

The Self-Employed Are Less Likely To Have
Health Insurance Than Wage-Earners. So What?

by

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ABSTRACT

There is considerable public policy concern over the relatively low rates of health insurance coverage among the self-employed in the United States. Presumably, the reason for the concern is that their low rates of insurance lead to worse health outcomes. We use data from the Medical Expenditure Panel Survey conducted in 1996 to analyze how the self-employed and wage-earners differ with respect to insurance coverage and health status. Using a variety of ways to measure health status, we find that the relative lack of health insurance among the self-employed does not affect their health. For virtually every subjective and objective measure of health status, the self-employed and wage earners are statistically indistinguishable from each other. Further, we present some evidence that this phenomenon is not due to the fact that individuals who select into self-employment are healthier than wage-earners, *ceteris paribus*. Thus, the public policy concern with the relative lack of health insurance among the self-employed may be somewhat misplaced.

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1. Introduction

A persistent public policy concern in the United States is that so many Americans--currently over 40 million--lack health insurance. Indeed, this was a major issue in the recent presidential campaign. Republican George W. Bush proposed a tax credit of up to \$2,000 per family to help low-income workers buy insurance; Democrat Al Gore suggested expanding the federal-state health plan for children. Although their approaches differed considerably, both parties clearly viewed the lack of health insurance as a serious problem.

Within the ranks of the uninsured, the self-employed have been the objects of particular concern. Owners of small businesses do indeed have lower rates of health insurance than wage-earners. Only 69 percent of those under 63 years of age had any coverage in 1996 as compared with 81.5 percent of wage-earners, according to our tabulations from the Medical Expenditure Panel Survey. The principal public policy response to this situation has been to subsidize self-employed individuals' purchases of health insurance through the personal income tax. Currently, self-employed workers are allowed to deduct 60 percent of their health-insurance premiums, which is up from 45 percent in 1998. According to recent legislation, this figure is scheduled to increase to 70 percent in 2002 and 100 percent in 2003 and thereafter.¹ In early 2001, Senator Bond of Missouri proposed that the increases in the deduction be phased in even sooner.

Implicit in the support behind this type of policy is the assumption that health insurance affects health outcomes--if an individual has health insurance, he or she is more

likely to be healthy.² Certainly, at face value, this seems to make sense. Health insurance reduces the cost to individuals of a variety of medical services, increasing consumption of these services and presumably improving health, *ceteris paribus*.

However, the link between insurance and health status is not as obvious as it might seem.

While most researchers agree that socioeconomic status has a significant impact on health, some argue that insurance does little to contribute to these differentials.³ Some have argued, for example, that lifestyle issues may ultimately be more important than purchases of medical services (Fuchs [1998]). Alternatively, relatively less risk-averse individuals may prefer to eschew health insurance and deal with health expenses out-of-pocket.

Thus, it is not obvious whether the health of the self-employed suffers because of their relative lack of health insurance. In fact, we know of no research that looks at the link between insurance status and health for the self-employed. The purpose of this paper is to investigate whether the lack of health insurance among the self-employed has a detrimental effect on their health. The centerpiece of the study is a statistical analysis of differences between the self-employed and wage-earners in a variety of health status measures.

¹ See Internal Revenue Service Code section 162(1). A related policy issue, not addressed in this paper, is the question of why owners of small businesses are not likely to offer insurance to their employees.

² Although it does not receive as much attention in the policy debate, another possible reason for the subsidy is horizontal equity--health insurance purchases of wage-earners and the self-employed should be treated in the same way. To the extent that differences in the treatment of health insurance are capitalized into the returns to self-employment, this rationalization is less compelling.

³ See, for example, Ross and Mirowsky [2000]. Sorlie, Johnson, Backlund, et al. [1994] found that individuals covered by Medicare or Medicaid have 1.6 times the mortality rate of the uninsured, after controlling for age, sex, race, and income [1994]. We conjecture that this result might be due to unobservable heterogeneity--individuals who end up on Medicaid differ in important ways from those who

Section 2 provides a brief review of previous literature. Section 3 outlines the empirical strategy and describes the data set, the 1996 wave of the Medical Expenditure Panel Survey (MEPS). Section 4 discusses some econometric issues and presents the results. The main finding is that even though the self-employed are less likely to have insurance than wage-earners, they are generally just as healthy. Neither do the children of the self-employed appear to suffer any adverse health consequences. Hence, concerns that the self-employed need insurance subsidies in order to improve their health may be somewhat misplaced. Section 5 examines whether our result is due to the fact that individuals who select into self-employment are healthier than wage-earners to begin with. We find no evidence that transitions into or out of self-employment are affected by health status. Section 6 provides a summary and suggestions for future research.

2. Previous Literature

Three literatures are relevant to this paper. The first is the effect of income or wealth on health. The general finding is that there is a positive relationship in the data between health status and economic resources.⁴ See, for example, Menchik [1993], Ettner [1995], Smith and Kington [1997] and Smith [1999].⁵ While these studies look at the impact of a variety of other economic and demographic characteristics on health, none examines possible health differences between the self-employed and wage-earners.

do not, even after taking observable covariates into account. The possibility of a similar issue rises in our context, and we deal with it in some detail in Section 5 below.

⁴ However, Meer, Miller and Rosen [2001] argue that the causal relationship running from wealth to health status disappears once the endogeneity of wealth is taken into account.

⁵ A distinct but closely related question is how inequality in income affects health outcomes; see, e.g., Deaton and Paxson [1999].

Second is the health insurance demand literature, in which several studies have noted that the tax treatment of insurance differs for wage-earners and the self-employed, and take advantage of this fact to estimate the price elasticity of demand for insurance (see Monheit and Harvey [1993] and Gruber and Poterba [1994]). Their results show that lowering the effective price of insurance does indeed increase the probability that a self-employed individual will buy insurance. The question remains, however, whether having the insurance makes any difference to their health.

The third literature focuses on links among health insurance, health services utilization, and health outcomes. Currie and Gruber [1995] examine health insurance eligibility, utilization and children's health. They find that utilization increases with insurance eligibility, but has no effect on a set of paternal-reported health status measures. They do not consider differences between the children of wage-earners and the self-employed, or the health status of adults more generally. Ross and Mirowsky [2000] examine whether medical insurance helps explain differences by socioeconomic status in health. They find that, after controlling for socioeconomic status and baseline health, private insurance is not associated with good health outcomes and that public insurance is actually associated with *worse* health. We regard this finding with a degree of skepticism, since unobservable heterogeneity may be driving the results. Meara [1998] finds that the most important determinants of low birth weights are the health behaviors of the mother, rather than the availability of public insurance. Similarly, a key finding of the RAND Health Insurance Experiment is that the type of insurance an individual possesses has a significant impact on the utilization of health care, but only

minor effects on health status (Newhouse et al. [1993]). But for the self-employed, even the link between insurance and utilization of medical services is rather weak. Perry and Rosen [2001] show that the differential use of health services between the self-employed and wage-earners is less than one would expect on the basis of their differential insurance rates.

In short, when we consider previous papers focusing on the connections among health insurance, medical services utilization, and health outcomes, the self-employed make only a few appearances. In particular, there is no work on what is arguably the central policy question here: does the lack of health insurance among the self-employed lead to worse health outcomes for them? Further, the literature on the link between insurance and health outcomes in other contexts creates no presumption that the answer to this question is necessarily yes.

So far, we have ignored a key question that all empirical analyses in this literature have to confront--just how does one characterize health status? The World Health Organization defines health as "a state of complete physical, mental, and social well-being, not merely the absence of disease or infirmity" (Newhouse [1993, p. 183]). Clearly, no single number can capture every aspect of an individual's health. In the literature, basically two types of measures are used, subjective and objective.

