statistically insignificant effect on both children's and adults' chances of seeing a specialist. The difference between the liklihood that a black and a nonblack will visit a specialist is small and statistically insignificant for all age groups. Individuals in families with a college educated head are more

likely to visit a specialist than those living in families whose head has less education.

Taken together these results suggest that once we take into account health status, low income individuals are no more likely than high income individuals to visit an emergency room. Low income children are less likely than high income children to visit a specialist, mainly a pediatrician, although these differences are small and they may not effect health outcomes.

Likelihood of Visiting a Doctor

The results presented so far are for individuals who have had at least one doctor visit in the last year. As I noted above, the first visit after not having seen a doctor for a time may be more costly than a follow-up visit. These costs may include direct expenditures but they may also include nonmonetary costs that have a greater impact on low income individuals.

Table 7 shows two-stage logistic regression estimates of individual's chances of seeing a doctor at least once in the last year. Low income children are more likely than high income children to have visited a doctor in the last year. However, these differences are small. Low income nonelderly adults are less likely than high income nonelderly adults to have visited a doctor in the previous year.

Children and nonelderly adults who live in families whose heads have a lot of education are more likely than those who live with heads with less education to have visited a doctor in previous year. Black children and black elderly adults are less likely than nonblack children and nonblack elderly adults to have visited a doctor in the previous year. But, among nonelderly adults blacks are more likely than

nonblacks to have visited the doctor in the last year.

Individuals with health insurance are more likely than those without insurance to have visited a doctor within the last year regardless of their age. These results imply that (evaluating all of the variables at their means) insured nonelderly adults are about 13 percent more likely than uninsured nonelderly adults to have visited a doctor in the last year.

Changes Since 1980

Since 1980, health care costs have continued to increase and in 1982 OBRA reduced the number of families eligible for Medicaid. Both of these factors could lead to greater income differences in the use of medical care. NCHS changed the HIS considerably in 1982, so it is impossible to compare data collected after 1982 with the data used in this paper. However, published data from the HIS and data from the Survey of Income and Program Participation (SIPP) suggest that these results for 1980 are likely to hold for more recent years.

Table 8 shows that HIS data yield no clear trend in the relationship between income and number of physician visits during previous year between 1982 and 1989. Nor is there any clear trend in the distribution of acute or chronic condition or limitation of activity due to chronic conditions over income groups. If neither the correlation between income and doctor visits nor the correlation between income and health status has changed appreciably, then it is unlikely that the effect of income on number of doctor visits will have changed once we control health status.

As further evidence that the estimates from the 1980 HIS are likely to hold, Table 9 shows estimates of the effect of income and family size

on the number of doctor visits in the previous year estimated from 1984 SIPP data and 1980 HIS data. The estimated effect of both income and family size is quite similar for both data sets. This is especially interesting since the SIPP income measure is much better than the 1980 HIS income measure. SIPP does not, however, include measures of health status equivalent to those in the HIS. Unless the correlation between income and health status changed between 1980 and 1984, it is unlikely that the effect of income on frequency of doctor visits controlling health status changed [17].

CONCLUSIONS

These results do not imply that everyone in the US sees the doctor as often as they need to or as often as they would like to. Most health care providers believe that children less than 5 years old and adults over 70 ought to visit the doctor at least once a year. However, 11 percent of HIS respondents less than five years old and 20 percent of those over 70 years old did not see the doctor in the previous year. Nor do these results suggest that there are no inequities in medical services. Recent research suggests that the types of prenatal services offered to pregnant women does vary by income (Rosenzweig and Schultz 1991).

