Inheritances, Health and Death*

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ABSTRACT

We examine how wealth shocks, in the form of inheritances, affect the mortality rates, health status and health behaviors of older adults, using data from eight waves of the Health and Retirement Survey (HRS). Our main finding is that bequests do not have substantial effects on health. This absence occurs despite increases in out-of-pocket (OOP) spending on health care spending and in the utilization of many types of medical services. Nor can we find a convincing indication of changes in lifestyles that offset the benefits of increased medical care. Inheritances are associated with higher alcohol consumption, but with no change in smoking or exercise and a possible decrease in obesity. A tentative conclusion is that inheritances do not affect the health of senior citizens.

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1. INTRODUCTION

Do improving economic circumstances lead to better health? At first blush the answer seems obvious. Economic theory predicts that higher wealth will relax the budget constraint, allowing individuals to obtain more of all normal goods, presumably including health (Grossman, 1972). A great deal of research, across a variety of disciplines, suggests a positive relationship between social or economic advantage and health (Kitagawa and Hauser, 1973; Marmot et al., 1984, 1991; Feinstein, 1993). However, such cross-sectional associations are less convincing than they at first appear because of the possibility of reverse causation – whereby health determines economic circumstances rather than vice versa (Smith, 1999) – or if there are omitted confounding factors (such as discount rates) that cause both health and economic status (Fuchs, 1982). Moreover, time series data often tells a different story. For instance, many types of physical health worsen when the economic conditions *temporarily* improve (Ruhm, 2000, 2005, 2007). In addition, the wealth effects might vary across the lifecycle, with some analysts emphasizing the particular importance of economic circumstances at young ages (Wadsworth & Kuh, 1997; van den Berg, 2006).

This paper investigates how inheritances are related to mortality, health status and health behaviors. Our data come from the first eight waves of the *Health and Retirement Survey* (HRS), a large U.S. longitudinal survey of adults 51 and older. Bequests are useful to examine because they frequently represent large and unanticipated or not fully anticipated wealth shocks. As such they can be thought of as pure income effects, in contrast to wage increases that contain a potentially offsetting substitution component, possibly conflating wealth and time effects. The HRS contains multiple measures of health, as well as data on a wide variety of individual characteristics, including health status prior to the period over which inheritances are analyzed.

Beyond focusing on inheritances, which have been rarely studied in this context, our analysis improves upon most related previous research in several ways. First, we take extra care

in accounting for potential confounding factors by controlling for a wide variety of characteristics, including baseline health status, and by incorporating a falsification-based framework whereby the predicted "effects" of bequests too small to plausibly influence health are attributed to unobserved heterogeneity and are subtracted from those of larger inheritances. Second, we separately examine how inheritances are related to future mortality and to several measures of health status (among the living). Third, we explicitly consider the role of multiple types of medical care in explaining any observed changes in health. Finally, we examine whether bequests affect lifestyle behaviors that have potential consequences for health.

Our main finding is that the wealth shocks associated with sizable inheritances do not substantially affect health. Our point estimates suggest a small (statistically insignificant) *rise* in overall mortality, but with some possibility of modest benefits for men. The absence of strong health impacts comes despite increases in out-of-pocket (OOP) health care spending and in the utilization of many types of medical services, particularly those with a large discretionary component. Nor can we find convincing evidence of offsetting changes in lifestyles. The positive wealth shocks lead to increased alcohol consumption – both at the intensive and extensive margins – but with no change in smoking or vigorous exercise and some indication of lower obesity prevalence. A tentative conclusion is that inheritances do not affect the health of senior citizens.

2. QUASI-EXPERIMENTAL ESTIMATES

Potential biases due to reverse causation or confounding factors limit what we learn from previous evidence of positive cross-sectional associations between economic circumstances and health. An ideal experimental design would provide sizable wealth shocks to randomly assigned individuals, whose health could then be compared over several years to a set of similar persons

not receiving the added income. Since such experiments are impractical, a potentially promising alternative is to obtain estimates that are "quasi-experimental", in that they exploit natural experiments or use econometric identification strategies that mimic experimental designs.

Such approaches contain inherent limitations, relative to the experimental "gold standard", if the variation is not truly random, the treatment group is not representative of the full population, or the size and nature of the shocks are limited. For instance, like many related studies, our analysis focuses on mature adults. This is restrictive if socioeconomic status (SES) related health gradients initially grow with age but narrow later in life (Case et al., 2002; Smith, 2004), since such a pattern allows for the possibility that wealth does not affect the health of senior citizens but has important benefits at younger ages.[1] Quasi-experimental approaches nevertheless hold promise for providing information on how wealth shocks affect health for the groups considered and the types of variation available in the data. Although we do not attempt to comprehensively review the prior literature, the remainder of this section characterizes the main results obtained from previous quasi-experimental approaches and supplies context for understanding the contribution of the current analysis.

A standard econometric method for dealing with the endogeneity issue is to estimate instrumental variables (IV) models. Ettner (1996) provides the best known example in this literature. Using data from several sources, she finds that income is positively related to health as proxied by self-reported overall health status, bed-days, limitations in activities of daily living (ADLs) and depression scores; stronger associations are obtained from IV than ordinary least squares (OLS) estimates.[2] As is typical, the challenge is in finding valid instruments – that are correlated with income but do not have an independent effect on health – and several of those

[1] The SES-health gradient may be smaller for senior citizens for purely biological reasons – e.g. if the marginal product of medical care declines beyond a certain age – or because senior citizens in the United States have almost universal (albeit often incomplete) health insurance through Medicare, whereas younger persons do not.
[2] Stronger IV estimates could occur because the unobserved characteristics of high income persons result in relatively poor health (which seems unlikely) or because measurement error attenuates the OLS coefficients.

used by Ettner (e.g. state unemployment rates and parental/spousal education) may directly influence health.

Mixed results have been obtained using a second procedure that exploits variations in cohort-specific incomes. For instance, Deaton and Paxon (1998) show that cohort-specific incomes are positively related to health in the United States, with the strongest effects observed in middle-age, whereas Adda et al. (forthcoming) fail to uncover a positive correlation for the United Kingdom. Such conflicting results could reflect cross-country differences or limitations of the estimation strategy. Specifically, reverse causation due to *individual* health status is eliminated but *cohort* level biases are not: better average health might cause cohort incomes to rise and omitted factors (e.g. medical technologies or lifestyle changes) could be correlated with average levels of cohort health and income.