Subjective measures rely on answers to questions such as the following one, which comes from the March 1996 Supplemental Current Population Survey: "Would you say your health in general is: <1> Excellent <2> Very good <3> Good <4> Fair <5> Poor?" Clearly, "healthy" can mean different things to different people. For

example, some smokers might consider themselves to be in excellent health, despite the fact that they cough incessantly. Similarly, some obese individuals might be unaware of their health risks. In the same way, some individuals may under-rate their health status when compared to other individuals whom they see as being very healthy, such as professional athletes. Nevertheless, it is well-documented that self-reported measures of health have excellent explanatory power in predicting mortality rates. As Idler and Benyamini [1997, p. 21] note in their comprehensive survey of the literature on self-reported health measures, “[O]ver two dozen studies have been published in the U.S. and international literature that test the association between simple, global health assessments and mortality in the samples used: Most find a significant, independent association that persists when numerous health status indicators and other relevant covariates are included.”⁶

Objective measures tend to rely on descriptions of behavior or diseases that are, in principle, observable. For example, another question from the March Current Population Survey asks, “Do you have a health problem or disability which prevents you from working or which limits the kind or amount of work you can do?” The advantage of this type of measure is that the interpretation of responses is relatively simple--either an individual has a limitation or condition or does not (although even here one can imagine that a condition that would keep one person from working might not keep another person away from the job).

⁶ Additional confirmation of this finding is reported in Hurd and McGarry [1997].

Neither type of measure is obviously superior to the other. Both suffer from certain limitations. For example, health status measures may be too aggregate to capture the possible impact of insurance on the outcomes of particular interventions. In any case, as noted below, our data contain subjective as well as objective measures, and we analyze both. The hope is that we will find consistent results on the relationship between self-employment on health status regardless of the type of measure used. In addition to information on physical health, there are some self-reported mental health data, which we discuss as well.

3. Data

3.1 Description

Our basic strategy is to see how differences in insurance coverage between the self-employed and wage-earners translate into differences in health outcomes. This strategy requires information on an individual's insurance coverage and health status, as well as a set of exogenous characteristics that might influence health and insurance outcomes. We draw upon the Household Component of the 1996 Medical Expenditure Panel Survey (MEPS). The MEPS consists of approximately 22,000 respondents who comprise 9,500 families. In the survey, the respondents were asked a series of questions relating to their demographic characteristics, insurance coverage, employment status, and health. We exclude individuals with missing information on insurance, health, and education. In addition, we drop from the sample any people younger than 18 or older than 62. Those under 18 are unlikely to have developed a strong attachment to the labor

market, and the decisions of those over 62 are complicated by impending retirement. All of these exclusions left a group of 8,986 individuals, of whom 1,088 (12%) were self-employed. This figure corresponds fairly closely to other estimates of the self-employment rate (U.S. Bureau of the Census [1998, p. 412]).

As noted in Section 2, a major issue in a study like this is how to measure health outcomes. The MEPS contains both self-reported and objective characterizations of individuals' health status, and we examine both. The subjective measures include self-reported ratings for both general physical and mental health. The objective measures include information regarding individuals' physical limitations and whether or not they have a variety of medical conditions (including cancer, cardiac problems, and so on).

3.2 Preliminary Analysis

To begin, in Table 1 we examine differences in health status and insurance by employment status. For each variable, columns (1), (2), and (3) show the means for the entire sample, for wage-earners, and for the self-employed, respectively. The fourth column displays the t-statistic associated with the hypothesis that the means in columns (2) and (3) are equal.

The insurance variable in the first row is a dichotomous variable generated in the MEPS that takes a value of one if the individual has health insurance coverage and zero if the individual characterizes his or her health as fair or poor. Specifically, the variable equals one if the individual is covered under Medicare, Medicaid,

CHAMPUS/CHAMPVA⁷, other public hospital/physician or private hospital/physician insurance. (Note that an individual is considered covered if the source of insurance is a spouse.) 69 percent of the self-employed in the sample have insurance compared with 81.5 percent of wage-earners. From column (4), this difference is significant at all conventional levels, a result that is consistent with previous research (Holtz-Eakin, Penrod, and Rosen [1996], Health Insurance Association of America [1999]).

As suggested above, insurance can come from a variety of sources. Table 2 examines whether wage-earners and the self-employed differ with respect to where their insurance comes from, conditional on having insurance. Column (1) reports the conditional proportions of the entire sample with each type of insurance, while columns (2) and (3) present the conditional proportions for wage-earners and the self-employed, respectively. The fourth column displays the t-statistic associated with the hypothesis that the means in columns (2) and (3) are equal.

The first five rows reveal that, conditional on being insured, wage-earners and the self-employed are equally likely to have public or private insurance, as well as to have coverage offered through the military. However, rows (6) and (7) indicate substantial differences between the two groups with respect to the type of private coverage. 87.5 percent of covered wage-earners have private employer provided group coverage, the corresponding figure for the self-employed is only 63.5 percent. Similarly, over 18 percent of the self-employed have private non-group coverage, while only 2.7 percent of

⁷ CHAMPUS is a health benefits program designed to provide medical coverage for the dependents of active duty military servicemen/women. CHAMPVA is intended for dependents and survivors of severely disabled veterans.

wage earners have non-group coverage. These results are consistent with the notion that the self-employed are unable to form or become part of groups that purchase insurance.

Another striking finding from Table 2 is that the self-employed are significantly less likely than wage-earners to be the holders of their policies. Only 51.4 percent of the self-employed, as compared to 74.1 percent of wage earners, are the policy holders for private insurance. Further, only 27 percent of the self-employed are the policy holders for group insurance policies, while 69 percent of wage-earners are. These findings remind us of the importance of viewing insurance as a *family* rather than an *individual* issue. The fact that an entrepreneur cannot obtain his or her own insurance does not necessarily mean that he or she has to go uninsured.

In any case, the central issue is whether their relative lack of insurance affects the health status of the self-employed. As noted, the MEPS provides a subjective health evaluation based on the individual's response when asked to rate his or her health as poor, fair, good, very good or excellent. Consistent with earlier literature, we use this information to create the dichotomous self-reported health variable HEALTHY, which takes a value of one if the individual is in good, very good, or excellent health, and zero otherwise. Individuals were also asked to evaluate their mental health; in analogy to the physical health variable, we create a dichotomous variable MHEALTHY, which equals one if the individual reports him- or herself being in good, very good, or excellent health, and zero otherwise. The figures reported in rows (2) and (3) of Table 1 indicate that one cannot reject the hypothesis that the mean values of both HEALTHY and MHEALTHY are the same for the two groups. Despite the differential in their rates of insurance

coverage, the self-employed and wage-earners have about the same subjective perceptions of physical and mental health.

To complement this discussion of subjective health status measures, we examine several objective measures. Row (4) examines a dichotomous variable that takes a value of one if the individual has any physical limitations⁸ and is equal to zero otherwise. There appear to be no differences between the self-employed and wage-earners in the likelihood of having physical limitations.

The MEPS also asks individuals a series of questions about specific medical conditions. To keep things manageable, we condense the conditions data into ten categories: cancer, viral infection, headaches, cardiac condition, upper respiratory infection, respiratory disease, skin disease, intestinal disorder, and arthritis.⁹ The MEPS also indicates whether or not the individual has a "priority condition," defined as any of a number of serious medical conditions. These include AIDS, diabetes, emphysema, high cholesterol, hypertension, arthritis, gall bladder disease, stomach ulcers, back problems, Alzheimer's disease, and depression. A glance down column (4) of Table 1 indicates that only for the case of arthritis is there a significant difference between the self-employed and wage-earners; the self-employed are slightly more likely to have arthritis. From a statistical point of view, however, it is no surprise that if one examines a substantial number of effects, one of them comes up significant.¹⁰ In short, Table 1 indicates that in

⁸ The variable equals one if the respondent has had any Activities of Daily Living, Instrumental Activities of Daily Living, or functional or sensory limitations in the past year.

⁹ Appendix B provides the details of these variables' construction.

¹⁰ An interesting question is how self-reported health status correlates with the various objective measures. For the two "general" objective measures, the correlations are substantial. Specifically, the correlations between HEALTHY and the dichotomous variable for whether the individual has any physical limitations

spite of their low insurance rates, the self-employed appear generally as healthy as wage-earners. Still, a number of different factors are known to influence health and some of them could be correlated with self-employment status. Hence, while these results are suggestive, we now turn to a multivariate approach.

4. Multivariate Analysis

4.1 The Setup

The univariate comparisons in Table 1 suggest that self-employed individuals are just as healthy as wage-earners, despite their lower propensity to have medical insurance. In this section we estimate conventional probit models to investigate whether this finding is robust to the inclusion of variables other than self-employment status that might influence an individual's health.