These results do suggest, however, that differences in income play a minor role in explaining why some people who need medical care get it while others do not. They also suggest that income plays a minor role

[17] Freeman et al. (1987) report that the number of people who visited a physician in the previous year decreased between 1982 and 1986 and the decrease was the greatest among the poor. Their results come from two telephone surveys that differed in several important ways and differ from the HIS survey. These differences make trend estimates quite unreliable.

in explaining whether doctor visits are in emergency rooms or not. They also suggest that health insurance plays a minor role in explaining why some children visit the doctor and other do not and why some go to the emergency room and others do not. These results are consistent with recent research that finds that taking into account health status, low income individuals consume no less than their share of total medical care expenditures in the U.S. (Gottschalk and Wolfe (1991).

These results yield mixed conclusions about the effect of the education of the family head and the race of the respondent on both frequency of doctor visits and likelihood of visiting a doctor in the previous year depending on the age of the individual. In general both of these background characteristics have greater effects among older children and nonelderly adults than among the very young or old.

According to one estimate, in 1982 physicians provided $9.2 billion in bad debt and charity care (Friedman 1991). Even if this is a substantial over-estimate of the value of services provided, it would be surprising to find that it had no impact on the distribution of medical services. In addition in 1980 there were $87 billion in public expenditures for medical care not counting expenditures for construction, research or military or defense department expenditures. Much of this goes to pay for services for children and the elderly. If we believe the HIS, which probably provides the best overall data, inequalities that remain in the US health care system may be related to ignorance, cultural differences, distance to services and other such factors, but they are only weakly related to income.

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APPENDIX
VARIABLE DEFINITIONS

Doctor Visits - consultation with a doctor, in person or by telephone.

Family Income - Total cash income of all persons related by blood, marriage or adoption living in a housing unit, coded in 11 categories ranging from less than $1,000 to greater than $25,000 in 1980 dollars. Categories increase by $1,000 to $6,999 then increase from $7,000 to $9,999, $10,000 to 14,999, 15,000 to 24,999 and greater than $25,000. The categories were recoded to their midpoints.

Family Size - number of persons related by blood, marriage or adoption living in a single housing unit.

Black - a dummy variable coded as 1 if the respondent is black and zero otherwise.

Rural - a dummy variable equal to 1 if the person does not live in an SMSA.

Education of the Head of the Family - coded as three dummy variables. The first is equal to 1 if the head of the family completed 12 years of school. The second is coded 1 if the head of the family completed more than 12 but less than 16 years of school. The third is coded as 1 if the head of the family complete at least 16 years of school. In all cases the omitted category is less than a high school education.

Health - respondents' self-reported health status coded as 1 - excellent; 2 - good; 3 - fair; 4 - poor.

Bed Disability Days in the Last Year - the total number of days in which a persons stays in bed for all or most of the day due to illness.

Number of Acute Conditions - number of the following conditions: acute digestive condition, acute respiratory condition, acute circulatory condition, acute mental disorder, acute endocrine, metabolic or nutritional condition, acute conditions of the eye or ear, acute infection or parasitic condition, acute conditions of the skin, acute musculoskeletal conditions, acute conditions of the genitourinary system, injury, childhood disease, common cold and other acute symptoms and ill-defined conditions. Acute conditions must have been present during the two weeks prior the HIS interview and must have had their onset within the 3 months prior to the interview.

Number of Chronic Conditions - number of the following conditions: chronic digestive condition, chronic respiratory condition, chronic circulatory condition, chronic mental disorder, chronic endocrine, metabolic or nutritional condition, chronic conditions of the eye or ear, chronic infection or parasitic condition, chronic conditions of the skin, chronic musculoskeletal conditions, chronic conditions of the genitourinary system, chronic injury, neoplasms, congenital diseases, hypertension and other chronic symptoms and ill-defined conditions.

Health Insurance - a dummy variable equal to 1 if the respondent reports having any health insurance regardless of whether it is public or private insurance.

Occupation of the Head of the Family - coded as ten dummy variables as follows: 1 - professional, technical and kindred workers, 2 - managers and administrators (except farm), 3 - sales workers, 4 - clerical and offices workers, 5 - carpenter, craftsmen, mechanics, repairmen, 6 - operatives (except transport), 7 - transport equipment operatives, laborers (except farm), 8 - farm labors and foremen, 9 - cleaning, food service, health and personal services, protective services, household workers, 10 - no reported occupation.