A third strategy exploits variations in government policies that create plausibly exogenous variations in wealth. Case (2004) finds that pension reforms leading to unanticipated increases in wealth of black and coloured South Africans were associated with health improvements.[3] Such results might not extend to industrialized countries, however, and Snyder and Evans (2006) provide countervailing evidence of reduced mortality rates for U.S. seniors whose retirement wealth was unexpectedly *lowered* due to legislation establishing the Social Security benefit "notch". Interestingly, they suggest that the improved health occurred due to higher rates of (part-time) post-retirement employment which, in turn, were hypothesized to result in reductions in social isolation and increased connections with the community. These results do not necessarily generalize to younger individuals or to wealth increases that are unaccompanied by changes in labor supply.[4]

[3] These health benefits were shared by all family members in households that pooled incomes.
[4] Similarly, Frijters et al. (2005) find that the increased incomes experienced by East Germans, following German unification, resulted in only slightly higher levels of health satisfaction, although their experimental design combine

Finally, a number of researchers examine how health is affected by individual income or wealth shocks. Lindahl (2005) shows that, among Swedish lottery winners, larger prizes are associated with better health and lower mortality rates, with larger estimated effects from IV than OLS models. However, his sample is limited to winners and he has no information on the frequency of playing the lottery. Gardner and Oswald (2007) attempt to overcome these problems, by comparing the consequences of medium size (£1000 – £120,000) UK lottery winners to those winning small prizes (<£1000) not expected to affect health.[5] They find that medium size prize winners report reductions in mental stress, although the effects take two years to show up. A general concern is that lotteries could influence health through channels other than income. For instance, winning a large lottery might place stress on social relationships (Kaplan, 1978). As an alternative, Smith (2004) examines the effects of changes in stock market wealth and fails to uncover any connection with health. However, this could occur because such fluctuations are viewed to be transitory or uncertain.

This study examines inheritances. As mentioned, inheritances are useful because they frequently represent large wealth shocks that, unlike wage changes, do not have an offsetting substitution effect. One potential issue is that inheritances need not always be unanticipated, raising the possibility of changes in health or lifestyles prior to their actual receipt, and probably leading to an understatement of their effects in our analysis. However, even when inheritances are anticipated (with some probability), the amount and timing are uncertain, making it likely that many individuals feel constrained from using the prospective future wealth prior to obtaining the bequest. That said, we provide evidence below that our results are not sensitive to

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the impact of pure income shocks (due to currency conversion) with wage changes that may generate additional substitution effects.

[5] The assumption is that since both small and medium prize winners play the lottery, they are likely to have similar unobserved characteristics.

accounting for the subjective *ex ante* probability of receipt and that individuals frequently have difficulty correctly predicting the probability of obtaining future bequests.

A more serious concern is that inheritances may be correlated with unobserved determinants of health. This may be an issue for Meer et al. (2003), who use inheritances to instrument changes in wealth and uncover what they describe as weak improvements in self-assessed health status.[6] Michaud and van Soest (2008) similarly instrument changes in wealth with bequests. They present statistical evidence indicating the importance of unobserved heterogeneity and argue that accounting for it completely eliminates the causal effects of wealth on health.[7]

We use three strategies to minimize potential omitted variables biases. First, we take advantage of the substantial information available in the *Health and Retirement Survey* to account for a wide variety of observable characteristics. Our analysis suggests that such controls are important, since bequests are not received randomly but instead tend to be obtained by persons with characteristics correlated with good health. More comprehensive controls therefore reduce the estimated health benefits of inheritances. Second, we hold constant health status and behaviors at baseline (prior to the potential receipt of an inheritance). Previous research (Adams et al., 2003; Gardner and Oswald, 2007) demonstrates the usefulness of examining *health innovations* in this way, and these covariates account for important sources of otherwise uncontrolled for heterogeneity. Lastly, we incorporate an implicit "falsification test", where the effect focused upon is the differential impact of a substantial inheritance, beyond that estimated for small bequests anticipated to have no (or at most tiny) health consequences. Specifically, our

[6] This characterization can be questioned. A $250,000 inheritance increases the predicted probability of good health by two percentage points, on a base of 81 percent, which Meer et al. consider to be small. However, this equivalently reduces the probability of poor health by two points on a base of 19 percent, which seems substantial. This study also contains other limitations. For example, self-assessed health is the only outcome examined and a limited set of covariates are accounted for.

[7] However, their identification strategy is quite different than ours and they examine a shorter time period, a more restrictive sample, and a less comprehensive set of outcomes than we do.

main specifications focus on the incremental effect of inheritances $10,000 or more. It seems difficult to imagine that bequests below $10,000 (which average under $4300) could affect health much. Conversely, inheritances above this threshold average over $113,000 (in 2002 year dollars) and so are large in both absolute terms and as a share of lifetime income.[8] We also discuss below the results of models where inheritances are classified as "large" or "small" based on their size as a proportion of baseline income, rather than using the absolute dollar amount.

3. DATA AND OUTCOMES

3.1 Health and Retirement Survey

Our analysis uses longitudinal data from the Health and Retirement Survey (HRS), whose initial cohort consisted of persons born from 1931 to 1941, and their spouses. The first interview took place in 1992, with seven additional survey waves at two-year intervals through 2006.[9] This age group and data set have several advantages. Mortality and morbidity are especially prevalent among seniors, potentially making it easier to observe the health effects of wealth shocks. The chance of receiving an inheritance also increases with age and the *HRS* contains detailed information on individual characteristics, health and mortality.[10]

In each survey wave, HRS respondents were asked the following:

> "People sometimes receive property or lump sum payments of money from such things as pension settlements, insurance settlements, cashing in annuities, or inheritances. In

[8] An $113,000 inheritance represents around 2.4 years of income, at the sample average.
[9] The HRS added four cohorts – the Study of Assets and Health Dynamics Among the Oldest Old (AHEAD), Children of Depression (CODA), War Baby (WB), and Early Baby Boomers (EBB), in 1993, 1998, 1998 and 2004 respectively. We do not use data from these cohorts in our analysis.
[10] For example, 29.2 percent of persons born before 1946 had received an inheritance by 2004, compared to 18.4 percent of those born between 1946 and 1964, and 12.1 percent of those born after 1964 (Gist & Figueiredo, 2006).

the past two years did you [or your (husband/wife/partner)] receive a lump sum of money or property worth $500 or more that you have not already told me about?"[11]

An affirmative answer led to queries about the source of lump sum (e.g. insurance or pension settlement, inheritance, annuity, other source) and we use these responses to limit the wealth shock analyzed to inheritances.[12] Respondents were also questioned about the amount of the bequest, with information on bracketed values of more or less than $50,000 requested for persons not specifying the exact amount. We converted inheritance amounts to 2002 dollars (using Current Price Index) and substituted the average amount conditional on receiving less (more) than $50,000 for persons providing categorical information.[13]

The original HRS cohort contained 12,652 persons at the baseline (1992) interview. We restricted our sample in three important ways. First, we excluded respondents receiving a bequest before the 1992 survey, since we do not have pre-inheritance information for them. Second, our analysis is limited to whites. The reason for this is pragmatic. Blacks have low probabilities of inheriting and obtain relatively small amounts when they do: just 5 percent obtained a bequest (after 1992) and only 3.4 percent received $10,000 or more, compared to 23 and 17 percent of whites (see Table 1). The average inheritance amount for whites is $19,993 and conditional upon receipt (receipt more than $10,000) it is $85,836 ($113,083). Sex differences in inheritance receipt of size among whites are modest. Third, the HRS cohort consists of persons born between 1931 and 1941, as well as their spouses. Birth years of the

[11] The wording changed slightly across survey waves. For example, the first interview asked "whether you ever received an inheritance till now", instead of using the time frame of in the past two years.