Focusing first on self-reported physical health status, we assume that the probability that the individual is healthy is given by

$$\text{Prob} (HEALTHY_i > 0) = F[\beta X_i + \delta SE_i], \quad (4.1)$$

are -0.19 and -0.42 for wage-earners and self-employed, respectively. The correlation between HEALTHY and the presence of a priority condition is -0.097 for wage-earners and -0.080 for the self-employed. On the other hand, for both groups, the correlations between HEALTHY and the specific health conditions are very small, generally less than 0.02 in absolute value. This is not unexpected; after all, one's general health can be bad even in the absence of a single particular condition.

where X_i is a vector of observable demographic characteristics, SE_i is a dichotomous variable equal to one if the individual is self-employed and zero otherwise, and $F[\]$ is the cumulative normal distribution.¹¹

To estimate the model, we need to decide what to include in the X -vector. We attempt to use only variables that are very likely to be exogenous to health. Age is included because health tends to deteriorate with age. Previous research has also suggested that a quadratic function of age may be appropriate; therefore, we include the square of age. Education affects one's lifestyle and environment as well as the ability to pay for care (Taubman and Rosen [1982] and Ruhm [2000]); thus, there is a set of dichotomous variables for education level. In addition, some evidence suggests that race may be a factor in health status (Smith and Kington [1997]). To allow for this possibility, we include a set of race dichotomous variables. Similarly, it has been documented that health status can vary by region (Preston and Taubman [1994]), therefore, we use a set of indicator variables for the region of the country in which a person lives.¹²

Further, we enter a dichotomous variable for the individual's sex, because previous research has suggested that men and women differ in their probability of having various health conditions (Verbrugge [1985]), and in the way they perceive their health (Idler and Benyamini [1997]). Finally, we include a dichotomous variable for marital status and a continuous variable for family size—number of adults plus dependents. Previous research has suggested that marital status is correlated with differing levels of

¹¹ This is the probit model, which is explained in Johnston and DiNardo [1997, pp. 418-424].

stress, which might impact health status (Taubman and Rosen [1982]); similar reasoning would suggest that it is reasonable to include family size as well.

Our specification omits certain variables that have appeared as covariates in several previous studies of health status. A number of papers, for example, include household income. (See, for example, Ross and Mirowsky [2000] and McDonough, *et al.* [1997].) There is indeed a substantial literature documenting the links between income and health status, but the direction of causality is not known. (See, for example, Deaton and Paxson [1999] and Ettner [1996].) To the extent that individuals' incomes are low because they are in poor health, then income is an endogenous variable and should be excluded from the reduced form.¹³

Insurance is another variable that sometimes appears in models of health status (Ross and Mirowsky [2000]). But as Gruber [2000, p. 46] and others have noted, "insurance coverage itself may be a function of health status, leading to endogeneity bias in estimates of the effects of insurance on health." Therefore, we also exclude insurance status from the model. While this makes it difficult to attach a structural interpretation to the results, it does increase the likelihood of obtaining consistent parameter estimates.

Table 3 lists and presents summary statistics for the right-hand side variables just discussed, as well as a few additional characteristics that are used in subsequent analyses. For each variable, the first column shows the mean value for the entire sample; the second and third columns exhibit the means for the self-employed and wage-earners,

¹² The regional classifications correspond to those used by the Census Bureau.

¹³ As an experiment, we estimated our canonical model including income on the right-hand side. We found that while income was positively related to insurance coverage and health status, our substantive results did not change. In the same spirit, we also augmented the equation with dichotomous variables for

respectively. The fourth column has t-tests on the differences in the means between columns (2) and (3). The table suggests that, in certain respects, the self-employed and wage-earners are similar—levels of educational attainment, family size, and distribution across region are roughly the same. The self-employed are more likely to be white, male, and married with a spouse present. Further, the self-employed tend to be older (5.4 years) on average than wage-earners. They also have higher incomes (\$3000 per year) and work longer hours. These findings all echo previous research (Fairlie and Meyer [1999] and Hamilton [2000]).

An important question is whether there is unobservable heterogeneity with respect to health status. Do the self-employed differ systematically from wage-earners in their underlying health in ways that cannot be captured by the covariates in Table 3? Specifically, might there be unobservable variables that drive both health status and the likelihood of becoming self-employed? For example, perhaps very healthy, energetic people have the "animal spirits" that lead them to become entrepreneurs. Alternatively, perhaps people who are too ill to hold jobs as employees decide to become self-employed.

Previous research with other data sets suggests that, in fact, there is no selection along these lines. Holtz-Eakin, Penrod, and Rosen [1996] (HPR) employ both the Survey of Income and Program Participation (SIPP) and the Panel Study of Income Dynamics data to examine transitions from wage-earning to self-employment. Both data sets indicate that health status is not a good predictor of whether a wage-earner will become

the industry in which the individual worked. This, too, left our substantive results unchanged.

self-employed in the future or not, *ceteris paribus*. In Section 5 below we use the MEPS to update and extend the HPR study. We examine both transitions from wage-earning into self-employment and from self-employment into wage-earning, and, like HPR, we find no selection on the basis of health status. While these findings cannot definitively exclude the possibility of unobservable heterogeneity, they certainly provide no support for the notion that people who select into self-employment are systematically different with respect to health-related attributes.

4.2 Basic Results.

In section 3.2, we used the differences in insurance status between wage-earners and the self-employed as a kind of baseline against which to measure differences in health status. In analogy, we begin the multivariate analyses with an examination of the probability of being insured, and then turn to the various indicators of health status.

Insurance Coverage. The results are reported in column (1) of Table 4, which presents the marginal effect of each of the variables on the probability of having insurance coverage. Notably, the coefficient on the self-employed variable (SE) is both negative (-.194) and statistically significant (standard error = .0173). Since 81.5 percent of the wage-earners have insurance, this implies that the self-employed are 25 percent less likely to be insured, even after controlling for demographic characteristics.

While not the primary focus of this paper, the other coefficients in column (1) merit some discussion. The coefficients on the age variables indicate insurance coverage increases throughout the entire relevant range of ages. The male variable's coefficient suggests that men are 3.6 percentage points less likely to be insured than women.

Consistent with previous research (Institute for the Future [2000, p. 23]), the coefficients on the education variables indicate that, relative to individuals with no high school degree, people with more education have higher coverage rates.

Table 4 also reveals that family composition affects an individual's insurance status. *Ceteris paribus*, the likelihood of having coverage falls by 1.4 percentage points with each additional person in the family. Further, married persons are 13.8 percentage points more likely to have coverage than single individuals. Since spouses often act as sources of insurance, this result is not surprising.

The coefficients on the race variables tell an interesting story. Notably, the coefficient on the black variable indicates that blacks are 2.8 percentage points less likely to have coverage than whites (the omitted group), other things being the same. Members of the "other" category, which consists of Asian-Americans, Eskimos, and Native Americans, are 5.1 percentage points less likely to have insurance relative to whites.

There are substantial regional effects. Northeasterners are about 3.0 percentage points more likely to have insurance than those in the west (the omitted category), while midwesterners are 5.1 percentage points more likely. People who live in the south are about as likely to have insurance as those who live in the west.

Health Status. With the insurance results in hand, we now turn to the various health measures available in the MEPS. Column (2) of Table 4 reports the results for the self-reported health measure. The coefficient on the self-employment variable is small and insignificantly different from zero--0.0119 with standard error 0.00705. There is no statistically discernible difference in subjective evaluations of health between wage-

earners and the self-employed. Considering that the self-employed are 25 percent less likely have health insurance, this finding confounds the notion that their lack of insurance translates into worse health outcomes.