Work Status - coded as two dummy variables, the first is coded 1 if the head of the family reports that his or her main activity is work and zero otherwise. The second is coded 1 if the head of the family is retired and zero otherwise.

Table 1
Doctor Visits and Health Status
by Income 1980 (Age Adjusted)

	All	Family Income				
		Under $5,000	$5,000-$9,999	$10,000-$14,999	$15,000-$24,999	Over 25,000+
Mean Number of Doctor Visits	4.9	6.4	5.3	4.9	4.9	4.8
Percent with Limitation of Activity Due To a Chronic Condition	18.4	31.9	24.5	18.5	15.3	13.2
Number of Acute Conditions Per 100 Persons Per Year	181.8	240.3	194.9	189.5	175.9	166.3
Number of Bed Disability Days Per Person Per Year	7.5	14.6	9.7	7.4	6.0	5.4
Percent in Fair or Poor Health	15.7	30.5	23.2	16.4	11.7	8.5

Table 1

Source: US Department of Health and Human Services, NCHS, Current Estimates from the National Health Interview Survey, United States, Vital and Health Statistics. Series 10, Number 139 . Washington, GPO.

Table 2
Variable Means and Standard Deviations (in Parentheses)

Variable	Age Group			
	Less Than 6 Years	6 to 18 Years	19 to 64 Years	Greater than 65 Years
Number of Doctor Visits in Last Year (Among Those With at least 1 Visit)	4.771 (7.822)	3.440 (5.930)	4.922 (9.460)	6.179 10.202)
Proportion With At Least 1 Visit	.885	.755	.738	.795
Log Family Income	9.559 (.817)	9.712 (.815)	9.723 (.792)	9.105 (.785)
Log Family Size	1.429 (.313)	1.479 (.378)	1.027 (.542)	.571 (.448)
Age	2.926 (2.009)	12.770 (3.447)	38.123 (13.219)	73.018 (6.424)
Female	.487	.491	.569	.600
Black	.147	.137	.098	.079
High School Education	.375	.374	.355	.235
Some College	.168	.152	.175	.085
College Education	.196	.172	.206	.104
Rural	.326	.332	.303	.356
Insured	.824	.848	.855	.985
Self-reported Health Status	1.422 (.594)	1.429 (.592)	1.675 (.771)	2.101 (.914)
Number of Chronic Conditions	.065 (.279)	.074 (.306)	.255 (.706)	.953 (1.263)
Number of Acute Conditions	.234 (.568)	.154 (.440)	.156 (.445)	.108 (.382)
Number of Bed Days in the Previous Year	4.276 (11.085)	3.985 (11.235)	6.877 (23.009)	13.013 (40.947)
Number of Cases	9,361	18,285	53,680	9,533

Table 3
OLS Estimates of the Effect of Income on
Number of Doctor Visits in the Last Year by Respondent's Age

	Age of Respondent			
	Lt 6	6 - 18	19 - 64	Gt 65
Log Income	.325	.008	-.130	-.182
	(.127)	(.068)	(.068)	(.195)
Log Family Size	-.942	-.774	.125	-.676
	(.295)	(.132)	(.090)	(.311)
Age	-.370	-.021	-.031	-.026
	(.051)	(.012)	(.004)	(.018)
Female	-.268	-.061	.976	.058
	(.173)	(.091)	(.090)	(.234)
High School	.539	.201	.312	.128
	(.235)	(.121)	(.121)	(.287)
Some College	.307	.251	.377	1.106
	(.291)	(.153)	(.145)	(.420)
College Graduate	.345	.300	.484	.500
	(.295)	(.154)	(.145)	(.408)
Black	-.037	-.581	-.078	.857
	(.261)	(.146)	(.151)	(.431)
Rural	-.611	-.125	-.409	-.291
	(.188)	(.100)	(.099)	(.239)
Health	1.495	.878	1.189	1.070
	(.157)	(.081)	(.067)	(.145)
Number Acute Conditions	.838	.375	.731	.790
	(.147)	(.095)	(.100)	(.286)
Number Chronic Conditions	4.860	4.992	1.896	1.008
	(.315)	(.137)	(.066)	(.097)
Number of Bed Days	.123	.084	.084	.041
	(.008)	(.004)	(.002)	(.003)
Insured	.351	.082	.419	.714
	(.247)	(.139)	(.139)	1.057)
Intercept	.346	2.382	2.652	5.044
	(1.187)	(.648)	(.631)	(2.472)
R^2	.127	.182	.138	.091