[12] Our reasoning is that other shocks could affect health for reasons other than by raising wealth. For example, insurance settlements due to auto accidents could represent compensation for harm caused to health, and annuities are frequently the anticipated realizations of wealth flows due to savings earlier in life.

[13] The average is $17,276 ($186,509) conditional on a bracketed inheritance amount less (greater) than $50,000. We use the original HRS data for the inheritance-related variables. All other information comes from the RAND HRS Data (version H), which has been cleaned and transformed to be user-friendly and accessible to researchers (Rand, 2008).

latter vary widely (from 1907 to 1969) and so to maintain a fairly homogeneous sample we restrict spouses to those born with five years of the original cohort (between 1926 and 1946).[14]

Attrition is potentially problematic, since 16.4% of respondents dropout prior to the wave 8 interview. Some attrition may represent unidentified deaths, which we account for when analyzing mortality by censoring such observations at the time of attrition. However, this could be an issue for evaluating health status, since persons exiting the sample could differ systematically from those who do not. To provide information on the potential magnitude of this problem, we compared baseline characteristics of attriters (by wave 8) and non-attriters. The sample means were generally quite close. For instance, 24 percent of non-attriters classified their health in 1992 as excellent and 28 percent as very good, versus 23 and 28 percent of attriters; 53 percent of the former group are female compared to 52 percent of the latter. However, less educated individuals are slightly more likely than others to exit the sample.[15]

3.2 Outcomes

Our dependent variables include mortality and multiple measures of health status. To investigate potential mechanisms for changes in health, we also analyze medical care expenditures, the use of several types of health care, and a set of lifestyle behaviors.

Mortality is, in some sense, the ultimate health outcome. Since the HRS respondents are aged 51 to 61 (and their spouses are 46 to 66) at baseline, and are followed for 14 years, deaths are common: around 20 percent of the non-attriter sample die prior to the 2006 interview. On the other hand, because some important health outcomes are unrelated or only weakly related to mortality, we also examine a variety of other indicators. The first of these is self-reported overall

[14] Our results are not sensitive to this choice.
[15] Twenty-eight percent of attriters are high school dropouts and 13 percent are college graduates, compared to 24 and 17 percent of non-attriters.

health.[16] From the original categories of excellent, very good, good, fair and poor, we constructed dichotomous variables for excellent and fair/poor health. Second, we measure limitations in activities of daily living (ADLs) or instrumental activities of daily living (IADLs). The binary ADL variable is set to one for persons reporting difficulty in: bathing, dressing, eating, moving from bed to chair or walking around. IADL is equal to one for individuals who have difficulty (without help): answering a phone, managing money, taking medicine, shopping or preparing meals. Our final proxy relates to mental health and are based on scores from an eight-item version of the Center for Epidemiologic Studies (CESD) depression scale.[17] Following previous research (Emptage et al., 2005; Doshi et al., 2008), we define persons with CESD scores of three or greater as being "depressed".

Wealth might protect health or improve quality of life by allowing individuals to consume more medical care. For this reason, we investigate how inheritances are related to out-of-pocket (OOP) medical expenditures, inpatient and outpatient treatments, nursing and home health care, doctor visits, prescribed medications, and dental care.[18] OOP spending refers to the total amount paid for medical services since the last interview; the other variables are dichotomous indicators of use since that time. Hospital and nursing home visits are coded as positive if there has been an overnight stay. Outpatient care refers to outpatient surgery (as distinguished from doctor visits) and home health care to home visits by medically trained professionals such as nurses, nurse's aides, physical/occupational therapists, chemotherapists or respiratory therapists. Doctor visits measure whether a respondent went to a physician at least

[16] Self-reported overall health is predictive of health status and future mortality rates (e.g. Idler and Angel, 1990). There may be cultural differences in responses to self-reported health questions (Jurges, 2008) but this should not be much of an issue for panel data exploiting within-person variations.
[17] CESD scores in waves 2 and later of the HRS range between zero and eight and are obtained by summing eight questions related to depression. These include both negative indicators (e.g. feelings of sadness, depression, and lonliness) and positive ones (e.g. feelings of happiness or life enjoyment). All questions are scored such that higher values are more indicative of depression. Tuvey (et al., 1999) provides discussion of the eight-item CESD scale.
[18] OOP expenditures refer to spending on hospital or nursing home stays, doctor visits, home health care and prescription drug use.

once since the last interview and dental care includes seeing a dentist or obtaining dentures. Prescription use is based on whether the respondent regularly took prescription medications during the last two years.

Wealth shocks may also change health-related lifestyle behaviors. We examine the effects on alcohol use, smoking, vigorous exercise and obesity. Drinking is modeled in several ways. First, we include a dichotomous indicator of whether the respondent has drunk any alcohol during the last three months and a continuous measure of drinks per week conditional on some use.[19] Second, since the effects of recreational and heavy drinking could differ (with the former sometimes associated with health benefits), we analyze categorical variables measuring consumption of at least one and no more than 7 or 14 drinks per week (light/moderate alcohol use) and greater than 14 drinks weekly (heavy consumption). We also examine tobacco use, from a binary variable set to one for persons smoking at the time of the interview, and zero otherwise, as well as physical activity through a dichotomous indicator of vigorous exercise occurring least three times per week. Lastly, we consider excess body weight, which reflects the combined influences of physical activity and diet. Obesity is defined conventionally as body mass index (BMI) of 30 or higher, and class 2 obesity as BMI of 35 or more.[20]

3.3 Explanatory Variables

The explanatory variables of principle interest relate to inheritances. We delete from the analysis persons obtaining bequests prior to the initial interview, in 1992, and calculate the total inheritance amount received between the first interview and the current survey (whether from single or multiple bequests). Our main analysis uses two inheritance variables. The first indicates if any inheritance has been received; the second denotes bequests of $10,000 or more.