Before examining the remaining health indicators, we discuss the coefficients of the other variables in column (2). The linear and quadratic age variables are individually significant, but taken together, they are jointly significant, with a chi-squared statistic of 52.3. Together they imply that the probability of being healthy declines throughout the age range. The dichotomous variables for education reveal that health outcomes tend to improve with education, a finding that is consistent with previous research (Ross and Mirowsky [2000]). Family size, marital status, and location have no statistically discernible impact on the self-reported health status measure. However, black individuals are 2 percent less likely than whites to report that they are in good health. Men are 1.3 percentage points more likely to report that they are in good health than women. This finding must be interpreted with caution, because some researchers have suggested that men and women may use different processes to incorporate information into their self-assessments of health (Idler and Benyamini [1997, p. 26]). Likewise, the results in column (3) of Table 4 with respect to mental health must be taken with a grain of salt. While there is no statistically significant difference between the self-employed and wage-earners in their perceived mental health status, one cannot be sure of the validity of this self-reported measure.

These reminders of possible problems with subjective health measures provide a natural segue to our analyses of the various objective health measures. We re-estimate

the model for each of a series of such measures. Columns (4) and (5) of Table 4 look at two summary measures of health: whether there are any physical limitations and whether the individual has a priority condition. As was the case with the subjective measure in column (2), there are no statistically discernible differences between the self-employed and wage-earners in their propensity to be healthy. That is, the objective measures give exactly the same answer as the subjective measure.

This conclusion is reinforced by Table 5, which presents results for seven specific health conditions. There is not one single condition that the self-employed are statistically more likely to have than wage-earners. In short, even though the self-employed are 25% less likely to be insured than wage-earners, their health does not appear to be any worse, *ceteris paribus*. Thus, concerns about their health do not seem to merit medical insurance subsidies to the self-employed.

4.2 Alternative Specifications.

We subjected the model to a variety of different tests to examine whether the substantive results were sensitive to changes in specification.

Income. Previous research has shown that income is positively related to health status. The conventional explanation is that “the less well-to-do have access to less or lower quality medical care” (Smith [1997, p. 145]). Recall that the tabulations in section 3.2 revealed that the self-employed have higher average incomes than wage-earners (on the order of \$3000). Perhaps, then, the fact that we find no health differences between wage-earners and the self-employed is due simply to the fact that the self-employed have higher incomes. To allow for this possibility, we augment the canonical specification

with family income.¹⁴ Of course, as noted above, income might be endogenous if, for example, healthier individuals are able to work more and earn higher incomes. For this reason, income was not included in the basic specifications in Tables 4 and 5.

Column (1) of Table 6 shows the self-employment coefficients only from the augmented probit models for the various health measures. The results indicate that including income on the right-hand side generally has no significant impact on the self-employment coefficients. Again, because of the potential endogeneity of income, these results should be interpreted with caution. Just the same, the inclusion of family income as a covariate reinforces the core result—wage-earners and the self-employed appear equally healthy.

Hours. It is well-documented that the compensation packages of part-time workers are less likely than those of full-time employees to include benefits such as medical insurance (Campling [1987]). At the same time, there is reason to suspect that self-employment status might be correlated with hours of work. In fact, the correlation in our data is .104. Hence, our estimates of the effects of self-employment on insurance coverage and utilization rates might be biased because of the failure to take into account differences in hours worked. Therefore, we augment the canonical specification with a set of dichotomous variables for hours worked per week. Of course, hours of work might itself be endogenous, since people who are ill may work fewer hours, *ceteris paribus*. That is why it was not included in the original specification.

¹⁴For this exercise, we drop observations for which total family income is below \$5000, operating on the assumption that measured income is not a good index of ability to pay. Such families might either have substantial income-in-kind, or own businesses that create accounting losses.

The coefficients on the self-employment variables associated with this specification are reported in column (2) of Table 6. A quick comparison with the results in Tables 4 and 5 suggests that, for almost every health measure, the inclusion of the hours of work has barely any impact on the self-employment effect.

Utilization. Some previous research has used differences in the utilization of medical services to help explain disparities in health (Thomas, *et al.* [1992]). Certainly, *ceteris paribus*, one would expect medical service usage and health status to be related; however, the direction of causation is unclear. In a demand function for health services, for example, one might include health status as an explanatory variable--healthier individuals require less health care. Alternatively, however, one could argue that people who consume more health care services receive treatments that lead to better health. Therefore, including utilization rates of health care services on the right-hand side of an equation explaining health status is problematic. That said, previous research indicates that self-employed individuals are less likely than wage-earners to use many (but not all) types of medical care services (Perry and Rosen [2001]). Thus, to the extent that utilization *does* belong on the right-hand side, failure to take it into account may bias the estimates of the self-employment effects on insurance coverage and health status.

One common measure of health care utilization is the number of doctor visits during the year. We therefore augmented the canonical specification with a continuous variable for number of doctor visits. The results, reported in column (3) of Table 6, suggest that its inclusion has no serious impact on the self-employment effects. Thus, to

the extent that utilization does belong in the model, it appears to have no effect on our substantive results.

Insurance. As noted above, we have not included insurance status in the model because it is likely endogenous. However, if we are willing to forgo a direct estimate of the self-employment effect on health, we can include insurance and instrument it with self-employment status.¹⁵ Given that the impact of insurance on health status is of independent interest, we re-estimated our canonical model from Table 4 with insurance status on the right hand side and using instrumental variables probit. To conserve space, we do not report the full set of results. The key finding is that we cannot reject the hypothesis that the impact of insurance on health status is zero--the coefficient is -0.074 with a (bootstrapped) standard error of 0.047. Of course, the validity of this exercise depends on whether it is appropriate to treat self-employment status as exogenous; we return to this issue below.

Children. We have shown that the relative lack of health insurance among the self-employed does not appear to have a negative impact on their health. However, much of the recent concern over health insurance has focused on the needs of children. One could argue that a tax subsidy to the self-employed for purchases of health insurance is warranted if it helps improve their children's health. Do the children of the self-employed

¹⁵ An alternative strategy is to ignore the endogeneity of insurance, and simply augment the canonical model with insurance status and its interaction with self-employment. Without making too much of it, we note that the basic result continues to hold: self-employment does not have a substantial impact on self-reported health status. (The marginal effect of being self-employed, conditional on having insurance, is -0.007) Further, taking advantage of the information on types of insurance in Table 2, we looked for self-employment effects by type of insurance (public versus private). Conditional on having private insurance, the self-employment effect is -0.001. Conditional on having public insurance, it is -0.075. The negative effect of public insurance on health status is consistent with previous research and, we believe, an artifact of selection into public insurance on the basis of unobservable characteristics.

have worse health than the children of wage-earners, *ceteris paribus*? We address this question by taking advantage of a set of parental reported and objective health measures in the MEPS. Three of these measures are based on the parents' responses to a series of statements about their children's health: "Child resists illness;" "Child seems to be less healthy than other children;" and "Child seems to catch diseases that are going around." The parent then responded on a scale from one to four, where one meant "definitely false" and four meant "definitely true." We convert each answer into a dichotomous variable equal to one if the respondent's answer was indicative of the presence of a health problem (a response of 1 or 2 to the first statement, and an answer of 3 or 4 to the second and third statements).

Earlier we cited research that indicated that adults' self-reported health reports are meaningful indicators of their health status. We know of no such research validating parents' assessments of their children's health. As Currie and Gruber [1995] note, such measures may be subject to directional bias based on contact with the health care system. Further, there is some evidence that the number of illnesses a mother reports for her children is a function of her education (Currie and Thomas [1995]).¹⁶ Hence, while interesting, these parental evaluations must be viewed with caution.

The MEPS also has some more objective measures of children's health. For children four years of age and younger we have information on whether there are any limitations on their activities,¹⁷ and for children 17 and under a set of condition variables

¹⁶ McCormick, Brooks-Gunn, Workman-Daniels and Peckham [1993] and Dadds, Stein and Silver [1995] provide further evidence along these lines.

¹⁷ We create a dichotomous variable equal to one if any child aged 4 or under in the family is limited in any way, including play activity, because of an impairment or physical or mental health problem.

similar to those we studied for adults. As before, it is useful to have as a baseline an estimate of how self-employment affects the probability of being insured for the relevant population. We use the sample of families with children under 17 to estimate an equation for the probability that the children in the family were covered by some form of health insurance. On the right-hand side we include a dichotomous variable which takes a value of one if both parents were self-employed or if one parent was self-employed and the other did not work, and zero otherwise. In addition, we include a vector of the child's characteristics including age, age squared, race, family size, sex, and region.