Table 4
TSLS Estimates of the Effect of Income on Number of Doctor Visits in the Last Year by Respondent's Age

	Age of Respondent			
	Lt 6	6 - 18	19 - 64	Gt 65
Log Income*	.156	-.254	-1.010	-.629
	(.303)	(.167)	(.196)	(1.170)
Log Family Size	-.843	-.605	.582	-.278
	(.324)	(.163)	(.132)	(1.071)
Age	-.368	-.018	-.021	-.029
	(.051)	(.012)	(.004)	(.020)
Female	-.279	.064	.962	.057
	(.173)	(.092)	(.090)	(.235)
High School	.606	.303	.586	.251
	(.265)	(.135)	(.134)	(.426)
Some College	.407	.398	.685	1.300
	(.341)	(.176)	(.158)	(.654)
College Graduate	.486	.519	1.042	.836
	(.396)	(.201)	(.186)	(.958)
Black	-.113	-.711	-.410	.681
	(.292)	(.165)	(.166)	(.618)
Rural	-.630	-.155	-.557	-.350
	(.191)	(.102)	(.104)	(.283)
Health	1.475	.844	1.060	1.023
	(.160)	(.084)	(.072)	(.189)
Number of Acute Conditions	.837	.372	.732	.799
	(.147)	(.095)	(.100)	(.286)
Number of Chronic Conditions	4.892	4.991	1.875	1.010
	(.315)	(.137)	(.066)	(.097)
Number of Bed Days	.123	.084	.083	.041
	(.008)	(.004)	(.002)	(.003)
Insured	.464	.119	.463	.650
	(.244)	(.139)	(.137)	(1.054)
Intercept	1.692	4.586	10.373	9.280
	(2.637)	(1.445)	(1.734)	11.047)
R^2	.127	.182	.138	.091

Table 5
Percent of Doctor Visits in Various Locations
and with Types of Doctors By Respondents' Age and Income

	Location of Visit				Type of Doctor		
	Doctor's Office	Phone	Clinic	Emergency Room	GP or Internist	Pedia-tritian	Number of Cases
Less than 6 Years Old							
Less than $5,000	51.8	9.9	16.5	11.6	44.3	39.3	178
$5,000 -9,999	57.7	12.6	10.5	10.3	53.4	35.0	240
$10,000- 14,999	66.2	15.1	8.7	6.4	45.9	40.0	375
$15,000-24,999	68.8	18.0	4.4	4.3	36.5	52.7	556
Greater than $25,000	68.0	21.8	2.0	2.6	23.5	65.7	428
6 to 17 Years Old							
Less than $5,000	53.5	5.9	10.2	11.0	72.9	14.8	217
$5,000 -9,999	57.6	11.1	7.3	8.9	61.8	12.0	265
$10,000- 14,999	65.8	14.5	7.6	7.6	62.9	19.4	282
$15,000-24,999	72.6	9.7	5.8	6.8	55.7	23.2	527
Greater than $25,000	75.0	11.1	2.6	5.7	49.2	25.8	738
18 to 64 Years Old							
Less than $5,000	61.6	7.6	11.9	5.2	66.1	na	752
$5,000 -9,999	67.6	7.6	10.5	6.2	65.1	na	996
$10,000- 14,999	71.3	9.5	7.3	5.7	60.2	na	1145
$15,000-24,999	73.3	10.1	7.0	3.5	61.2	na	1999
Greater than $25,000	74.1	11.1	5.2	4.3	60.0	na	2342
Greater than 64 Years Old							
Less than $5,000	77.0	8.0	9.8	1.8	75.8	na	479
$5,000 -9,999	79.7	6.6	8.3	1.2	76.3	na	603
$10,000- 14,999	81.5	7.5	6.3	1.0	72.1	na	336
$15,000-24,999	77.5	7.5	6.2	.4	70.4	na	248
Greater than $25,000	82.8	5.0	4.9	1.5	71.5	na	219