[19] The number of drinks per week is calculated as the product of the number of weekly drinking days times the number of drinks consumed on these days, again measured over the last three months. This information is not provided for 1994 and observations for that year are excluded from this portion of the analysis.

[20] BMI is based on self-reports of height and weight. These are measured with error, generally leading to an understatement of BMI, but there is no reason to think the mistakes are systematically related to inheritance receipt.

For brevity, we often refer to the latter as "large" inheritances, with those below $10,000 sometimes called "small".[21] We also perform sensitivity analysis dividing inheritance amounts more finely (e.g. into five categories rather than two), varying the threshold between "large" and "small" bequests, or measuring inheritance size as a proportion of income rather than by an absolute dollar amount.

Supplementary regressors include demographic characteristics such as sex, age and age-squared, marital status, education and (the natural log of) household income, all measured at baseline. Most of these are standard and do not require further explanation. Married and cohabiting individuals are separately classified, as are high school graduates and those with a GED. Household income refers to receipts by the husband and wife from earnings, veterans' benefits, retirement or pensions, annuities, IRA distributions, stocks and bonds, savings accounts, rental properties, investment trusts and other sources. Finally, to allow for the possibility that the recent death of a parent could affect the outcomes examined, we control for whether the respondent's mother or father (two dichomotomous variables) has died since the previous survey wave.[22]

Most models control for baseline (1992) health through four dummy variables for self-assessed overall health (fair, good, very good or excellent, with poor health the reference category), dichotomous regressors for underweight, overweight, mild obesity or severe obesity (BMI ranges $\leq$18.5, 25 to 29.9, 30 to 39.9, and $\geq$40) , as well as smoking status. Table 2 provides summary statistics on these and other variables used in the analysis.

We also estimated models with controls for parental education, ADLs, IADLs and alcohol use at baseline, since these might capture some remaining sources of heterogeneity. The

[21] Inheritances less than $50,000, but with the exact amount not specified, are placed in the "large" category, introducing some possibility for error. The resulting bias is likely to be minor, however, since only this covers just 1.6 percent of inheritances and similar results are obtained when these individuals are dropped from the sample.
[22] These variables are set to zero and a missing value dummy variable set to one if information on parental death is unavailable.

results were insensitive to their inclusion and these additional regressors were not incorporated in the main models described below.

4. ECONOMETRIC METHODS

The question of interest is whether inheritance receipt causally affects health outcomes and inputs. Consider a general specification:

$$Y_{i,t} = X_i\, b + Any\ Inherit_{i,t}\, c + \mu_{i,t}\ , \qquad (1)$$

where $Y_{i,t}$ is a health outcome for individual i at time t, $Any\ Inherit_{i,t}$ indicates inheritance receipt by the current survey wave, X_i is a vector of control variables measured at baseline (the 1992 interview), and $\mu_{i,t}$ is a regression disturbance term. The HRS surveys individuals at two year intervals (from 1992 to 2006) and equation (1) allows even recently received inheritances to affect the outcomes. The results are generally insensitive to this assumption, as discussed below.

Our most important concern relates to the difficulty of adequately controlling for heterogeneity between persons who do and do not receive bequests. Observable characteristics available in the *HRS* suggest that inheritance receivers are more advantaged along a variety of dimensions (e.g. they are relatively educated and healthy at baseline). Failure to account for this heterogeneity will lead to erroneously favorable estimates of the health benefits of inheritances. We partially address this issue by controlling for demographic characteristics and health status at baseline. Holding baseline health status constant should remove sources of confounding that affect health similarly in 1992 and in later years.

An additional innovation is that we focus on the incremental impact of large bequests, beyond those of inheritances likely to be too small to meaningfully affect health. Specifically, our main models take the form:

$$Y_{i,t} = X_i\, b + Any\ Inherit_{i,t}\, c + Inherit \geq \$10{,}000_{i,t}\, d + \mu_{i,t}\ , \qquad (1')$$

where *Inherit ≥$10,000* indicates receipt of inheritances of $10,000 or more. *Any Inherit* and *Inherit ≥$10,000* are both set to one for persons obtaining "large" bequests, whereas only the former equals one (with *Inherit ≥$10,000* set to zero) for individuals receiving small (below $10,000) inheritances. $\hat{c}$ then provides the regression estimate of the "effect" of a small inheritance, which is assumed to reflect otherwise uncontrolled for heterogeneity, and $\hat{d}$ shows the additional (causal) impact of a large bequest.[23] The key identifying assumptions are that inheritances below $10,000 must be too small to materially affect health and receivers of small and large inheritances have similar unobserved characteristics (after controlling for baseline demographics and health status). The first assumption seems quite plausible. Although we are less sure about the second supposition, any remaining omitted variables seem likely bias the estimates towards overstating the health benefits of inheritances (since the observables suggest favorable selection), so that a finding of little or no benefit is informative.

Since there are up to seven observations per individual (covering the second through eight waves), we calculate robust standard errors, after clustering at the individual level.

4.1 Mortality

Inheritance receipt is likely to be mechanically correlated with death rates because early mortality precludes the future receipt of a bequest. Consider the example where inheritances have no effect on health and two individuals would both inherit in wave 5, conditional on living that long, but that one of them dies in wave 3 (before the bequest is received). Inheritances are then negatively associated with death rates (since the non-receiver does not live as long as the individual who inherits) but this reflects mortality selection rather than a causal effect.

To address this issue, we estimate a discrete time logit hazard model specified by:

[23] To see this, assume that $Y_{i,t} = X_i\, b + Inherit\ <\$10{,}000_{i,t-1}\, c' + Inherit\ \geq\$10{,}000_{i,t-1}\, d' + \mu_{i,t}$, where *Inherit <$10,000* is a binary variable indicating receipt of a "small" inheritance. Since *Inherit* equals one if either *Inherit <$10,000 or Inherit ≥$10,000* is one, this can be rewritten as: $Y_{i,t} = X_i\, b + Inherit_{i,t-1}\, c' + Inherit\ \geq\$10{,}000_{,t-1}\, (d'-c') + \mu_{i,t}$. Therefore, in equation (1'), *c=c'* and *d=d'-c'*.

$$M_{i,t} = exp(Z_{i,t}\beta)/(1+exp(Z_{i,t}\beta)) \quad (2)$$

where $M_{i,t}$ is the mortality hazard rate, the probability of dying between wave *t-1* and *t*, conditional on being alive at *t-1*, and

$$Z_{i,t}\beta = X_i\, b + Any\ Inherit_{i,t-1}\, c + Inherit \geq \$10{,}000_{i,t-1}\, d + \mu_{i,t}. \quad (3)$$

Since inheritance receipt is measured at *t-1*, and the hazard rate is conditioned on living at least that long, these estimates are not contaminated by the mortality selection. The model also easily accounts for censoring due to attrition or survival through the end of the analysis period.

