# THE HEALTHY BIRD GETS THE WORM: CHILDHOOD HEALTH AND INEQUALITY IN LABOR MARKET OUTCOMES OVER THE WORK CAREER[*]

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## Abstract

This paper sheds light on the relationship between health and socioeconomic status over the life course by illustrating the extent to which labor market outcomes over the work career are patterned by early life health status. Drawing on data from the Health and Retirement Study's Earnings Benefit File (HRS-EBF) which links survey data to administrative records from the Social Security Administration, we estimate the impact of childhood health on earnings curves and the coefficient of variation in earnings between ages 25-50. We also investigate the extent to which the impact of childhood health on labor market outcomes is indirect, acting through diminished educational attainment and earlier onset of chronic health conditions. We find that those who experience poor childhood health have substantially diminished labor market earnings and increased variability in earnings over the work career. In addition, such earnings differentials start out small in early adulthood and grow larger over the life course. Part of the child health earnings differential is accounted for by health-related selection into diminished educational attainment and the earlier onset of chronic disease in adulthood.

## INTRODUCTION

The strong and persistent positive relationship between socioeconomic status and health (however each of these is measured) is an empirical observation dating at least to the early 19th century (Chadwick 1842). The last three decades has witnessed a dramatic growth in the number of investigations documenting the complexity and heterogeneity of this phenomenon (Marmot 2004; Moore and Hayward 1990; Williams 1990; Syme and Berkman 1976; Kitigawa and Hauser 1973). Increasingly, researchers are concerned with how the relationship between health and socioeconomic status unfolds over the life course. In particular, there is great interest in understanding the extent to which health status in early life may shape later life health and socioeconomic outcomes.

This paper investigates the role of childhood health in the process of social stratification by estimating the extent to which poor childhood health status has a lasting impact on labor market outcomes. Using a unique combination of prospective and retrospective data from the Health and Retirement Study, we extend previous analyses which documented the impact of childhood health on socioeconomic status at one static point in adulthood by modeling differences in life course employment and labor earnings curves by childhood health status. We also estimate the association between childhood health and earnings variability over the work career.

## BACKGROUND

### *Theoretical Explanations for Health and SES Relationships*

Most of the previous research that has investigated the influence of early life health on adult socioeconomic attainment has been involved in debates about the relative merits of a *social causation* or a *health selection* explanation for health disparities. The social

causation argument posits that lower SES has detrimental causal effects on health. Several proximate mechanisms have been suggested through which SES is thought to affect health including differential access to and utilization of health services (Ross and Wu 1995), exposure to occupational hazards and environmental pathogens (Toscano and Windau 1994), lower levels of social support (Berkman and Syme 1979; Thoits 1995), and differences in health-related risk behaviors (e.g., smoking) (Kaplan et al. 1987). In addition, a number of broader conceptual frameworks have been proposed to explain the nature by which social position is thought to have causal effects on health. Link and Phelan (1995) proposed a model that focuses on the ways in which different rungs on the social ladder afford their members differential material and social resources with which to maximize health. They conceptualized socioeconomic status as a fundamental cause of disease, a cause of causes, as it acts as a primary determinant of access to important health-related resources influencing nearly all health outcomes via multiple complex pathways. They highlight the resilience of health inequalities over time, which remain robust even to fundamental shifts in the underlying epidemiologic environment and cause of death structure. According to this perspective, the diseases that kill us may change, as do the specific mechanisms through which SES impacts health. However, socioeconomic advantages remain, and continue to provide material, social, and psychological resources that can be translated into physiological advantages. Similarly, Mirowsky and Ross (2003) highlight the particularly important role of education in generating psychosocial resources. They argue that educational attainment improves health primarily by increasing individual agency, self-efficacy, and problem-solving capacity, all of which promote a healthy lifestyle (Mirowsky and Ross 2003).

Marmot (2004), offers an alternative explanation for the ubiquity and resilience of socioeconomic health gradients. Marmot suggests that by their very nature, different positions within social hierarchies afford their occupants varying degrees of control over the circumstances of their lives and differential opportunities to play important social roles or to otherwise fully participate in the society. To Marmot, it is the cumulative stress associated with differentials in life control and the accompanying opportunities for social participation (inherent features of any social hierarchy) that are responsible for what he calls the 'status syndrome'. Though much of the evidence for the physiological link between social hierarchies and stress comes from studies of primates (Sapolsky 1998), increasingly researchers have investigated the role of stress processes in generating socioeconomic health disparities in human populations, though with mixed results (McEwen 1998; Dowd and Goldman 2006).

Conversely, the endogeneity, or health selection hypothesis, posits the reverse flow of causality. That is, adverse health events may exert negative causal impacts on socioeconomic position. The health selection hypothesis can be further differentiated into two variants. In the *socioeconomic drift* variant, those in poor health are selected into lower SES because of decreased labor force participation, thereby decreasing wage income and inhibiting wealth accumulation. Furthermore, health problems may necessitate spending previously accumulated assets either to replace lost income or to pay for health services. The second, or *social stunting,* variant argues that poor health—particularly during critical periods of childhood and adolescence—may limit an individual's initial accumulation of human capital (both cognitive and non-cognitive) and subsequent ascent to higher positions of prestige, power, and wealth. Thus, health

selection may operate in two distinct ways—either by inducing downward social mobility or by preventing movement upward.[1]

Though often presented as such, selection and social causation processes need not be mutually exclusive. That poor childhood health may hinder educational attainment and labor market outcomes does not preclude the possibility (or strong likelihood) that diminished adult socioeconomic status may subsequently result in poor health and increased mortality risk. Likewise, it is not our intention to provide any definitive support for either the selection of social causation hypotheses, though the results below will certainly inform the ongoing debate. Rather, the aim of the current study is to explore the role of health in generating socioeconomic inequality, thereby highlighting the complex and heterogeneous nature of health-SES relationships as they unfold over the life course.

*The Role of Health in Socioeconomic Attainment*

In their notable *American Sociological Review* article Conley and Bennett (2000) pose the question: *is biology destiny?* Specifically, they asked; to what extent are one's life chances (academic achievement and socioeconomic attainment) influenced by early life health insults? The answer, they suggest, is that adverse health in early life can indeed have dramatic impacts on the developmental and socioeconomic prospects of individuals. In addition, through the intergenerational transmission of low birth weight and childhood socioeconomic disadvantage, there can be lasting spill-over effects on the well-being of subsequent generations (See also Currie and Moretti 2005). Their paper and the subsequent monograph have spurred a new wave of research on the long-term socioeconomic impacts of poor infant and childhood health among sociologists and economists (Conley, Strully, and Bennett 2003). Most recently, Palloni (2006) sought to

estimate the relative contribution of early life health status to the intergenerational transmission of social class using Monte Carlo simulation. He estimates that early childhood health status accounts for about 9% of the effect of parental social class on that of offspring. That is roughly equivalent to the impact of parental social class acting through offspring educational attainment. However, the notion that health may influence socioeconomic outcomes is not novel.