Table 6
Logistic Regression Estimates of the Effect of Income on the Chance that a Doctor Visit will be in an Emergency Room or with a Non-Specialist

	Emergency Room				Non-Specialist			
	Age of Respondent				Age of Respondent			
	Lt 6	6 - 18	19 - 64	Gt 65	Lt 6	6 - 18	19 - 64	Gt 65
Log Income	-.266	-.202	-.098	-.080	-.300	-.332	-.004	.124
	(.136)	(.113)	(.077)	(.311)	(.084)	(.074)	(.039)	(.096)
	-.014*	-.013	-.004	-.001	-.071	-.078	-.001	.022
Log Family Size	-.211	.727	.209	.135	.862	.235	-.020	-.040
	(.338)	(.226)	(.110)	(.498)	(.191)	(.141)	(.053)	(.157)
	-.011	.046	.007	.001	.204	.057	-.005	-.007
Age	.115	.038	-.028	-.006	.070	.077	.019	.007
	(.059)	(.022)	(.005)	(.032)	(.032)	(.013)	(.002)	(.009)
	.006	.002	-.001	-.000	.017	.019	.004	.001
Female	.291	-.575	-.742	.529	-.044	-.137	-.295	.084
	(.205)	(.170)	(.109)	(.444)	(.109)	(.095)	(.054)	(.118)
	.015	-.037	-.030	.005	-.010	-.033	-.066	.015
High School	-.107	-.167	-.188	-.461	.073	-.236	-.033	-.296
	(.251)	(.212)	(.136)	(.512)	(.151)	(.130)	(.070)	(.142)
	-.005	-.010	-.007	-.004	.017	-.057	-.008	-.054
Some College	-.715	-.089	-.455	-1.329	-.255	-.302	-.001	-.447
	(.374)	(.275)	(.174)	(1.130)	(.185)	(.162)	(.085)	(.210)
	-.030	-.006	-.014	-.008	-.059	-.074	-.003	-.086
College Graduate	-.880	-.330	-.630	-1.710	-.619	-.346	-.241	-.546
	(.410)	(.299)	(.189)	(1.140)	(.198)	(.163)	(.084)	(.194)
	-.036	-.019	-.019	-.010	-.138	-.085	-.056	-.107
Black	.280	.185	.496	-.218	-.117	-.048	.143	-.026
	(.287)	(.249)	(.151)	(.683)	(.178)	(.164)	(.087)	(.210)
	.016	.012	.021	-.002	-.027	-.012	.032	-.005
Rural	.425	-.267	-.047	.051	.795	.676	.306	.512
	(.211)	(.185)	(.121)	(.406)	(.117)	(.107)	(.059)	(.126)
	.023	-.016	-.002	.001	.191	.159	.068	.086
Health	.052	.158	-.064	-.182	.067	.091	.089	.049
	(.149)	(.119)	(.071)	(.232)	(.082)	(.070)	(.034)	(.067)
	.003	.010	-.002	-.002	.157	.022	.020	.008
Bed Days	-.008	.027	.067	.062	.025	-.003	-.023	-.027
	(.050)	(.037)	(.017)	(.047)	(.029)	(.027)	(.011)	(.018)
	-.000	.002	.002	.001	.006	-.001	-.005	-.005