Notice that (2) can be rewritten as:

$$Ln[M_{i,t}/(1 - M_{i,t})] = Z_{i,t}\beta. \quad (2')$$

Since mortality hazard rates are small, averaging .029, $(1 - M_{i,t}) \approx 1$, so that the log of mortality rates is approximately linear in the covariates and that the marginal effects of the latter are closely estimated by $\exp(\hat{\beta}) - 1$.

4.2 Other Outcomes

Most dependent variables, other than mortality, are dichotomous. The predicted effects of inheritances on these outcomes are estimated using a linear probability model (LPM) defined by equation (1').[24] We again have multiple observations for most individuals, but with missing values where death or attrition precedes the interview date.

Out-of-pocket medical spending and alcohol use are analyzed using a two-part model that separately estimates the determinants of positive use and the amounts conditional on such use (Duan, Manning, Morris, and Newhouse, 1983; Madden, 2008). The participation equation is estimated as an LPM model equivalent to (1'). The conditional use specification, is a semi-log model taking the form:

$$Ln(Y_{i,t} |\ Y_{i,t} > 0) = X_i\, b + Any\ Inherit_{i,t}\, c + Inherit \geq \$10{,}000_{i,t}\, d + \mu_{i,t}\ , \quad (4)$$

[24] We also estimated some specifications as probit models. The resulting marginal effects were close to those from corresponding LPM estimates.

with the predicted impact of a large inheritance shock estimated as $\exp(\hat{d}) - 1$.

5. RESULTS

5.1 Mortality Rates

The predicted impact of inheritances on mortality hazard rates is displayed in Table 3. As discussed, the coefficient on *Inherit ≥$10,000* provides our best estimate of the true wealth effect, with that on *Any Inherit* indicating effects of confounding factors remaining after inclusion of the supplementary regressors. The estimated inheritance effects will still be biased if there are systematic differences in the unobserved characteristics of persons obtaining large and small inheritances, holding other explanatory variables constant. Such confounding is likely to be particularly severe in models with parsimonious controls and so we anticipate that the large inheritance coefficient will change as we move from less to more fully specified models.

Column (1) of Table 3 holds constant only the two inheritance variables. The large negative coefficient on *Any Inherit* provides evidence of remaining heterogeneity, as anticipated since inheritance receivers are favorably selected and the specification contains no other controls. Large bequests are associated with a substantial but imprecisely estimated (and insignificant) 13 percent reduction in mortality hazard rates.

The beneficial effect of large inheritances rises – to a 17 percent reduction in the mortality hazard – when age and sex are controlled for (see column 2). This occurs since age is positively correlated with both inheritances and death. By contrast, the coefficient is attenuated when adding controls for other demographic characteristics, recent parental death and baseline health status (models 3 and 4). In the most comprehensive specification, which also holds constant baseline smoking and body weight, large inheritances are correlated with a statistically insignificant 2.8 percent *increase* in mortality hazard rates (column 5). Thus, there is no evidence that large inheritances substantially reduce mortality, after accounting for important

sources of heterogeneity, and some indication that they may increase deaths, although large standard errors imply that all such conclusions are tentative.[25]

5.2 Health Indicators

Nor does an inheritance of $10,000 or more have large or consistent impacts on health status. This can be seen in Table 4, which summarizes results for the six health indicators. Here, and throughout the remaining analysis, we report findings for models containing our most complete set of explanatory variables, corresponding to column (5) of Table 3. The point estimates suggest that large bequests are associated with four indicators of better health – an increased likelihood of "excellent" overall health and lower rates of ADLs, IADLs or depression, while the parameter estimate for fair/poor health is zero. However, none of these are close to being statistically significant and most are of small size. The parameter estimates for *Any Inherit* again generally point to favorable inheritance selection (although most coefficients are not statistically significant) and the supplementary covariates usually have the expected signs.

5.3 Medical Care

Positive wealth shocks are likely to increase personal (out-of-pocket) spending on medical care, if the latter is a normal good. Table 5 confirms this expectation. Substantial inheritances increase the predicted probability of positive OOP spending, but the effect is small and statistically insignificant because the vast majority (over 90 percent) of the sample has some expenditure (column 1). The results in column (2) are more dramatic, however, showing that

[25] Coefficients on the supplementary covariates are generally in the expected directions. Mortality hazard rates are relatively high for males, older sample members, smokers, those in poor initial health, and underweight or severely obese individuals. Education and income do not have strong predicted effects in the most comprehensive model, largely because baseline health – which is influenced by income and education – has already been controlled for. The coefficient on *Any Inherit* is generally attenuated by including additional covariates, as expected since it captures the effects of omitted variables. The one important exception is that the sign of the large bequest parameter estimate switches from negative to positive when moving from column (4) to (5). This occurs because smokers have high mortality rates and probabilities of receiving small inheritances but relatively infrequently obtain large ones.

large bequests raise expected OOP spending, conditional on positive amounts, by a highly significant 23.3 percent.

The remainder of Table 5 indicates that inheritances are also associated with higher use of the seven of the specific types of medical care examined, although many of the estimates are statistically insignificant. Most notably, the coefficients on *Inherit ≥$10,000* suggest that dental care rises 8.7 percentage points, on a base of 64 percent, and home health care by 1.2 points on a base of 4.4 percent. Both of these seem likely to have a large discretionary component that might well be affected by bequest-related wealth shocks. By contrast, inpatient hospitalizations are likely to be less sensitive to economic circumstances and so it is no surprise that the inheritance effects are small (0.7 points on a base of 22 percent) and insignificant. Growth in the predicted probability of visiting the doctor or taking prescription drugs is also tiny – 0.3 and 0.4 percentage points on sample averages of 93.0 and 72.4 percent – probably because these are so common (and we do not measure changes at the intensive margin), whereas the expected rise in outpatient and nursing home care is sizeable (0.7 and 0.2 percentage points on a base of 19.5 and 1.3 percent) although imprecisely estimated.

In summary, these results suggest that inheritance receivers use some of their new wealth to increase purchases of medical care, particularly those types with a substantial discretionary component.

5.4 Health Behaviors

Table 6 investigates how inheritance receipt affects alcohol use. Large bequests predict a statistically significant 10 percentage point increase in the probability of drinking (on a base of 33 percent), with a significant 27 percent rise in consumption conditional on some use. The health effects of this change are not transparent, since light drinking may protect from some health problems (Reynolds et al., 2003), whereas heavy use is likely to be harmful. However,

the remainder of the table shows that light drinking experiences the most: the probability of consuming 1 to 7 or 1 to 14 drinks per week are predicted to rise 5.2 and 8.4 percentage points, compared to just a 1.4 point growth in the probability of drinking more than 14 alcoholic beverages weekly.[26]

The findings for the other behaviors – exercise, smoking and obesity – are ambiguous but most often suggest that inheritance shocks lead to lifestyle changes likely to improve health. Specifically, as shown in Table 7, bequests over $10,000 predict have little impact on exercise or smoking but are associated with substantial but imprecisely estimated decreases in obesity (2.9 percentage points on a base of 26.5 percent) and severe obesity (1.2 points compared to a sample average of 7.6 percent).