Since its early expositions, human capital theory has viewed health as an important labor market input through its influence on human productive capacity (Mushkin 1962). Specifically, economic losses to poor health may take the form of either debility (impaired productivity or diminished labor supply) or disability (complete non-participation in the labor market). Accordingly, previous research has investigated the impact of health on the short and medium range labor market outcomes. For example, economists working in the human capital tradition have presented evidence of substantial adverse effects of health on wages, labor force participation, and ultimately earnings (Chirikos, Thomas, and Nestel 1985; Luft 1975). However, this work has had important limitations. First, poor health was often conceptualized quite narrowly as disability. More recently, studies have estimated the impact of specific health shocks in the form of chronic disease onset on labor force participation, earned income, wealth, and financial solvency (Smith 1999; 2005; Himmelstein et al. 2005).

Another limitation of previous work in this area is that it has often focused on the role of current health at the exclusion of other points in the life course. Because of this concern with current adult health, it has also tended to focus on labor supply as a principal mechanism through which health impacts socioeconomic standing. Therefore

most of the previous research in this area has explored the drift variant of health selection. However, research is beginning to show that the socioeconomic impact of health insults is not limited to those that occurred only proximally. Early life health may also have lasting effects on socioeconomic outcomes such as earnings if it permanently alters health-related productivity or selects individuals into lower educational strata. Likewise, more recent research has begun to investigate the social stunting variant of health selection. For example, using data from the Panel Study of Income Dynamics, Haas (2006) has shown that relative to their peers in excellent health, those who experienced poor childhood health had 22% lower earnings at one static point in adulthood. Similarly, Black and colleagues (2005) compare the birth weight and earnings of Norwegian twins and find higher earnings among the heavier siblings. On average a 10% increase in birth weight is associated with a 1% increase in earnings.

A final important limitation of previous research is that it has been confined to estimating the influence of health on labor market outcomes either at one point in time or over relatively short periods of follow-up. Only a few studies have examined the impact of health on labor market outcomes over a long period time, and none has estimated the extent to which health in childhood and adolescence may also influence the underlying level and shape of earnings trajectories over the entire work career. In part, this reflects a dearth of data linking information on childhood health status with high quality time-series data on labor market outcomes at the individual level.

In their totality, the studies discussed above suggest a non-trivial role for childhood health in the stratification process as an important mechanism in the intergenerational reproduction of SES. Though there is evidence that early life health insults can have long

lasting impacts on labor market outcomes, very little is known about the contours of this relationship or the mechanisms through which they occur. Does the experience of poor childhood health result in a constant earnings deficit over the work career, thus simply shifting earnings curves downward? Alternatively, does the disadvantage associated with poor childhood health accumulate over the work career such that differentials that are small in early adulthood widen over time, thus altering the shape of earnings curves as well?

Figure 1 presents a stylized life-cycle earnings curve (heavy solid line) where by earnings rise through early and middle adulthood, peak in the early to mid fifties and then declines with labor supply thereafter. However, this average trajectory may mask heterogeneity in earnings profiles by childhood health status (the light and dotted lines). No previous study has estimated the extent to which child health influences such earnings curves.

[Figure 1 about here]

In addition to influencing the level and/or shape of earnings curves, poor childhood health may also expose individuals to greater economic volatility through increased variation in earnings throughout the work career. To illustrate this, figure 2 presents a stylized representation of the earnings curve stratified by childhood health status overlaid with yearly variation in earnings. The lingering risk of health shocks in childhood health may periodically impair labor supply and/or productivity through the increased risk of recurrent health events, in part a manifestation of latent childhood health insults (Barker 1994). This may lead to greater year to year variation in earnings over the work career. Additionally, poor childhood health may increase variation in earnings

through its impact on educational attainment. Those with lower levels of education are more likely to experience periodic spells of unemployment and the income shocks that accompany them. To the extant that poor childhood health is associated with diminished educational attainment then it may also increase variation in earnings. To our knowledge no previous research has estimated the extent to which poor childhood health increases the amount of variation in labor earnings over the work career.

[Figure 2 about here]

*Theorized Pathways Connecting Childhood Health to Labor Market Outcomes*

There are a number of pathways ways through which poor health in early life may be expected to have lasting impacts on labor market success. Two that are immediately obvious are educational attainment and adult health status. There is growing evidence as to the role played by health in determining educational outcomes. Poor health in childhood has been linked to diminished cognitive development and academic achievement (Currie and Stabile 2004; Boardman et al. 2002; Edwards and Grossman 1979; Matte et al. 2001) and such insults are ultimately associated with lower levels of completed schooling (Haas 2006; Black et al. 2005; Case et al. 2005; Conley and Bennett 2000; Wadsworth 1986) and impaired occupational attainment (Haas 2006; Case et al. 2005). Given education's role as a significant structural determinant of labor market outcomes over the life course, to the extant that poor early life health is associated with diminished educational attainment, it should also be expected to negatively impact earnings curves. A second pathway by which childhood health my influence labor market outcomes is through differential onset of health problems in adulthood, which may

impinge upon productivity and limit labor supply. A growing body of research has documented that poor health in childhood is associated with increased risk of poor adult health outcomes (Kuh and Ben-Schlomo 1997; Barker 1994). For example, Blackwell, Hayward, and Crimmins (2001) observed that serious infectious disease in childhood increased the risk of various adult chronic diseases including cardiovascular disease, arthritis/rheumatism, cancer, and lung conditions. These associations were net of age, race, gender, social background, current SES, height, and co-morbid conditions. Similarly, Haas (2007) has shown that after controlling for childhood SES and adult health risk factors, poor childhood health more than doubles the risk of poor self-rated rated, work-limiting disability, chronic disease, and declines in health over time. Again, given the important role of current health status in determining labor supply and productivity, to the extent that poor health in childhood is associated with later adult health shocks we would expect it to adversely impact labor market outcomes.

*The Present Study*

This present study seeks to address many of the limitations of previous research and provide a much more elaborate empirical exposition of the relationship between childhood health adult labor market success. We take advantage of a unique combination of prospective and retrospective data from the Health and Retirement Study to estimate differences in employment and in life course labor earnings curves by childhood health status. We also estimate the association between childhood health and earnings variability over the work career. Lastly we investigate the extent to which the impact of poor childhood health acts indirectly through educational attainment and differential onset of adult chronic disease.