The results are reported in column (1) of Table 7. They indicate that the children of the self-employed are about as likely as wage-earners' children to have insurance coverage--one cannot reject the hypothesis that the coefficient on the parent self-employment variable is zero. This is a striking contrast to the 19.4 percentage point differential between the probabilities that self-employed and wage-earning adults have health insurance. Apparently, parents place a premium on having their children covered, a result that is certainly consistent with anecdotal evidence. For example, following a recent 40 percent spike in insurance premia for his two children, a wage-earner named Eddie Williams observed:

“Of course you ask yourself why. You even wonder whether it's worth it to pay all that. The children are healthy. Seems like they've only gone to the doctor twice this year, both times for shots, which weren't even covered by insurance. But these are my kids we're talking about here. You never know what might happen. So we pay it. I wouldn't dream of them being without insurance.” (*New York Times*, September 18, 2000, p. A1)

Given the lack of an insurance coverage differential, the rest of Table 7 is rather anti-climactic. Analyses of both the parental-reported responses and the objective measures indicate that there are no statistically significant differences between the children of the self-employed and the children of wage-earners. Concerns for the health of their children do not seem to provide adequate justification for subsidizing the health insurance purchases of the self-employed.

5. Do Healthier People Become Self-Employed?

A potentially important problem mentioned earlier is that unobservable heterogeneity may be driving our results. Specifically, the concern is that underlying differences between the self-employed and wage-earners with respect to health and the demand for health services may not be captured by the covariates. One can imagine, for example, that people who are too ill to hold jobs as employees decide to become self-employed. Alternatively, it may be that healthy, energetic people have the "animal spirits" that lead them to become entrepreneurs. This latter possibility is particularly important given our principle finding that in spite of their relatively low insurance rates, the self-employed do not suffer from adverse health outcomes relative to their wage-earning counterparts. Perhaps this result is due to the fact that the self-employed are healthier to begin with.

We address this issue by examining transitions into and out of self-employment. Consider a group of wage-earners during a given time period. If the probability that an individual transits to self-employment in the subsequent period is independent of his or

her health status at the outset, then one can feel some confidence that selection into self-employment on the basis of health is not driving our results. On the other hand, if healthier individuals are more likely to make transitions into self-employment, the interpretation of our findings becomes problematic.

As noted above, this issue has been studied previously by Holtz-Eakin, Penrod and Rosen [1994] (HPR). They employ both the Survey of Income and Program Participation (SIPP) and the Panel Study of Income Dynamics (PSID) to examine transitions from wage-earning to self-employment. Both data sets indicate that in a given year, those wage-earners who become self-employed in the future are not statistically different in their health status or health care utilization from the ones who remain wage-earners.¹⁸ In the SIPP data, the health measures are combined days in bed during the last 4 months and a self-reported health status variable. The utilization measures are combined nights in a hospital in the last 4 (and 12) months and the combined number of doctor visits in the last 4 (and 12) months. In the PSID the health measures are hours of work lost due to illness and a self-reported health variable. The utilization measure is number of nights in the hospital during the year.

In this section we update and extend these results using the MEPS. We take advantage of the panel nature of the data set to examine transitions into and out of self-employment between rounds 1 and 5, corresponding to the period January 1996 to January 1998.¹⁹ The MEPS has a couple of advantages in this context. First, it allows us

¹⁸ These results are cited in Holtz-Eakin, Penrod and Rosen [1996]; more detailed documentation is reported in the National Bureau of Economic Research Working Paper with the same title, number 4880 (October 1994).

¹⁹ We also examined one-year transitions, and the results were essentially the same.

to study the transitions of the same sample of individuals upon whom our results on self-employment and health are based. Second, these data are more recent and provide richer information on utilization and health care status than the data sets used by HPR.

During the two-year period, 145 individuals made the transition from wage-earning to self-employment (from an initial group of 7188 wage-earners) and 138 left self-employment to become wage-earners (from an initial group of 836 self-employed). The implied rates of entry (about 2 percent) and exit (about 16 percent) are similar to those that have been found in other data sets (see Holtz-Eakin, Penrod and Rosen [1996]).

5.1 Self-Employment Transitions and Health Status

To begin, we examine transitions into self-employment by wage-earners as a function of a variety of indicators of their health status. The sample consists of wage-earners in January 1996, and we examine the probability that they are self-employed in January 1998, conditional on a set of demographic characteristics and their initial health status.²⁰ If one believed that our results were due to the fact that healthy people are particularly likely to enter self-employment, then, *ceteris paribus*, one would expect indicators for good health to increase the probability of transiting to self-employment, and vice versa. The results are reported in the first column of Table 8. The first row reveals that the coefficient on the self-reported measure of health status, HEALTHY, is statistically insignificant. Moving down the column, we see that the same holds true as well for every single specific health condition. In short, whether subjective or objective

²⁰ The employment status and demographic information were recorded at the beginning of 1996, and the health information was recorded in the middle of that year.

measures of health status are employed, the results in Table 8 suggest no systematic tendency for healthier people to enter self-employment

Column (2) of Table 8 reports the results from a series of equations that examine transitions out of self-employment into wage-earning. Here the sample consists of individuals who were self-employed in January 1996, and the left-hand side variable is the probability that they were wage-earners two years later. None of the health measures has any impact on the decision to exit self-employment except for the presence of headaches. Of course, given that the results from a dozen regressions are reported in column (2), it is not surprising to turn up at least one statistically significant health measure. But even if there is a true "headache effect," when taken in conjunction with the other results in Table 8, it does not undermine the main message--health status does not appear systematically to influence decisions to enter or leave self-employment.

5.2 Self-Employment Transitions and Children's Health

We argued in Section 4 that there appear to be few significant differences in health status between the children of the self-employed and those of wage-earners. This raises a question analogous to the one just discussed--does the health status of a person's children affect his or her decision to enter or exit self-employment? To examine this possibility, we estimate the same kind of transition equations as reported in Table 8, but this time using parent-reported and objective measures of children's health. As in Table 7, for each parental-reported measure, the associated dichotomous variable takes a value of one if the answer for any of a person's children is consistent with the presence of a health problem. Similarly, for each objective measure, the dichotomous variable is one if

any child has the condition. The results are reported in Table 9. In general, one cannot reject the hypothesis that the coefficients on the children's health variables are zero. The exceptions are the grab bag "priority condition" variable and intestinal diseases (for entry into self-employment only). We are inclined to regard these as statistical anomalies, especially because the "priority condition" variable appears with the same sign in both the entry and exit equations. By and large, the main story told by the table is that self-employment transitions are not significantly affected by children's health.

5.3 Summary

This section has investigated the possibility of self-selection into or out of self-employment on the basis of health conditions. We find that, in general, a wage-earner's health status does not predict whether he or she will be self-employed two years later, *ceteris paribus*. Similarly, a self-employed person's health status does not predict whether or not he or she will be a wage-earner two years later. Neither does a child's health status predict whether his or her parent will make a transition into or out of self-employment.

In work not reported here for the sake of brevity, we also investigated whether an individual's initial utilization of health services is a predictor of transitions into or out of self-employment. These results, too, suggest that health issues are not related to the selection of employment mode.²¹ On the basis of the available evidence, then, we conclude that our findings with respect to the lack of health differences between wage-

²¹ We examined whether the utilization of any of the following medical services was a good predictor of a transition into or out of self-employment: cholesterol exam, breast exam, blood pressure test, physical exam, flu shot, mammogram, prostate exam, doctor visit, hospital admission, and purchase of prescription medicine.

earners and the self-employed--despite the large differences in insurance coverage--is not due to the fact that relatively healthy people tend to select into self-employment.

6. Conclusion.

Using data from the 1996 Medical Expenditure Panel Survey, we have analyzed differences between the self-employed and wage-earners with respect to insurance coverage and health status. Our results suggest that the relative lack of health insurance among the self-employed has essentially no impact on their health or on the health of their children. This finding is robust to a number of reasonable changes in the specification of our statistical model. Further, we demonstrate that the result does not seem to be due to selection into self-employment on the basis of health status.