5.5 Gender Differences

We investigated whether bequests affect men and women differently. Although large standard errors make it difficult to draw firm conclusions, the results (not shown) raise the possibility of more favorable health consequences for males. For instance, large inheritances predict a large (but statistically insignificant) 43 percent increase in the mortality hazard rate of women versus a 16 percent reduction for men. The point estimates also suggest a substantial fall in ADLs, IADLs and depression for males (with the last two being statistically significant), compared to increases in all three outcomes for females. Positive wealth shocks are estimated to raise the overall use of medical care for both men and women, with larger effects for the females. For instance, conditional on positive amounts, large inheritances were associated with a 30.1 percent growth in OOP spending for women versus 15.5 percent for men.

Finally, sizable inheritances increase predicted drinking for both sexes, with larger growth in light consumption for women than men. There were no consistent gender differences

[26] Notice that although the predicted rise in the probability of drinking more than 14 drinks per week is large relative to the (small) base level, it is the absolute not relative increasesin the probabilities of light versus heavy drinking that is important for evaluating how changes in alcohol consumption affect average health of the population.

for exercise, smoking or body weight, and none of these inheritance effects approached statistical significance.

6. DISCUSSION

Our analysis suggests that the positive wealth shocks resulting from substantial inheritances fail to provide health benefits and might be associated with slight increases in mortality, particularly for women. This is not a complete surprise since previous quasi-experimental analyses obtained mixed results, including often finding that positive income or wealth shocks have no impact or adverse effects on health. Nevertheless, economic theory predicts beneficial consequences, assuming that health is a normal good, and our efforts to provide mechanisms for the observed effects are not particularly successful. Most potential moderating factors examined (greater use of medical care, increases in light alcohol and decreased obesity) seem likely to improve health.

We tested the robustness of our findings to a variety of alternative specifications. To allow for the possibility that inheritances only gradually improve health, we estimated models examining how self-assessed health was related to inheritances received 2, 4, 6, 8, 10, 12 or 14 years earlier (among persons remaining in the sample at the wave 8 interview). These estimates failed to show any clear pattern and, in particular, did not provide consistent evidence of stronger (positive) health effects for inheritances received further in the past.

We investigated sensitivity of the results to use of the $10,000 threshold defining "large" inheritances through specifications where the cut point was $3,000, $5,000 $7,000 or $20,000. Qualitatively similar results were almost always obtained. The one exception was that large inheritances predicted implausibly big (but still insignificant) increases in mortality using the

$3,000 and $5,000 boundaries.[27] We do not have an explanation for these last results (indicating strong negative wealth effects on health) but note that they are obtained in specifications where very few persons were classified as receiving "small" inheritances (e.g. less than one percent of observations when using the $3,000 standard).

Positive wealth shocks of a given size might have different effects on poor than wealthy individuals, since the change in relative economic well-being is larger for the former group. We addressed this by estimating models measuring inheritance size as a proportion of baseline household incomes (with the analysis limited to persons not retired in 1992). Although the results were somewhat sensitive to the threshold dividing "large" and "small" inheritances, there was never consistent evidence of large and statistically significant health effects.[28]

Inheritances might have few effects on health because they are fully anticipated and so do not represent true shocks. We view this as unlikely, since neither the timing nor amount of bequests are known in advance, and many individuals might be reluctant to alter their spending before inheritances are actually received.[29] Nevertheless, to investigate this issue, we defined inheritances as "expected" for individuals reporting (in 1994) that their subjective probability of obtaining a bequest during the next 10 years was at least 50 on a 100 point scale (and unexpected otherwise). We then examined the effects on health status and medical care utilization in 2006. These revealed qualitatively similar predicted effects of expected and unexpected inheritances

[27] Large inheritances were predicted to increase mortality hazards by approximately 27 and 24 percent in these cases.
[28] For instance, results similar to those above are obtained when setting the inheritance threshold at 10 percent of annual (baseline) income. Conversely, using an 18 percent of income threshold, large bequests predict much smaller (statistically insignificant) increases in out-of-pocket health care spending or in the use of specific medical services.
[29] There is direct evidence that individuals have limited ability to predict the future receipt of inheritances. Just 51 percent of respondents stating, in 1994, that they had a 100 percent probability of inheriting during the next ten years actually obtained a bequest by 2006 (conditional on surviving until then). At the other extreme, most (68 percent) of the HRS sample claimed to have no possibility of obtaining an inheritance but 12 percent of this group had actually received one by 2006.

for most outcomes, suggesting that bequest expectations are inaccurate, individuals do not treat expected inheritances like other sources of wealth, or that health is unaffected by them.[30]

The main results were robust to several other specification checks. For instance, we examined but uncovered no consistent evidence of uncontrolled for differences in the health *trends* of inheritance receivers and non-receivers.[31] Some specifications divided large inheritances into four separate categories ($10,001-$25,000, $25,001-$100,000, $100,001-$$250,000, >$250,000). We also experimented with fixed-effect estimates, as an alternative method of controlling for heterogeneity. Our main conclusions remained unchanged.

We are left to conclude that the wealth shocks resulting from large bequests have negligible impacts on mortality and self reported health status. The main specifications suggest that out-of-pocket health expenditures and the use of medical services, particularly discretionary components such as dental or home health care, do increase. Alcohol consumption also rises, probably with beneficial effects on health, since the change is dominated by growth in light rather than heavy drinking. The data also suggest, although not conclusively, that obesity and severe obesity decline, which should yield health benefits.

Many of our estimates are large in magnitude but imprecisely estimated, raising the issue of limited statistical power. However, it is noteworthy that we did find substantial and significant effects for out-of-pocket medical spending and some types of health care (dental visits and home health care) likely to have a strong discretionary component. The average sample member spends about $1,250 per year out-of-pocket on medical care and a large

[30] For instance, expected and unexpected inheritances raise OOP health care spending and drinking by similar amounts. However, unexpected bequests may have larger positive (negative) effects on dental visits (obesity prevalence) and, if anything, more detrimental consequences for self-assessed health.