## METHODS

### *Data*

This Study uses data is drawn from the restricted-use Earnings Benefit File (EBF) of the Health and Retirement Study (HRS) (Mitchell, Olson, and Steinmeier 1996). The HRS is a long-term panel study of near-elderly Americans begun in 1992 and was designed to investigate the economic and health transitions associated with retirement (Juster and Suzman 1995). It combines extensive information on both socioeconomic and health status. The original data collection took place using in-home face-to-face interviews and a standard survey instrument. Follow-up takes place every second year via telephone interviews. The original HRS cohort was composed of those born between 1931 and 1941 and their spouses. Approximately 9,500 age-eligible respondents comprised the original HRS sample. At the initial interview, respondents were asked permission to access their Social Security records. While 75% of the sample consented, ultimately 66% of the sample was successfully linked to their SSA records. The EBF includes various measures constructed from SSA records including yearly earnings, projected Social Security benefit wealth, and the number of quarters of covered employment (Mitchell, Olson, and Steinmeier 1996). The analysis below is restricted to the 6,155 respondents who were successfully linked and who additionally survived and were included in the 1998 wave as this was when childhood health status was assessed.

### *Measures*

#### *Labor market outcomes*

We examine three outcomes in this analysis. First, we examine whether or not the respondent was working in SSA covered employment at each year between the ages 25-

50. At each age-year observation a respondent is coded 1 if they had non-zero SSA earnings and thus were in covered employment and 0 otherwise. While the Social Security linked data provide numerous advantages this remains an imperfect measure of employment status. Not all employment is covered and captured by Social Security records. To the extent that respondents were employed in non-SSA covered sectors than our estimates will be biased. Also, our measure does not capture spells of unemployment that last less than a year or multiple unemployment spells within a year in which the respondent had some covered employment. Nor does it capture effects on labor supply short of exit out of employment. Ideally, we would want to know the number of weeks of employment and the average number of hours worked per week for each year of observation so as to construct complete work histories.

Second, we examine annual inflation-adjusted earnings (in constant 1992 dollars) at ages 25-50. For each respondent we have 26 yearly earnings observations yielding 166,608 annual earnings records. We have decided not to log transform earnings because as Social Security earnings are capped there is substantially less rightward skew to the earnings distribution than is generally observed and is the main reason for the transformation. Also, secondary analysis shows that the substantive findings are not sensitive to this transformation.[2]

Our final outcome measure is the coefficient of variation for earnings between ages 25-50. This is defined as the standard deviation in earnings between ages 25-50 divided by the mean of annual earnings over those ages. This is designed to assess the extent to which there is differential variation in earnings over the work career by childhood health status.

The 25-50 age range was chosen for several reasons. Substantively, this represents the core of the economically active years. We chose age 25 as the beginning of our observation to minimize the influence of censoring due to those who had not completed their education. As a significant number of individuals curtail their employment activity or leave the labor market entirely in their fifties, we chose age 50 as to top cutoff to avoid the issue of retirement as much as possible. In addition, from a practical standpoint these were the ages that all respondents had data in common.

*Childhood health*

The investigation of the effects of childhood health on later-life outcomes has been limited primarily by the scarcity of prospective life course data on both health and SES. Researchers must often find alternative ways of assessing these effects. The method used in this analysis is to use retrospective reports. In 1998, respondents were asked to "consider your health while you were growing up, from birth to age 16. Would you say that your health during that time was excellent, very good, good, fair, or poor?" We create a dichotomous measure that codes those who report experiencing fair or poor childhood health as 1 and this reporting good, very good, or excellent childhood health as 0.

Previous research suggests that retrospective measures of childhood health perform reasonably well. Krall and colleagues (1988) compared retrospective self reports of childhood communicable diseases, accidents, hospitalizations, surgeries, and other illness against a series of physical exams and parental interviews in a birth cohort. Retrospective childhood health questionnaires administered at age 30, 40, and 50 showed a very high level of accuracy (averaging 85% at age 50). Accidents and surgeries were

recalled correctly 75% and 89% of the time at age 50, respectively. Reliability did not change much between age 30 and 50, nor was recall accuracy correlated with education (Krall et al. 1988).

Two previous studies have investigated the exact measure used in this analysis. For example, it has been shown using data from the PSID and the HRS that retrospective reports of overall childhood health are reliably reported over time (polychoric correlation =0.6; Goodman-Kruskal gamma=0.6), especially when the measure was dichotomized into a good/very good/excellent vs. fair/poor comparison such as that used here (tetrachoric correlation=0.7; Goodman-Kruskal gamma=0.9) (Haas 2007). Quality of measurement did not vary substantially by gender or age. However, those with higher levels of education were slightly more consistent reporters of childhood health (Haas 2007). Retrospective reports were also correlated with birth weight, with low birth weight respondents reporting significantly worse childhood health (Haas 2007). Finally, there was no evidence of anchoring by which current health status contaminates reports of health in childhood. Using the HRS Elo (1998) further demonstrated a high level of internal consistency between the report of general childhood health and reports of specific long-term health limitations in childhood.

*Mediators of the impact of child health on labor market outcomes*

As mediators of the relationship between childhood health and labor market outcomes we investigate educational attainment and the timing of adult chronic disease onset. Educational attainment is measured as years of completed schooling. At wave I, HRS respondents were asked if a doctor had ever diagnosed them with a series of chronic health conditions including heart disease, cancer, diabetes, and stroke. If they answered

affirmatively, then they were asked the year of diagnosis. For each annual observation of earnings we include a dummy variable indicating if the respondent had been diagnosed with any condition prior to that year's observation. All models adjust for race, ethnicity, parental education, and father's occupation. We include a centered measure of age and age$^2$ such that a value of 0 corresponds to age 25 and a value of 1 corresponds to age 26 etc. The main effect of the childhood health variable therefore represents the impact of experiencing poor childhood health on earnings at baseline (age 25). We then include interaction terms between age and childhood health to examine health related age trajectories of employment.

*Analysis*

To examine the impact of childhood health on labor force participation, we first estimate employment trajectories using a random-effects logit model specified as follows:

$$\text{logit}[P(Y_{it} = 1| \mathbf{X},\mathbf{Z}, u_i)] = \mathbf{X}\beta + \mathbf{Z}\gamma + u_i + e_{it}$$

where $\text{logit}[P(Y_{it} = 1| \mathbf{X},\mathbf{Z}, u_i)]$ is the log odds that respondent *i* was in covered employment at time *t*. The model assumes that conditional on $u_i, Y_{i1}$ to $Y_{in}$ are independent, **X** represents a vector of time-invariant covariates (e.g. race, ethnicity, parental SES, childhood health), **Z** is a vector of time-varying covariates (e.g. age) for individual *i* at time *t*, $u_i$ is a random effect for respondent *i* and is assumed to be ~N(0,1), and $e_{it}$ is an individual time-specific error term. Estimation was accomplished using maximum likelihood in the xtlogit Stata command.