(Table 6 continued)

Number of Chronic	-.458	-.204	-.193	-.016	-.168	-.043	.213	.093
	(.302)	(.173)	(.077)	(.152)	(.126)	(.086)	(.032)	(.045)
	.023	-.013	-.007	-.000	-.040	-.010	.048	.016
Number of Acute	.595	.810	.870	.869	.108	.041	.580	.061
	(.118)	(.120)	(.070)	(.241)	(.072)	(.078)	(.045)	(.104)
	.030	.051	.031	.009	.026	.010	.132	.011
Insured	-.381	-.340	-.079	-2.792	-.014	.155	.028	-.438
	(.232)	(.216)	(.156)	(.739)	(.159)	(.142)	(.083)	(.615)
	-.015	-.024	-.003	-.130	-.004	.038	.006	-.068
Intercept	.417	-2.151	-.844	-.510	.850	1.945	.547	-.182
	(.146)	(1.089)	(.708)	(3.510)	(.770)	(.695)	(.365)	(1.203)

* Partial derivatives are shown under the standard error which appears in parentheses.

Table 7
Two-Stage Logistic Regression Estimates of the Likelihood of Contacting A Doctor in a Year by Respondent's Age

	Age of Respondent							
	Lt 6		6 - 18		19 - 64		Gt 65	
	Beta	Partial	Beta	Partial	Beta	Partial	Beta	Partial
Log Income*	-.244 (.122)	-.Ø18	-.259 (.Ø57)	-.Ø48	.198 (.Ø16)	.Ø33	.189 (.255)	.Ø27
Log Family Size	- .838 (.122)	-.Ø6Ø	-.522 (.Ø57)	-.1ØØ	-.242 (.Ø21)	-.Ø4Ø	-.181 (.232)	-.Ø25
Age	-.181 (.Ø22)	-.Ø13	-.Ø19 (.ØØ4)	-.ØØ4	-.Ø12 (.ØØØ)	-.ØØ2	.ØØ5 (.ØØ5)	.ØØ1
Female	.Ø65 (.Ø7Ø)	.ØØ5	.Ø35 (.Ø31)	.Ø35	.724 (.Ø21)	.121	.282 (.Ø51)	.Ø4Ø
High School	.471 (.Ø99)	.Ø33	.312 (.Ø44)	.Ø58	.19Ø (.Ø27)	.Ø31	.118 (.Ø93)	.Ø16
Some College	.668 (.137)	.Ø4Ø	.461 (.Ø59)	.Ø8Ø	.3Ø2 (.Ø34)	.Ø47	.238 (.145)	.Ø31
College Graduate	.86Ø (.164)	.Ø51	.777 (.Ø69)	.128	.373 (.Ø34)	.Ø58	.377 (.21Ø)	.Ø48
Black	-.188 (.1Ø8)	-.Ø14	-.327 (.Ø52)	-.Ø65	.2Ø3 (.Ø37)	.Ø32	-.27Ø (.134)	.Ø41
Rural	-.221 (.Ø75)	-.Ø17	-.139 (.Ø34)	-.Ø27	-.ØØ3 (.Ø23)	-.ØØ1	-.136 (.Ø62)	-.Ø19
Health	.Ø93 (.Ø69)	.ØØ7	.133 (.Ø31)	.Ø25	.226 (.Ø17)	.Ø37	.262 (.Ø43)	.Ø37
Number Acute Conditions	.956 (.122)	.Ø7Ø	.551 (.Ø48)	.1Ø4	.725 (.Ø38)	.12Ø	.9ØØ (.113)	.124
Number Chronic Conditions	1.338 (.3Ø5)	.1ØØ	1.25Ø (.1Ø1)	.237	.779 (.Ø31)	.129	.653 (.Ø35)	.Ø92
Number of Bed Days	.Ø61 (.Ø11)	.ØØ4	.Ø99 (.ØØ5)	.Ø19	.Ø45 (.ØØ2)	.Ø8	.ØØ4 (.ØØ1)	.ØØ1
Insured	.69Ø (.Ø82)	.Ø6Ø	.382 (.Ø43)	.Ø77	.528 (.Ø3Ø)	.Ø97	1.Ø22 .162)	.19Ø
Intercept	4.777 (.Ø72)		3.21Ø (.496)		1.488 (.148)		2.911 (2.41Ø)	