There are several possible explanations for this phenomenon. One is that the self-employed finance health care from sources other than insurance. Perhaps, for example, they self-insure, paying for medical care out of their incomes or accumulated saving. However, in other research we have shown that the out-of-pocket costs that the self-employed incur for health care do not differ much from those of wage-earners, both in absolute terms and relative to income (Perry and Rosen [2001]).²² Another possibility is that access to health care is responsible for only a relatively small part of health, with more important determinants being genetics, environment, and health behaviors (Institute for the Future [2000, p. 23]). From this perspective, our results might be viewed as adding to a line of research which has shown that, in a variety of other contexts, the links

²² See Levy [2000] for a careful analysis of the financial impact of health insurance.

between insurance coverage and health status are weaker than one might imagine.²³ (See Currie and Gruber [1995], Meara [1998], Joyce, Jaestner and Racine [1999], and Ross and Mirowsky [2000].) In any case, given that the health of the self-employed does not suffer due to their relative lack of health insurance, targeting health insurance subsidies at them may not be an appropriate public policy.

²³ To the extent that other parties are incurring the costs, there may be an efficiency rationale for compelling people to buy insurance. See Coate [1995].

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Appendix

The purpose of this appendix is to provide careful definitions of the various health status variables employed in the text.

PRIORITY is set equal to one if an individual has any of the following conditions:

A. Long-term, life threatening conditions:

Cancer (of any body part): cancer, tumor, malignancy, malignant tumor, carcinoma, sarcoma, lymphoma, Hodgkin's disease, leukemia, melanoma, metastasis, neuroma, adenoma

HIV/AIDS: HIV, AIDS

Diabetes: diabetes, diabetes mellitus, high blood sugar, juvenile diabetes, (Type I diabetes), adult-onset diabetes, (Type II diabetes), diabetic neuropathy

Emphysema: emphysema, chronic obstructive pulmonary, disease (COPD), chronic bronchitis (MUST use the word 'chronic', only for adults), Chronic obstructive bronchitis (MUST use the word 'chronic', only for adults), smokers cough

High Cholesterol: high cholesterol, high or elevated triglycerides, hyperlipidemia, hypercholesterolemia

Hypertension: hypertension, high blood pressure, Ischemic Heart Disease, ischemic heart disease, angina, angina pectoris, coronary artery disease, blocked, obstructed, or occluded coronary arteries, arteriosclerosis, myocardial infarction, heart attack

Stroke: stroke, cerebral hemorrhage, cerebral aneurysm, transient ischemic accident, transient ischemic attack, apoplexy, carotid artery blockage, arterial thrombosis in brain, blood clot in brain

B. Chronic, manageable conditions:

Arthritis: rheumatoid arthritis, degenerative arthritis, osteoarthritis, bursitis, rheumatism

Back Problems of Any Kind: back problems or pain of any kind, (lower or upper back), sore, hurt, injured, or stiff back, backache, 'vertebrae', 'lumbar', 'spine', or strained or pulled muscle in back, sprained back, muscle spasms, bad back, lumbago, sciatica or sciatic nerve problems disc problems: herniated, ruptured, dislocated, deteriorated, or misaligned discs, 'spinal', back spasms slipped, compressed, extruded, dislocated, deteriorated, or misaligned discs

Asthma: anything with the word 'asthma' or 'asthmatic'

Gall Bladder Disease: gall bladder disease, trouble, attacks, infection, or problems, gallstones

Stomach Ulcers: stomach ulcer, duodenal ulcer, peptic ulcer, bleeding ulcer, ulcerated stomach, perforated ulcer

C. Mental Health Issues

Alzheimer's Disease and Other Dementias: anything with the words 'Alzheimer's' or 'dementia', organic brain syndrome

Depression and Anxiety Disorders: depression (including severe, chronic, or major depression), dysthymia, dysthymic disorder, bipolar disorder, manic depression or manic

depressive illness, anxiety attacks, panic attacks, anxiety, nerves, nervous condition, nervous breakdown

In the text we also discuss a number of specific health conditions (see Table 3). They are defined as follows:

CANCER

Cancer of head and neck, esophagus, stomach, colon, liver and intrahepatic bile, lung/bronch/other intrathora, bone and intraconnective tissue, melanomas of skin, other non-epithelial, cancer of skin, breast, uterus, cervix, other female genital organs, prostate, bladder/kidney/renal pelvic, brain and nervous system.

VIRAL INFECTION

A Viral Infection.

HEADACHE

Headache, including migraines.

CARDIAC CONDITION

Heart Valve Disorders, Peri-, Endo-, and Myocarditis, Cardiomyo, Hypertension & Hypertension with complications, acute myocardial infarction, coronary atherosclerosis and other heart, nonspecific chest pain, pulmonary heart disease, other and ill-defined heart disease, conduction disorders, cardiac dysrhythmias, cardiac arrest, and ventricular fibrillation, congestive heart failure, nonhypertensive

UPPER RESPIRATORY INFECTION

Acute and Chronic Tonsillitis, Acute Bronchitis, Other Upper Respiratory Infections, Chronic obstructive pulmonary disease

RESPIRATORY DISEASE

Lung disease due to external agents, other lower respiratory disease, other upper respiratory disease

SKIN DISEASE

Skin and subcutaneous tissue, other inflammatory conditions, chronic ulcer of skin, other skin disorders.

INTESTINAL DISEASE

Intestinal infection

ARTHRITIS

Infective arthritis and osteomyelitis, rheumatoid arthritis and related disease, osteoarthritis and other non-traumatic joint disorders.

Table 1*

Summary Statistics: Insurance and Health Status by Employment Status

	(1)	(2)	(3)	(4)
	Entire Sample	Wage-Earners	Self-employed	Test Statistic of Difference in Means Between (2) and (3)
Insurance	.800 (.00422)	.815 (.00437)	.690 (.0140)	9.717
Healthy	.930 (.00270)	.928 (.00290)	.938 (.00734)	-1.092
Mentally healthy	.968 (.00186)	.967 (.00201)	.975 (.00472)	-1.445
Any physical limitations	.137 (.00363)	.135 (.00385)	.148 (.0108)	-1.124
Priority Condition	.131 (.00371)	.129 (.00391)	.149 (.0118)	-1.704
Cancer	.00242 (.000541)	.00245 (.00058)	.00219 (.00155)	0.152
Viral infection	.0190 (.00150)	.0182 (.00156)	.0252 (.00518)	-1.446
Headache	.0206 (.00156)	.0208 (.00167)	.0186 (.00447)	0.447
Cardiac condition	.0272 (.00179)	.0271 (.00189)	.0284 (.00550)	-0.238
Upper respiratory infection	.105 (.00337)	.106 (.00359)	.0985 (.00986)	0.679
Respiratory disease	.0479 (.00235)	.0490 (.00252)	.0394 (.00644)	1.284
Skin disease	.0363 (.00206)	.0366 (.00219)	.0339 (.00599)	0.412

Table 1 (continued)

	(1)	(2)	(3)	(4)
	Entire Sample	Wage-Earners	Self-employed	Test Statistic of Difference in Means Between (2) and (3)
Intestinal disorder	.0496 (.00239)	.0509 (.00256)	.0394 (.00644)	1.513
Arthritis	.0230 (.00165)	.0218 (.00170)	.0328 (.00590)	-2.100
Observations	8986	7898	1088	

* Each entry in columns (1), (2), and (3) shows the proportion of the relevant group that had each condition within the last year. Figures in parenthesis are standard errors. Column (4) shows t-tests on the differences in means in columns (2) and (3).

Table 2*
Insurance Source by Employment Status
(Conditional on Having Insurance)

Coverage Type	(1) Sample	(2) Wage- Earners	(3) Self- Employed	(4) T-test of Difference b/n 2 and 3
CHAMPUS/CHAMPVA	.0198 (.00160)	.0199 (.00170)	.0187 (.00478)	0.233
Medicaid	.0344 (.00210)	.0353 (.00225)	.0262 (.00564)	1.350
Any public insurance	.0687 (.00291)	.0683 (.00307)	.0722 (.00914)	-0.417
Medicare	.00292 (.000621)	.00267 (.000629)	.00498 (.00249)	-1.147
Private	.953 (.00243)	.955 (.00254)	.941 (.00829)	1.661
Private employer group	.850 (.00412)	.875 (.00403)	.635 (.0170)	18.38
Private non-group	.0439 (.00236)	.0273 (.00199)	.183 (.0137)	-20.94
Holder private insurance	.717 (.00519)	.741 (.00534)	.514 (.0176)	13.63
Holder private group insurance	.645 (.00551)	.690 (.00563)	.270 (.0157)	24.42
Holder private non-group insurance	.00570 (.000867)	.00490 (.000851)	.0125 (.00392)	-2.688

* Figures in each cell are means, with standard errors in parentheses. All means are computed conditional on having insurance.