Earnings trajectories are estimated with an analogous random effects model for a continuous outcome specified as:

$$Y_{it} = \mathbf{X}\beta + \mathbf{Z}\gamma + u_i + e_{it}$$

Where earnings for individual *i* and time *t* ($Y_{it}$) is a function of time invariant (**X**) and time-varying (**Z**) covariates, a normally distributed individual random effect ($u_i$), and an individual time-specific error term ($e_{it}$). Estimation was accomplished using Generalized Least Squares in the xtreg Stata command.

Standard OLS estimation is used to model the impact of childhood health on the coefficient of variation in annual earnings between ages 25-50.

For the earnings analyses we first estimate a model with just childhood health, age, childhood health x age interactions, and socio-demographic background. We then estimate models in which we add educational attainment and prior onset of chronic disease, respectively. Finally we estimate a model that includes socio-demographic controls, childhood health, educational attainment, and onset of chronic disease. All models are estimated separately by gender.

## RESULTS

### *Childhood Health and Employment*

Figure 3 presents the relative odds of employment at a given age for men and women who experienced fair/poor childhood health based on the random effects logit model of employment. Men reporting fair or poor childhood health were significantly more likely to have been employed at baseline (age 25) (odds-ratio 1.73) than were men reporting excellent, very good or good childhood health. However, this employment advantage declined in the late twenties and thirties such that after age 38 men who experienced poor childhood health were less likely to be employed relative their healthy childhood peers. By age 50 men who were sick as children were approximately 23% less likely to be employed.

[Figure 3 about here]

For women the pattern is different. Early on, women who experienced fair/poor childhood health were about 20% less likely to have been employed than their peers who experienced better childhood health. This employment disadvantage declined and was no longer significant during their 30s. However, beginning in their late 30s the employment gap between women who were healthy and sick as kids again increased such that by age 50, women who experienced fair/poor childhood health were only about half as likely to have been employed as their healthy childhood peers.

*Differentials in Earnings Curves by Childhood Health*

Table 2 presents estimates from the random effects model of earnings for men. Individuals who had zero earnings in a given year were dropped and do not contribute to that year's estimation. For comparison, estimates based on the full sample including the zero years are presented in the appendix. As seen, in model 1, for men there is main effect of poor childhood health of $928 suggesting that men with unhealthy childhood earned more at baseline than their peers. However, this difference is not statistically significant. There is also a large negative interaction effect between poor childhood health and age and a significant positive interaction between childhood health and age-squared. To see how the effect of poor childhood health on men's earnings unfolds over the work career, figure 4 presents predicted age-specific earnings differentials associated with fair/poor childhood health. The blue line presents predictions based on model 1 and excludes controls for educational attainment and prior onset of chronic disease. Early on, men with unhealthy childhoods typically earned more, with this earnings advantage diminishing and disappearing by age 30. During their thirties the earnings deficit

experienced by men with unhealthy childhoods expanded to about $1000 per annum by age 40. The deficit then attenuated some in the late 40s. Over the course of the 26 years men who experienced fair/poor childhood health earned approximately $12,800 less in constant 1992 dollars than their peers who experienced better health in early life.

[ Table 2 about here]

[ Figure 4 about here]

As with employment, there are strong gender differences in the patterns of life cycle earnings differentials by childhood health. Table 3 present estimates from the random effects model of earnings for women. In model 1, there is a significant and negative main effect of being in fair/poor childhood health such that at age 25 women from unhealthy childhoods earned on average $1448 less than their healthy childhood peers. As with men there are also significant interaction effects between poor childhood health and the linear and quadratic age terms. However, the nature of these interactions is quite different. Figure 5 presents predicted age-specific earnings differentials associated with fair/poor childhood health for women. As can seen from the blue line (model 1), the earnings deficit for women is convex with age while it was the opposite for men. Women who experienced unhealthy childhoods faced significant earnings deficits both early (in the twenties) and later on (in the 40s) in the work career. However, during their thirties the earnings gap all but disappeared. Despite the fact that women in these cohorts had markedly lower overall levels of employment and earnings than their male counterparts, the cumulative earnings deficit for those experiencing poor childhood health was

substantially higher among women than it was among men ($16,613 in constant 1992 dollars). Unlike the men, sick women's later career earnings deficit was not offset by early career earnings advantages.

[Table 3 about here]

[Figure 5 about here]

*The Mediating Effects of Educational Attainment and Onset of Chronic Disease*

To test whether the observed earnings differentials associated with fair/poor childhood health are mediated by educational attainment and onset of chronic disease we estimate a series of nested models. The results of this analysis are presented in models 2-5 in tables 2 (men) and 3 (women). For men, the addition of education to the model increases the main effect of fair/poor childhood health by more than a third. However, this is still not statistically significant. In terms of the interactions between childhood health and age these are attenuated only slightly by the addition of education to the model. Similar results are found for women. The green line in figures 4 and 5 presents the predicted earnings differentials based on model 2 for men and women respectively. For both men and women the effect of adding education is to shift the curves up attenuating the effect of poor childhood health by about one-third. However, it does not alter the shape of the curves meaningfully.

Model 3 includes a control for whether or not the respondent experienced the prior onset of a chronic disease. Conditional on having positive earnings, we still we see a significant and large effect of prior disease onset on earnings. However, this does not appear to explain the earnings gap associated with poor childhood health as there is no

perceptible impact on the differential in earnings associated with poor childhood health for men or women. Model 4 includes both educational attainment and onset of chronic disease. This model also suggest that education plays a larger role in mediating the impact of poor childhood health on earnings curves net of employment and this is primarily through its impact on the main effect.

That controlling for onset of chronic disease does not attenuate the effect of childhood health in models dropping those with zero earnings is somewhat expected given that major impact of chronic disease is to select individuals into lower labor supply. By dropping those with zero earnings in a given year we have already accounted for such selection out of the labor force. This is confirmed by appendix figure A1 in which there is substantial attenuation of the effect of childhood health (for men) when prior disease onset is introduced into a model including those with zero earnings. Thus the experience of poor childhood health increases the risk of early onset of chronic disease. This onset of disease subsequently has negative impacts on earnings primarily through selecting individuals out of employment.