[31] To accomplish this, we selected individuals surviving through the eighth survey wave and who had not received an inheritance by wave four (1998). We then examined, but found no evidence of, differences in changes in self-assessed health between waves one and four (prior to potential inheritance receipt), as a function of whether or not a bequest was obtained between waves four and eight. Specifically, the health of large inheritance receivers deteriorated slightly (between waves one and four) relative to non-receivers but this was entirely due to their superior health at baseline. Controlling for health in 1992, the relative health of receivers trended slightly upwards between waves one and four. None of these differences approached statistical significance.

inheritance is anticipated to increase this by around $300. This might not be sufficient to have large effects on overall health or mortality but, particularly when used for purposes such as dental care, might increase quality-of-life in ways we poorly measure.

Even if the health is unrelated to income or wealth for the *HRS* age group, the latter could be important earlier in the lifecycle.[32] We obtained some indication of this by separately examining comparing results for persons below 65 versus 65 and over. Inheritances might have weaker health benefits for the older group, virtually all of whom are covered by Medicare, whereas their younger counterparts generally are not. Consistent with this, substantial bequests were associated with larger reductions in deaths and bigger improvements in all measures of health for those below than above 65, although the estimates were again imprecise. Interestingly, out-of-pocket health spending increased by similar amounts for both age groups, in part because seniors had relatively large increases in the types of medical care (such as dental visits) not covered under Medicare. This may provide some support for the possibility that increased wealth improves the quality-of-life of the elderly in ways that do not show up in the general indicators of health studied above.

[32] Consistent with this, Smith (2004) and Deaton and Paxon (1998) show that SES-health gradients grow through middle adulthood but then begin to decline.

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Table 1. Probability of Receiving Inheritance and Size of Inheritance for Persons Living Through End of Sample Period

	Whites	Blacks	White Females	White Males
% Received Inheritance by Wave 8	23.29	5.44	24.09	22.38
% ≥$10,000	16.78	3.35	17.12	16.39
% <$10,000	4.34	1.27	4.67	3.96
% Missing Inheritance Amount	2.15	0.82	2.30	1.98
Average Cumulative Inheritance Amount by Wave 8 (2002 dollars)				
Full sample	19,993	2,252	19,799	20,214
Received Inheritance	85,836	41,435	82,185	90,328
Received Inheritance ≥$10,000	113,083	65,544	114,488	111,408
Received Inheritance of <$10,000	4,298	4,426	4,325	4,263
N	5620	1343	2997	2623

Note: Data are from the Health and Retirement Survey and refer to respondents who had not received an inheritance prior to 1992 and lived through the wave eight (2006) interview.

Table 2. Descriptive Statistics for Selected Variables

	All	Females	Males
Baseline (1992) Control Variables			
Female	0.5290	1.0000	0.0000
Less Than High School	0.2420	0.2420	0.2414
GED	0.0580	0.0486	0.0680
High school graduate	0.3427	0.3833	0.2971
Some college	0.1920	0.1989	0.1852
College graduate	0.1650	0.1272	0.2084
Cohabits	0.0210	0.0181	0.0232
Separate/Divorced	0.0980	0.1188	0.0737
Widowed	0.0440	0.0736	0.0118
Never married	0.0220	0.0228	0.0212
Married	0.8150	0.7667	0.8702
Log(household income)	10.3380	10.2292	10.4595
Self reported health			
Excellent	0.2380	0.2446	0.2304
Very good	0.2830	0.2949	0.2690
Good	0.2700	0.2525	0.2898
Fair	0.1310	0.1388	0.1233
Smoker	0.2506	0.2412	0.2613
Death of Parent Since Last Survey			
Mother	0.0470	0.0445	0.0478
Father	0.0322	0.0254	0.0337
Dependent Variables (in 2006)			
Died By 2006 Survey	0.1942	0.1435	0.2511
Fair/worse Self-Reported Health	0.2764	0.2798	0.2720
Excellent Self-Reported Health	0.1070	0.1034	0.1115
ADL	0.1347	0.1401	0.1278
IADL	0.0607	0.0500	0.0745
Depressed (CESD Score≥3)	0.1953	0.2691	0.2371
Positive OOP medical expenditure	0.9191	0.9302	0.9049
Log(OOP) conditional on OOP>0	7.3455	7.3715	7.3112
	(1.3672)	(1.3659)	(1.3685)
Hospital Episode	0.2636	0.2507	0.2801
Outpatient Care	0.2377	0.2245	0.2546
Nursing Home	0.0236	0.0296	0.0158
Home Health Care	0.0657	0.0646	0.0672
Visited Doctor	0.9533	0.9632	0.9407
Prescription Use	0.8583	0.8688	0.8449
Visited Dentist	0.6372	0.6523	0.6178
Obese (BMI≥30)	0.3024	0.3153	0.2860
Severely Obese (BMI≥35)	0.1038	0.1228	0.0797
Current Drinker	0.5193	0.4621	0.5927
Log(# Drinks/Week) conditional on drinking	1.5055	1.2645	1.7049
	(1.0246)	(0.941)	(1.0484)
1-7 drinks per day	0.2839	0.1744	0.2631
1-14 drinks per day	0.3584	0.1997	0.3145
Smoker	0.2238	0.2712	0.1809
Vigorous Exercise	0.4490	0.3992	0.5096

Note: The sample in this table is limited to whites remaining in the sample through 2006. Sample sizes are 5,620, 2,997 and 2,623 for all whites, white females and white males. Standard deviations are in parenthesis. Log incomes are calculated by adding $1 to the value for persons reporting no income. Activity Daily Living (ADL) limitation if the respondent answers yes to having difficulty bathing, eating, moving from bed-to-chair, or walking by self. Instrumental activity of daily living (IADL) limitation if the respondent answers yes to having difficulty using telephone, shopping, managing money, preparing meals, or taking medication. Depression (severe depression) refers to scores of 3 (6) or higher on the Center for Epidemiologic Studies Depression (CESD) scale. "OOP" refers to out of pocket medical expenditure. Current drinking refers to the consumption of alcoholic beverages within the last three months. Vigorous exercise refers to vigorous exercise three or more times per week. All baseline variables are measured in 1992, except for depression and smoking, where the data were first collected in 1994. The outcomes refer to values in 2006, except for vigorous exercise where questions were lacking in 2006 and so the variable refers to 2004.