Table 3*

Summary Statistics: Individual Characteristics by Employment Status

	(1)	(2)	(3)	(4)
	Entire Sample	Wage-Earners	Self-Employed	T-Test
<u>Education</u>				
No Degree**	.128 (.00353)	.0130 (.00378)	.0118 (.00977)	1.133
GED	.0425 (.00213)	.0437 (.0023)	.0340 (.00550)	1.483
High School Diploma	.502 (.00527)	.505 (.00563)	.481 (.0152)	1.507
B.A.	.176 (.00402)	.176 (.00429)	.177 (.0116)	-0.113
Masters	.0591 (.00249)	.0575 (.00262)	.0708 (.00778)	-1.743
PhD	.0154 (.00130)	.0125 (.00125)	.0358 (.00564)	-5.873
Other Degree	.0763 (.00280)	.0753 (.00297)	.0836 (.00840)	-0.967
<u>Race</u>				
Other	.0414 (.00210)	.0419 (.00225)	.0377 (.00578)	0.656
Black	.122 (.00346)	.129 (.00378)	.0726 (.00787)	5.354
White**	.835 (.00391)	.828 (.00425)	.890 (.00950)	-5.168
<u>Region</u>				
Northeast	.192 (.00416)	.190 (.00441)	.208 (.0123)	-1.408
Midwest	.230 (.00444)	.233 (.00476)	.207 (.0123)	1.901

Table 3 (continued)

	(1)	(2)	(3)	(4)
	Entire Sample	Wage-Earners	Self-Employed	T-Test
South	.351 (.00504)	.356 (.00539)	.313 (.0141)	2.771
West**	.227 (.00442)	.221 (.00467)	.272 (.0135)	-3.745
<u>Other Demographic</u>				
Age	38.8 (.117)	38.2 (.125)	43.6 (.300)	-15.41
Age Squared	1631 (9.30)	1580 (9.82)	2001 (25.9)	-14.96
Family Size	3.11 (.0165)	3.11 (.0175)	3.13 (.0492)	-0.45
Male	.526 (.00527)	.511 (.00563)	.635 (.0146)	-7.686
Married with Spouse in House	.620 (.00512)	.601 (.00551)	.756 (.0130)	-9.877
Income	26473 (225.3)	26119 (229.4)	29049 (827.3)	-4.247
Hours Worked per Week	37.91 (.145)	37.37 (.140)	41.76 (.614)	-9.948

*Figures in each cell are means, with standard errors in parentheses. Except for family size, age, age-squared, wage, and hours/week, all variables are dichotomous. They are equal to one if the individual is in the category, and zero otherwise. Column (4) is a t-test of the difference between columns (2) and (3).

**Omitted from right-hand side of regression models.

Table 4

Probit Estimates for Insurance Coverage and for General Health Status Measures

	(1)	(2)	(3)	(4)	(5)
	Insurance Status	HEALTHY	MHEALTHY	Any Physical Limitations	Priority Condition
Self- Employed	-.194 (.0173)	.0118 (.00706)	.00625 (.00509)	-.0100 (.0104)	.00333 (.0116)
Age	.00642 (.00256)	-.00255 (.00163)	-.00312 (.00115)	.00739 (.00236)	.00710 (.00240)
Age Squared	-.0000338 (.0000325)	9.56e-06 (.0000199)	.0000348 (.0000142)	-.0000323 (.0000287)	-.0000494 (.0000293)
GED	.0877 (.0128)	.0212 (.00873)	.00593 (.00678)	.0592 (.0233)	.0262 (.0215)
H.S. Diploma	.199 (.0114)	.0667 (.00710)	.0291 (.00508)	-.00930 (.0112)	-.0167 (.0126)
B.A.	.190 (.00701)	.0645 (.00452)	.0237 (.00367)	-.0357 (.0117)	-.0566 (.0117)
M.A.	.173 (.00576)	.0561 (.00420)	.0226 (.00368)	-.0606 (.0126)	-.0522 (.0136)
PhD	.165 (.00585)	.0570 (.00478)	--	-.0668 (.0194)	-.0533 (.0207)
Other Degree	.151 (.00727)	.0531 (.00455)	.0239 (.00340)	-.0400 (.0136)	-.0246 (.0152)
Family Size	-.0141 (.00276)	-.00100 (.00183)	-.00235 (.00121)	-.0173 (.00277)	.000624 (.00293)
Black	-.0275 (.0133)	-.0194 (.00870)	-.00197 (.00562)	-.0345 (.00991)	.0138 (.0134)
Other	-.0506 (.0238)	-.0249 (.0149)	.00221 (.00843)	-.0447 (.0154)	-.0140 (.0187)

Table 4 (continued)

	(1)	(2)	(3)	(4)	(5)
	Insurance Status	HEALTHY	MHEALTHY	Any Physical Limitations	Priority Condition
Northeast	.0296 (.0118)	.00828 (.00740)	.00764 (.00484)	-.0443 (.00983)	-.0317 (.0105)
Midwest	.0514 (.0109)	.0129 (.00705)	.00222 (.00500)	.00751 (.0106)	.0172 (.0108)
South	.00276 (.0108)	.00380 (.00666)	.00881 (.00442)	-.00585 (.00962)	-.0145 (.00963)
Male	-.0363 (.00820)	.0132 (.00516)	.00406 (.00361)	-.00502 (.00723)	.0262 (.00762)
Married	.138 (.0106)	.00213 (.00603)	.0164 (.00455)	-.0126 (.00854)	-.0218 (.00896)
Log Likelihood	-3851	-2166	-1228	-3374	-3129
Observations	8986	8986	8986	8803	8260

*The coefficients give the marginal effects of the associated right hand side variable on the probability of being covered by insurance (column (1)), and on the probabilities of assessing oneself as being healthy, assessing oneself as being mentally healthy, having any physical limitations, and having a priority condition, in columns (2), (3), (4), and (5), respectively. The standard errors appear in parentheses.

Table 5*
 Probit Estimates for Specific Health Status Measures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Viral Infection	Headaches	Cardiac Conditions	Upper Respiratory Infection	Respiratory Disease	Skin Disease	Intestinal Disorder	Arthritis
Self-Employed	.00877 (.00564)	-.000817 (.00466)	-.00444 (.00415)	.00201 (.0111)	-.0110 (.00674)	-.00424 (.00622)	-.00738 (.00729)	.00634 (.00516)
Age	-.000114 (.000959)	.00195 (.000943)	.00276 (.00112)	.000126 (.00218)	.000249 (.00148)	-.00125 (.00134)	-.000659 (.00150)	.00197 (.00102)
Age Squared	-3.37e-06 (.0000121)	-.0000264 (.0000118)	-.0000188 (.0000131)	-.0000291 (.0000275)	-4.30e-06 (.0000182)	.0000158 (.0000164)	-3.44e-06 (.0000191)	-.0000137 (.0000122)
GED	-.00397 (.00753)	.00178 (.00806)	.0105 (.0108)	.0107 (.0206)	.00956 (.0149)	.00196 (.0120)	-.0118 (.0108)	-.00266 (.00808)
H.S. Diploma	.00395 (.00561)	-.00436 (.00499)	.00277 (.00541)	.0201 (.0126)	.00133 (.00875)	.000122 (.00755)	-.00146 (.00810)	.000878 (.00550)
B.A.	.00795 (.00753)	-.00245 (.00521)	-.00675 (.00540)	.0296 (.0155)	.0191 (.0112)	.00345 (.00884)	-.00440 (.00883)	.00509 (.00668)
M.A.	.00663 (.00969)	-.0110 (.00445)	-.00267 (.00687)	.0395 (.0209)	.0245 (.0152)	.0212 (.0138)	-.0100 (.0104)	-.00243 (.00695)