*Childhood Health and Earnings Variation over the Work Career*

Table 4 present OLS estimates of the effect of fair/poor childhood health on the coefficient of variation (CV) in earnings. The calculation of the CV included those person-year observations with values of zero as selection out of the labor market is a major mechanism by which childhood health is hypothesized to increase life-cycle earnings variation. Separate estimates are presented for men and women. To the extent that poor childhood health is positively associated with the coefficient of variation then it increases life course variability in earnings. Row one presents the estimated effect of

fair/poor childhood health on the coefficient of variation in earnings controlling for parental socioeconomic status, race/ethnicity/ and birth cohort. For men there is not a significant impact of childhood health on earnings variability. However, women who experienced fair/poor childhood health had significantly more variability in their earnings between the ages of 25 and 50 compared to women who experienced healthy childhoods. The second row presents estimates for a model that adds controls for the onset of chronic disease during the respondent's 20s, 30s, and 40s. Again, there is not a significant effect for men. The effect of childhood health for women is attenuated slightly, but remains significant. Finally, row three adds a control for educational attainment. Again, while there is not a significant effect of childhood health on variability in earnings among men, women who experienced fair/poor childhood health had substantially greater variability in their earnings over their work career compared to their healthy peers. The experience of poor childhood health adds significant volatility to women's life-cycle earnings that is not accounted for by lower levels of completed schooling or early onset of chronic disease.

[Table 4 about here]

**DISCUSSION**

The current analysis provides a substantial extension and elaboration of the growing literature documenting the influence of childhood health on the process of socioeconomic attainment. Specifically, we take advantage of unique administrative record-linked survey data to provide the first analysis of the impact of childhood health on life-cycle labor market outcomes. We further estimate the extent to which such differences derive from

health-related selection into lower educational strata and the earlier onset of chronic health conditions.

We find that the experience of poor childhood health has lasting impacts on employment in the prime adult working years. For both men and women, poor childhood health is associated with decreased odds of employment after age 40, though patterns in the early career differ with men being more likely to be employed and women less likely. Conditional on employment in a given year, we find that those who experience poor childhood health have substantially diminished labor market earnings. In addition, women who experienced poor childhood health also have substantially greater variation in their annual earnings over the work career. The precise pattern by which early life health influences earnings over the career is strongly patterned by gender. For men, an initial earnings benefit quickly gives way to a substantial earnings deficit after age 32. For women, poor childhood health is associated with a substantial earnings deficit in the 20s and the 40s while there is no a consequential difference the thirties. Furthermore, we find that part of the earnings differential associated with poor child health is accounted for by health-related selection into diminished educational attainment previously documented by Haas (2006) and Case et al. (2005) and the earlier onset of chronic disease (Haas 2007).

One of the most interesting findings is the very different impact that childhood health has on labor market outcomes for men and women. For women, the picture is further embedded within the process of family formation and the timing of entry into marriage, which has very strong impacts on women's labor force participation. As the mothers of the baby boom, such processes were especially salient for women in these

cohorts. For the average women in our sample the baseline observation (age 25) occurred in 1961 around the time when period fertility rates associated with the baby boom peaked. Based on data from the EBF, it has been shown that married women in these cohorts had on average 2.8 fewer years of covered SSA employment between the ages of 20 and 50 (Mitchell et al. 1996). Accordingly, they also spent a smaller proportion of their 20s and 30s in covered employment compared to non-married women. Interestingly, in separate analysis not shown, we find that on average women who experienced fair/poor childhood health entered their first marriage about 7 months earlier than their peers who experienced excellent childhood health. The also had slightly higher number of children ever born. Part of the early career differential in employment and earnings found among women with childhoods marked by illness may be accounted for their early entry into marriage and presumably early onset of childbearing and concomitant labor force exit and or retreat to part-time employment.

While our analysis has a number of strengths it also has some notable limitations. Due to a lack of appropriate time-varying covariates observed concurrently with earnings we are not able to estimate a selection model to adequately deal with the issue of unobserved earnings for those with zero earnings in a given year. This is especially problematic for estimating women's earnings as most will spend a significant proportion of the working years out of the labor market. Our strategy of simply dropping those age-year observations with zero earnings is an imperfect solution to this problem. Ideally, a better measure of labor force participation such as hours worked per week would provide much better leverage on how health trajectories, extending back into childhood, influence labor market outcomes.

Despite imperfectly controlling for selection bias, there are several reasons to think that these estimates are conservative. First, given the important role of early onset of health problems in selecting individuals out of the labor market or into part-time employment, results based on models in which those with zero earnings are dropped are likely to be conservative underestimates of the true adverse economic impacts of poor childhood health. The differences between figures 3-4 and A1-A2 would seem to bear this out. Second, we are only observing those who survived to be in the study (age 55 on average). As we would expect those that died were more likely to have had worse childhood health, we would expect that this mortality selection would lead to an underestimate of the true association. Third, Social security earnings are capped so we are not capturing the top end of the distribution, presumably disproportionately made up of the healthiest individuals. Finally, by modeling earnings below the age of 50 we haven't captured peak earnings in which we would expect earnings difference to be greatest.

Another limitation is that the exact nature of poor childhood health, and more precise discussion of the pathways through which it influences adult SES, cannot be discerned from this data. Though previous research has shown such retrospective reports to be of reasonable quality, they only provide a broad overview of early life health status. While we are the first the estimate the impact of childhood health on labor market trajectories, our results, based on retrospective reports of childhood health, are consistent with prior research on European populations that found large impacts of childhood health on adult SES using other more objective measures of early life health status including birth weight (Black et al. 2005) and chronic conditions (Case et al. 2005; Palloni 2006).

Though the HRS-linked Social Security data provided a unique opportunity to test for long-term impacts of early life health status, in the future researchers should investigate the possibility of similar data linkages with other samples that may provide more comprehensive and robust information on childhood health status.

Finally, we are unable to make strong claims about the causal relationship between childhood health and labor market outcomes. At its core, our argument rests on the temporal ordering of childhood health and labor market outcomes and that the observation of the respondent's labor market outcomes was collected completely independently of information on the early life health status. Unfortunately, we lack a convincing source of exogenous variation in childhood health to implement an instrumental variables approach which would provide a much stronger purchase on the issue of causality. We are also unable to control for unobserved heterogeneity in which some third unobserved factor is driving some individuals to have both poor childhood health and diminished labor market outcomes. While we have controlled for the usual suspects, the specter of omitted variable bias lingers. However, our results are consistent with other studies that have dealt with the issues of endogeneity and unobserved heterogeneity through a variety of different strategies including sibling-fixed effects models (Haas 2006) and difference-in-difference models based on twin birth weight data (Black et al. 2005).