Table 3. Predicted Effect of Inheritance Receipt on Mortality

	(1)	(2)	(3)	(4)	(5)
Inheritance ≥$10,000	-0.135	-0.182	-0.087	-0.027	0.028
	(0.248)	(0.248)	(0.250)	(0.253)	(0.254)
Any Inheritance	-0.296	-0.222	-0.191	-0.150	-0.191
	(0.218)	(0.218)	(0.220)	(0.225)	(0.225)
Female		-0.468***	-0.581***	-0.658***	-0.590***
		(0.0714)	(0.0744)	(0.0772)	(0.0776)
Age at survey wave		-0.043	-0.116	-0.205	-0.194
		(0.124)	(0.126)	(0.127)	(0.128)
Age Squared		0.097	0.149	0.208**	0.209**
		(0.0938)	(0.0955)	(0.0964)	(0.0971)
Mother Died Since Last Wave			0.132	0.158	0.179
			(0.154)	(0.155)	(0.155)
Father Died Since Last Wave			-0.456	-0.434	-0.409
			(0.294)	(0.294)	(0.292)
Cohabits			0.0295	-0.0542	-0.143
			(0.244)	(0.256)	(0.258)
Separated/Divorced			0.428***	0.205*	0.104
			(0.107)	(0.113)	(0.115)
Widowed			0.508***	0.332**	0.211
			(0.149)	(0.151)	(0.157)
Never Married			0.204	-0.0160	0.0640
			(0.226)	(0.225)	(0.216)
Less than High School			0.324***	0.0187	-0.0218
			(0.0873)	(0.0914)	(0.0917)
GED			0.0289	-0.0563	-0.0663
			(0.157)	(0.157)	(0.157)
Some College			0.0449	0.0953	0.105
			(0.0999)	(0.101)	(0.103)
College Graduate			-0.397***	-0.128	-0.0154
			(0.117)	(0.119)	(0.120)
Log of Household Income				-0.0369*	-0.0340
				(0.0197)	(0.0210)
Very Good Health				0.473***	0.421***
				(0.130)	(0.130)
Good Health				0.866***	0.789***
				(0.125)	(0.124)
Fair Health				1.492***	1.392***
				(0.137)	(0.137)
Poor Health				1.860***	1.776***
				(0.147)	(0.148)
Smoker					0.786***
					(0.0743)

Note: Robust standard errors, clustered by individual, are in parentheses. Table shows results of discrete time hazard models, with observations weighted using sample weights (n = 31,002); * = significant at 10%, ** = significant at 5%; *** = significant at 1% level. All supplementary regressors are measured at baseline (in 1992). Reference group includes high school graduates in excellent health (in 1992). Wave fixed effects are included in all regressions. Models (3) through (5) also include controls for missing values of parental death (since the last wave), and specification (5) also contains covariates for BMI in the ranges: ≤18.5, 25 to 29.9, 30 to 39.9, and ≥40. The mean mortality hazard rate between surveys is 2.9%.

Table 4. Predicted Effect of Inheritance Receipt on Health Outcomes

	Fair/Poor Health	Excellent Health	ADL	IADL	Depressed
	(1)	(2)	(3)	(4)	(5)
Inheritance ≥$10,000	0.0001	0.0103	-0.00649	-0.0100	-0.0139
	(0.0169)	(0.0165)	(0.0132)	(0.0114)	(0.0184)
Any Inheritance	-0.0224	0.0023	-0.0034	0.0071	0.0037
	(0.0152)	(0.0144)	(0.0119)	(0.0107)	(0.0171)
Dependent Variable Mean	0.2492	0.1391	0.1167	0.0513	0.1998

Note: Robust standard errors, clustered by individual, are in parentheses. Table shows results of linear probability models, with observations weighted using sample weights; * = significant at 10% level. The sample size is 36618, except for columns (3), (4) and (5), where it is 36621, 36615 and 34343. The estimates also include controls for the same supplementary covariates as in model (5) of Table 3.

Table 5. Predicted Effect of Inheritance Receipt on Medical Care and Expenditures

	Positive OOP	Log(OOP) If >0	Visited Dentist	Prescrip-tion Use	Outpatient Care	Nursing Home	Home Health Care	Visited Doctor	Hospital Episode
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Inheritance ≥$10,000	0.0134	0.2100***	0.0866***	0.0357	0.0065	0.0020	0.0120*	0.0034	0.0073
	(0.0117)	(0.0724)	(0.0261)	(0.0238)	(0.0164)	(0.0042)	(0.0069)	(0.0103)	(0.0166)
Any Inheritance	0.0263**	-0.0365	0.0131	-0.0039	0.0335**	-0.0034	0.00	0.0142	-0.0034
	(0.0111)	(0.0659)	(0.0246)	(0.0216)	(0.0145)	(0.0035)	(0.0058)	(0.0097)	(0.0149)
Dependent Variable Mean	0.8916	7.0120	0.6358	0.7420	0.1954	0.0131	0.0443	0.9300	0.2243
N	36729	32566	29976	36701	29973	36705	36625	36497	36685

Note: See notes on Tables 3 and 4 for additional details on estimation process and supplementary covariates. OOP refers to out-of-pocket medical expenditure. All dependent variables, other than the log of out-of-pocket spending, are dichotomous with estimates obtained from linear probability models. See the text for additional details on definitions of the dependent variables.

Table 6. Predicted Effect of Inheritance Receipt on Alcohol Use

	Current Drinker	Weekly Alcohol Consumption			
		Log (# of Drinks) if >0	1 – 7 Drinks	1 - 14 Drinks	>14 Drinks
	(1)	(2)	(3)	(4)	(5)
Inheritance ≥$10,000	0.0995***	0.238**	0.0521**	0.0838***	0.0140
	(0.0291)	(0.0940)	(0.0235)	(0.0272)	(0.0102)
Any Inheritance	-0.0227	-0.112	-0.0136	-0.0186	-0.00228
	(0.0261)	(0.0871)	(0.0206)	(0.0242)	(0.00898)
Dependent Variable Mean	0.3290	1.5216	0.2262	0.2869	0.0373
N	29963	9813	29878	29878	29878

Note: See notes on Tables 3 and 4 for additional details on estimation process and supplementary covariates. All dependent variables, other than log(#drinks/week), are dichotomous with estimates obtained from linear probability models. See the text for additional details on definitions of the dependent variables.

Table 7. Predicted Effect of Inheritance Receipt on Exercise, Smoking and Body Weight

	Vigorous Exercise	**Current Smoker**	**Obese** (BMI≥30)	**Severely Obese** (BMI≥35)
	(1)	(2)	(3)	(4)
Inheritance ≥$10,000	0.0098	0.0043	-0.0287	-0.0123
	(0.0292)	(0.0180)	(0.0199)	(0.0116)
Any Inheritance	-0.0123	-0.0137	0.0213	0.0104
	(0.0257)	(0.0159)	(0.0185)	(0.0108)
Dependent Variable Mean	0.4799	0.2056	0.2652	0.0762

Note: See notes on Tables 3 and 4 for additional details on estimation process and supplementary covariates. All dependent variables, other than log(#drinks/week), are dichotomous with estimates obtained from linear probability models. See the text for additional details on definitions of the dependent variables.