Table 5 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Viral Infection	Headaches	Cardiac Conditions	Upper Respiratory Infection	Respiratory Disease	Skin Disease	Intestinal Disorder	Arthritis
PhD	.00837 (.0161)	-.0132 (.00643)	-.0108 (.00770)	.0395 (.0338)	.0230 (.0236)	.0131 (.0201)	-.0154 (.0154)	-.00662 (.00932)
Other Degree	.00783 (.00932)	.00222 (.00660)	-.000133 (.00737)	.0317 (.0192)	.00468 (.0123)	.0137 (.0121)	.00362 (.0114)	-.00258 (.00677)
Family Size	-.000462 (.00111)	-.00141 (.00117)	.00135 (.00113)	.00233 (.00254)	-.000173 (.00181)	-.000702 (.00157)	.000940 (.00174)	.000991 (.00118)
Black	-.00624 (.00428)	-.00349 (.00450)	.0157 (.00714)	.00476 (.0123)	-.0125 (.00732)	.0122 (.00830)	-.0118 (.00744)	.00939 (.00647)
Other	-.000114 (.00762)	-.0168 (.00351)	.0216 (.0121)	-.000291 (.0180)	.000736 (.0124)	.0117 (.0123)	-.000961 (.0117)	.0230 (.0115)
Northeast	-.00275 (.00413)	-.00534 (.00423)	.0148 (.00652)	-.000274 (.0107)	.00434 (.00778)	-.00741 (.00575)	-.0191 (.00611)	-.00545 (.00427)
Midwest	-.00521 (.00361)	-.000210 (.00414)	.00443 (.00506)	.0136 (.00997)	.00751 (.00714)	-.00557 (.00537)	-.00577 (.00616)	.00669 (.00475)

Table 5 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Viral Infection	Headaches	Cardiac Conditions	Upper Respiratory Infection	Respiratory Disease	Skin Disease	Intestinal Disorder	Arthritis
South	-.00494 (.00373)	.00483 (.00416)	.00556 (.00466)	-.00819 (.00912)	.00405 (.00651)	-.00862 (.00509)	-.00432 (.00591)	-.00435 (.00395)
Male	.00193 (.00298)	-.00432 (.00291)	.0125 (.00338)	.0210 (.00697)	.0166 (.00490)	.00706 (.00425)	.00866 (.00481)	-.000256 (.00308)
Married	-.00374 (.00340)	-.00316 (.00361)	.000207 (.00388)	.00420 (.00784)	.000163 (.00543)	.00581 (.00462)	-.00244 (.00557)	-.00155 (.00367)
Log Likelihood	-768	-813	-978	-2736	-1573	-1280	-1609	-877
Observations	8260	8260	8260	8260	8260	8260	8260	8260

*The coefficients give the marginal effects of the associated right hand side variable on the probabilities of having various health conditions. The standard errors appear in parentheses.

Table 6*

Self-Employment Effects in Alternative Specifications

	(1) Income	(2) Hours	(3) Doctor Visits
HEALTHY	.0108 (.00705)	.0119 (.00727)	.0110 (.00705)
MHEALTHY	.00532 (.00505)	.00831 (.00495)	.00568 (.00512)
Any Physical Limitations	-.00923 (.0105)	-.0199 (.0103)	-.00910 (.0104)
Priority Condition	.00172 (.0117)	.00271 (.0122)	.00368 (.0116)
Cancer	-.000287 (.000266)	-.000720 (.000483)	-.000516 (.000546)
Viral Infection	.00753 (.00545)	.00904 (.00596)	.00884 (.00564)
Headaches	-.000554 (.00476)	.00127 (.00529)	-.000966 (.00461)
Cardiac Condition	-.00427 (.00428)	-.00417 (.00430)	-.00457 (.00413)
Upper Respiratory Infection	.00380 (.0113)	.00444 (.0117)	.00184 (.0111)
Respiratory Disease	-.0112 (.00676)	-.0115 (.00697)	-.0110 (.00672)
Skin Disease	-.00473 (.00624)	-.00547 (.00623)	-.00441 (.00618)
Intestinal Disease	-.00590 (.00747)	-.00704 (.00772)	-.00751 (.00727)
Arthritis	.00684 (.00520)	.00671 (.00538)	.00610 (.00509)

*These are the coefficients on the self-employment dichotomous variables from the probit equations of Tables 4 and 5 augmented with a continuous variable for family income (column (1)), with a set of dichotomous variables for hours worked (column (2)), and with a continuous variable for number of doctor visits (column (3)). Coefficients are marginal effects on the respective probabilities, and figures in parentheses are standard errors.

Table 7*

Insurance and Health Status for Children

	Coefficient on the Parents' Self- Employment Status		Coefficient on the Parents' Self- Employment Status
(1) Insurance Coverage	0.04003 (0.0322)	(7) Upper Respiratory Infection	0.0393 (0.0486)
(2) Does not resist illness well	0.0320 (.0397)	(8) Skin Disease	-0.00927 (0.0177)
(3) Less healthy than others	-0.00729 (0.0348)	(9) Intestinal Disease	0.00457 (0.0287)
(4) Catches diseases	0.000802 (0.0514)		
(5) Priority Condition	0.0151 (0.0272)		
(6) Viral Infection	-5.44e-06 (0.0253)		

*This table shows the coefficient on the dichotomous variable for parents' self-employment status in each of a series of models estimated using as observations the children in the sample. Other covariates are child's age, race, sex, and region. The figures are the marginal effects from probit equations, with the standard errors in parentheses.

Table 8*

Health Effects on Transitions into and out of Self-Employment

	Probability of Being Self-Employed Conditional on Having Been a Wage-Earner	Probability of Being a Wage-Earner Conditional on Having Been Self-Employed
HEALTHY	.00110 (.00629)	.0102 (.0416)
MHEALTHY	-.0116 (.0116)	-.0650 (.0705)
Priority Condition	-.000820 (.00367)	-.0368 (.0275)
Cancer	.0712 (.0786)	**
Viral Infection	.00217 (.0102)	.127 (.0960)
Headaches	-.00233 (.00687)	-.0861 (.0231)
Cardiac Condition	.0177 (.0132)	-.0472 (.0433)
Upper Respiratory Infection	.00169 (.00427)	.00462 (.0379)
Respiratory Disease	.000410 (.00575)	.00920 (.0600)
Skin Disease	.00193 (.00711)	-.0203 (.0555)
Intestinal Disease	-.00788 (.00326)	.0142 (.0480)

Table 9*

Children's Health Effects on Transitions into and out of Self-Employment

	Probability of Being Self-Employed Conditional on Having Been a Wage-Earner	Probability of Being a Wage-Earner Conditional on Having Been Self-Employed
Does not resist illness well	-.00238 (.00309)	.00526 (.0272)
Less healthy than others	.0116 (.00689)	.00760 (.0508)
Catches diseases	-.00287 (.00331)	-.00389 (.0350)
Priority	-.00884 (.00323)	-.0837 (.0315)
Viral Infection	.00876 (.00801)	.0703 (.0596)
Upper Respiratory Infection	.00525 (.00460)	-.00282 (.0371)
Respiratory Disease	.00739 (.00738)	-.0283 (.0488)
Intestinal Disease	-.0102 (.00218)	-.0463 (.0455)
Skin Disease	-.00737 (.00436)	-.147 (.0805)
Observations	7029	836

* Each figure in the first column shows the marginal effect of the associated child's health condition on the probability of a parent making a transition from wage-earning to self-employment, *ceteris paribus*. The numbers in parentheses are standard errors. Each coefficient is generated from a probit model in which the left-hand side variable is the probability that an individual who was a wage earner initially is self employed two years later. The right hand side variables are those in table 4 in addition to the associated child's health variable. Each figure in the second column shows the marginal effect of the associated child's health condition on the probability of making a transition from self-employment to wage-earning, *ceteris paribus*. For this column, the probit equation is estimated over the sample of individuals who were initially self-employed, and the left-hand side variable is the probability of being a wage-earner two years later.