In conclusion, the results presented here suggest that early life health status plays a non-trivial role in structuring the process of social stratification. The results confirm findings from other studies documenting that those who experience adverse health events in childhood have substantially diminished life chances relative to their healthy peers.

They acquire less human capital in the form of completed schooling, occupy less prestigious and lower-paid occupational niches, and are more likely to experience the early onset of chronic disease and the functional limitations that accompany them. As the preceding analysis shows, these educational, occupational, and physiological deficits subsequently result in substantially compromised employment and earnings trajectories. There is also a tendency for such differences in labor market outcome accumulate over the work career. These results also put into context previous findings of very large differences in wealth at mid-life (Haas 2006) as such differences reflect the cumulative impact of poor childhood health on labor market outcomes over the life course. Taken as whole, the findings suggest an important role for early life health in the genesis of social inequality.

**NOTES**

1. A third class of explanations suggests that the relationship is either spurious or a statistical artifact. Examples of such hypotheses include differential subjective interpretations of health by social class (in the case of self-rated health status) (Kadushin 1966), incongruence between numerator and denominator in mortality rates, or some unobserved factor jointly determining SES and health creating a spurious association (Fuchs 1982). There is a general consensus that it is very unlikely that observed health disparities are due to either spurious correlations or statistical artifact (Bloor, Samphier, and Prior 1987).
2. In this analysis we drop those observations with zero earnings in a given year. However, such estimates are likely to be biased because the mechanisms that

select individuals out of employment (zero earnings) in a given year cannot be assumed to be independent of their observed and unobserved covariates. Unfortunately, we are unable to fit a selection model to account for this bias due to lack of appropriate variables for estimating the selection part of the model. However, given the decreased probability of employment associated with poor childhood health (especially among women), this likely makes our estimates of earnings differentials conservative. We also estimated our models using median regression and the substantive results are consistent. The appendix provides results from models including those with age-year specific zero observations.

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Table 1. Descriptive Statistics Health and Retrirement Study (Earnings Benefit File)

| | % | Mean | Std. Dev |
|---|---|---|---|
| Fair/Poor Childhood Health | 7.0 | | |
| Annual Earnings (1992 $) | | 14682 | 11749.85 |
| Earnings Coeffcient of Variation | | 1.09 | 1.04 |
| Mother Education (Centered) | | 0.389 | 3.379 |
| Mother's Educ. Missing | 7.8 | | |
| Father Education (Centered) | | 0.038 | 3.668 |
| Father's Educ. Missing | 11.0 | | |
| Father's Occupation (Centered) | | 1.145 | 1.251 |
| Father's Occupation Farm | 21.4 | | |
| Father's Occupation Millitary | 0.8 | | |
| Black | 15.7 | | |
| Hispanic | 7.5 | | |
| Female | 53.4 | | |
| Birth Year | | 1936.3 | 3.16 |
| Education (Years) | | 12.2 | 3.1 |
| Onset of Chronic Disease < Age 30 | 0.6 | | |
| Onset of Chronic Disease < Age 40 | 1.3 | | |
| Onset of Chronic Disease < Age 50 | 3.9 | | |
| *N* | | 6155 | |

Table 2. Random Effects Model of Annual Earnings (Men)

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Poor Childhood Health | 927.88 | 1281.32 | 933.88 | 1287.97 |
| | [751.23] | [740.50] | [751.29] | [740.55] |
| Age | 1146.18*** | 1146.60*** | 1145.33*** | 1145.74*** |
| | [16.03] | [16.03] | [16.03] | [16.03] |
| $Age^2$ | -22.09*** | -22.09*** | -21.98*** | -21.99*** |
| | [0.62] | [0.62] | [0.62] | [0.62] |
| Poor Childhood Health x Age | -223.23*** | -221.61*** | -225.64*** | -224.03*** |
| | [67.08] | [67.08] | [67.08] | [67.08] |
| Poor Childhood Health x $Age^2$ | 6.44* | 6.38* | 6.63* | 6.58* |
| | [2.61] | [2.61] | [2.61] | [2.61] |
| Black | -5430.60*** | -4810.87*** | -5442.82*** | -4822.27*** |
| | [478.12] | [472.82] | [478.19] | [472.88] |
| Hispanic | -4974.89*** | -3617.66*** | -4992.81*** | -3633.63*** |
| | [653.10] | [653.96] | [653.20] | [654.04] |
| Mother's Education | 304.34*** | 200.11** | 304.98*** | 200.60** |
| | [65.20] | [64.74] | [65.21] | [64.76] |
| Mother's Education Missing | -1374.45* | -432.04 | -1384.67* | -440.91 |
| | [696.70] | [689.47] | [696.80] | [689.54] |
| Father's Education | 142.52* | 36.24 | 141.91* | 35.46 |
| | [59.04] | [58.83] | [59.05] | [58.84] |
| Father's Education Missing | -269.74 | 253.54 | -252.33 | 271.99 |
| | [658.17] | [647.63] | [658.28] | [647.71] |
| Father's Occupation | -135.99 | 83.15 | -134.28 | 85.22 |
| | [190.28] | [187.84] | [190.30] | [187.86] |
| Father's Occupation Missing | -2156.97*** | -1493.23* | -2145.45*** | -1480.58* |
| | [604.19] | [596.14] | [604.28] | [596.21] |
| Father's Occupation Farm | -1862.49*** | -827.80 | -1855.71*** | -819.30 |
| | [562.66] | [560.92] | [562.74] | [560.99] |
| Father's Occupation Millitary | -4922.61** | -4679.10** | -4933.34** | -4689.62** |
| | [1669.52] | [1638.02] | [1669.75] | [1638.19] |
| Education | | 599.69*** | | 600.65*** |
| | | [57.96] | | [57.96] |
| Prior Onset of Chronic Disease | | | -1325.79*** | -1343.88*** |
| | | | [371.97] | [371.70] |
| Intercept | 17065.83 | 8795.69 | 17067.29 | 8784.04 |
| $R^2$ Within | 0.261 | 0.261 | 0.261 | 0.261 |
| $R^2$ Between | 0.195 | 0.222 | 0.196 | 0.223 |
| $R^2$ Total | 0.216 | 0.235 | 0.216 | 0.235 |
| N (Groups) | 65297 (2870) | 65297 (2870) | 65297 (2870) | 65297 (2870) |

**P<.05; **P<.01; ***P<.001 (Two Tailed Test) [standard error]*

Table 3. Random Effects Model of Annual Earnings (Women)