Table 8
Number of Doctor Visits in the Last Year and
Measures of Health Status by Income, 1982-1989[1]

Income [2]	Year							
	1982	1983	1984	1985	1986	1987	1988	1989
Number of Doctor Visits								
<$10,000	6.2	6.1	6.1	6.2	6.8	7.1	6.6	6.8
$10,000-19,999	4.9	4.9	5.0	5.3	5.5	5.6	5.6	5.8
$20,000-34,999	5.0	4.8	4.9	5.2	5.2	5.1	5.2	5.3
>$35,000	5.0	5.1	5.0	5.2	5.1	5.1	5.3	5.2
Number of Bed Disability Days								
<$10,000	11.2	12.2	11.6	11.2	11.5	11.4	12.2	12.2
$10,000-19,999	6.3	6.7	6.7	7.0	7.7	7.5	7.9	8.2
$20,000-34,999	4.4	4.6	4.7	4.6	5.2	4.9	4.9	5.2
>$35,000	3.9	4.1	4.4	3.9	4.3	3.9	3.8	4.0
Percent with Fair or Poor Health								
<$10,000	23.8	22.6	21.8	21.8	21.6	21.9	22.1	22.6
$10,000-19,999	12.6	12.6	13.1	12.9	13.7	13.7	14.3	14.3
$20,000-34,999	6.4	6.1	6.9	6.9	6.6	6.7	7.4	7.3
>$35,000	3.8	3.9	4.0	3.9	3.6	4.0	4.0	3.8
Percent with Chronic Limitation								
<$10,000	na	24.9	24.0	25.7	25.3	25.3	26.0	26.8
$10,000-19,999	na	16.1	15.3	16.3	17.3	17.0	18.1	19.4
$20,000-34,999	na	9.8	10.3	10.8	10.4	10.7	11.5	11.9
>$35,000	na	8.5	8.0	8.1	8.6	7.8	7.9	8.2
Number of Acute Conditions per 100 Respondents								
<$10,000	na	194.8	187.6	176.0	200.2	198.2	199.2	208.1
$10,000-19,999	na	168.6	181.0	186.6	174.5	171.3	166.4	166.3
$20,000-34,999	na	187.0	179.8	178.4	207.7	177.6	174.5	197.0
>$35,000	na	168.9	189.0	175.2	195.7	173.9	184.7	183.9

Source: US Department of Health and Human Services, NCHS, Current Estimates from the National Health Interview Survey, United States, Vital and Health Statistics. Series 10 (various year). Washington, GPO.

[1] These numbers are not adjusted for age. However, published data by age and income show no marked differences in these trends within age groups.

[2] NCHS does not adjust its published income categories to reflect inflation. Following are the income categories adjusted to 1980 and 1989 real dollars using the PCE fixed-weight price index deflator.

1982	1980	1989
<$10,000	<$11,500	<$7,590
$10,000-19,999	$11,500-22,999	$7,590-11,521
$20,000-34,999	$23,000-40,249	$11,523-26,564
>$34,000	>$40,250	>$26,565

Table 9
The Effect of Income and Family Size
on The Number of Doctor Visits in the Previous Year,
Among Adults Over 18 Years Old

	Regression Coefficient	
	SIPP	HIS
Log Income	-.572	-.743
	.Ø61	(.Ø44)
Log Family Size	-.448	-.389
	.Ø96	(.Ø71)
Intercept	8.363	1Ø.888
	(.611)	(1.ØØ2)
R^2	.Ø17	.ØØ3
Number of Cases	28,653	