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Poor Childhood Health | -1448.24* | -1126.21 | -1460.68* | -1137.80* |
| | [591.25] | [578.21] | [591.34] | [578.32] |
| Age | 401.05*** | 402.23*** | 401.16*** | 402.35*** |
| | [16.79] | [16.78] | [16.79] | [16.78] |
| $Age^2$ | 0.49 | 0.44 | 0.53 | 0.47 |
| | [0.63] | [0.63] | [0.63] | [0.63] |
| Poor Childhood Health x Age | 224.03*** | 225.08*** | 226.11*** | 226.99*** |
| | [62.05] | [62.02] | [62.06] | [62.03] |
| Poor Childhood Health x $Age^2$ | -9.37*** | -9.41*** | -9.41*** | -9.45*** |
| | [2.31] | [2.31] | [2.31] | [2.31] |
| Black | 958.81** | 983.88** | 958.11** | 983.21** |
| | [364.50] | [352.11] | [364.53] | [352.15] |
| Hispanic | -895.86 | 863.70 | -900.84 | 858.17 |
| | [531.84] | [526.39] | [531.90] | [526.47] |
| Mother's Education | 193.24*** | 28.9 | 193.36*** | 29.10 |
| | [51.61] | [50.97] | [51.61] | [50.98] |
| Mother's Education Missing | -1504.19* | -581.3 | -1505.54* | -583.07 |
| | [592.23] | [575.35] | [592.28] | [575.43] |
| Father's Education | 171.41*** | 61.98 | 171.23*** | 61.96 |
| | [49.06] | [47.93] | [49.07] | [47.94] |
| Father's Education Missing | -1350.99** | -585.33 | -1344.87** | -580.07 |
| | [488.20] | [474.31] | [488.26] | [474.39] |
| Father's Occupation | -207.44 | 101.66 | -205.91 | 102.93 |
| | [164.43] | [160.1] | [164.45] | [160.16] |
| Father's Occupation Missing | -817.52 | 369.02 | -811.69 | 373.79 |
| | [498.59] | [487.79] | [498.65] | [487.86] |
| Father's Occupation Farm | -1432.84** | -42.30 | -1426.63** | -37.28 |
| | [489.42] | [481.32] | [489.48] | [481.40] |
| Father's Occupation Millitary | -3648.07* | -3244.64* | -3654.81* | -3251.08* |
| | [1502.19] | [1452.50] | [1502.33] | [1452.70] |
| Education | | 872.80*** | | 872.33*** |
| | | [56.20] | | [56.21] |
| Prior Onset of Chronic Disease | | | -420.29 | -388.04 |
| | | | [287.59] | [286.61] |
| Intercept | 6757.67 | -4972.02 | 6755.99 | -4967.27 |
| $R^2$ Within | 0.174 | 0.174 | 0.174 | 0.174 |
| $R^2$ Between | 0.027 | 0.079 | 0.027 | 0.079 |
| $R^2$ Total | 0.091 | 0.136 | 0.091 | 0.136 |
| N (Groups) | 49556 (3285) | 49556 (3285) | 49556 (3285) | 49556 (3285) |

**P<.05; **P<.01; ***P<.001 (Two Tailed Test) [standard error]*

Table 4. OLS Estimates of the Effect of Fair/Poor Childhood Health on the Coefficient of Variation in Earnings

| | Men | | | Women | | |
|---|---|---|---|---|---|---|
| | b | Std. Error | p-value | b | Std. Error | p-value |
| Without Controls for Education or Chronic Disease[1] | 0.012 | 0.056 | 0.829 | 0.166 | 0.072 | 0.021 |
| With Control Chronic Disease[1] | 0.004 | 0.056 | 0.934 | 0.164 | 0.072 | 0.023 |
| With Control for Chronic Disease and Education[1] | 0.009 | 0.056 | 0.867 | 0.150 | 0.072 | 0.038 |

[1] Includes controls for Parental Education, Father's Occupation, Race, Ethnicity, and Birth Year

Figure 1. Life Cycle Earnings Curve

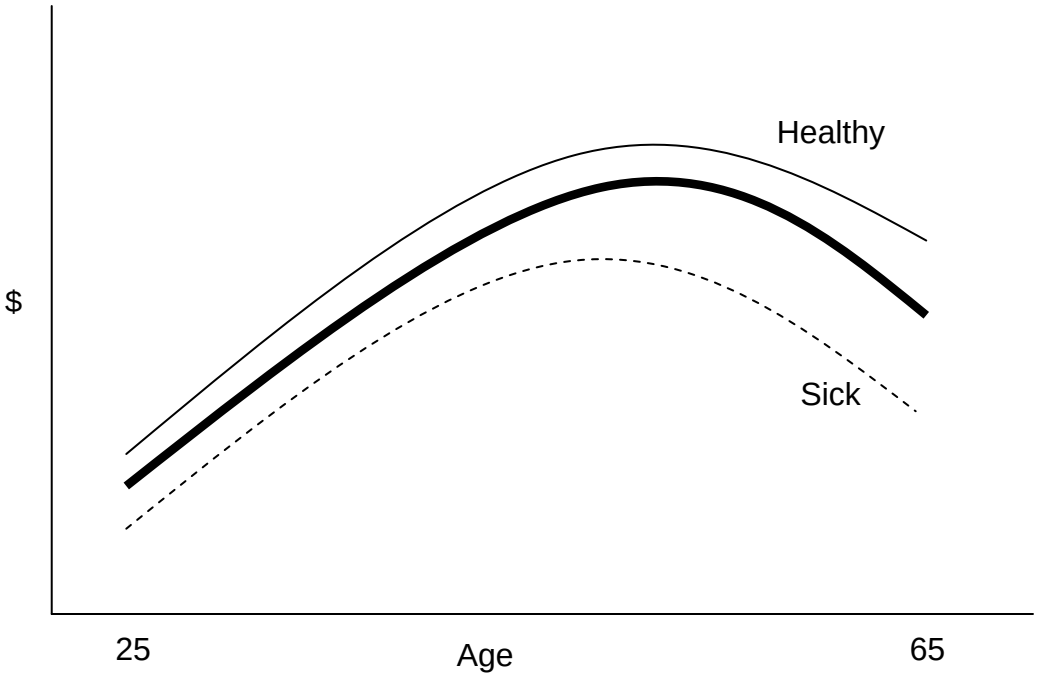

Figure 2. Variability around Life Cycle Earnings Curves

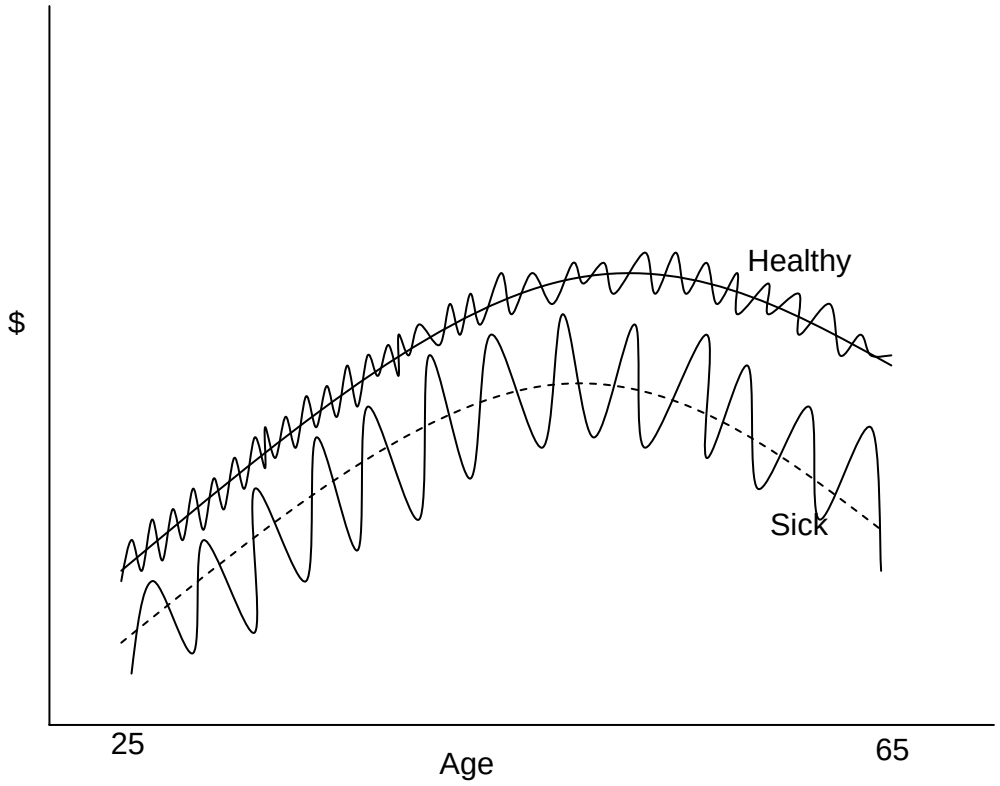

**Figure 3. Relative Odds of Being Employed for Those with Fair/Poor Childhood Health**

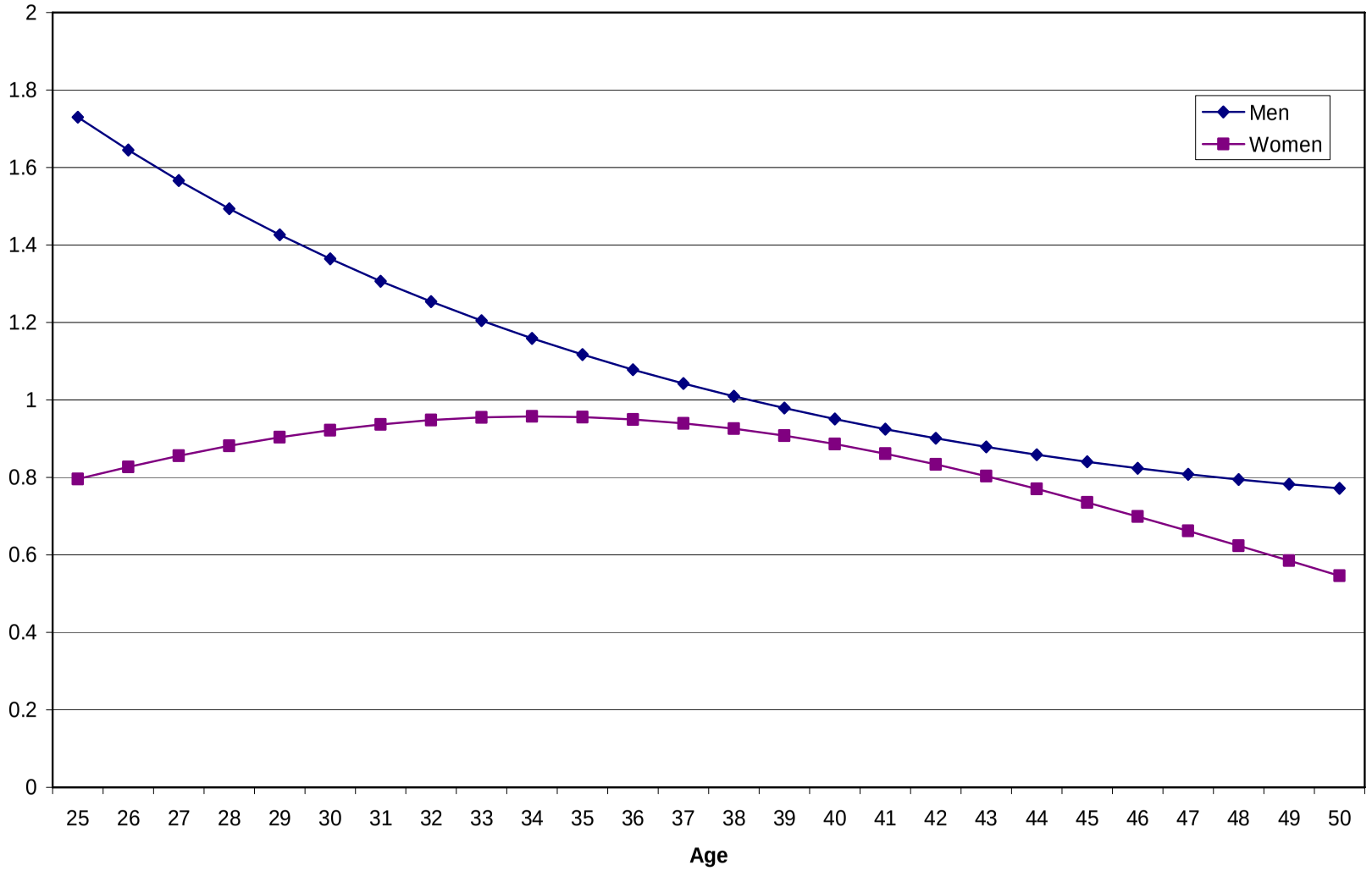

**Figure 4: Annual Earnings Differential Associated with Fair/Poor Childhood Health (Men)**

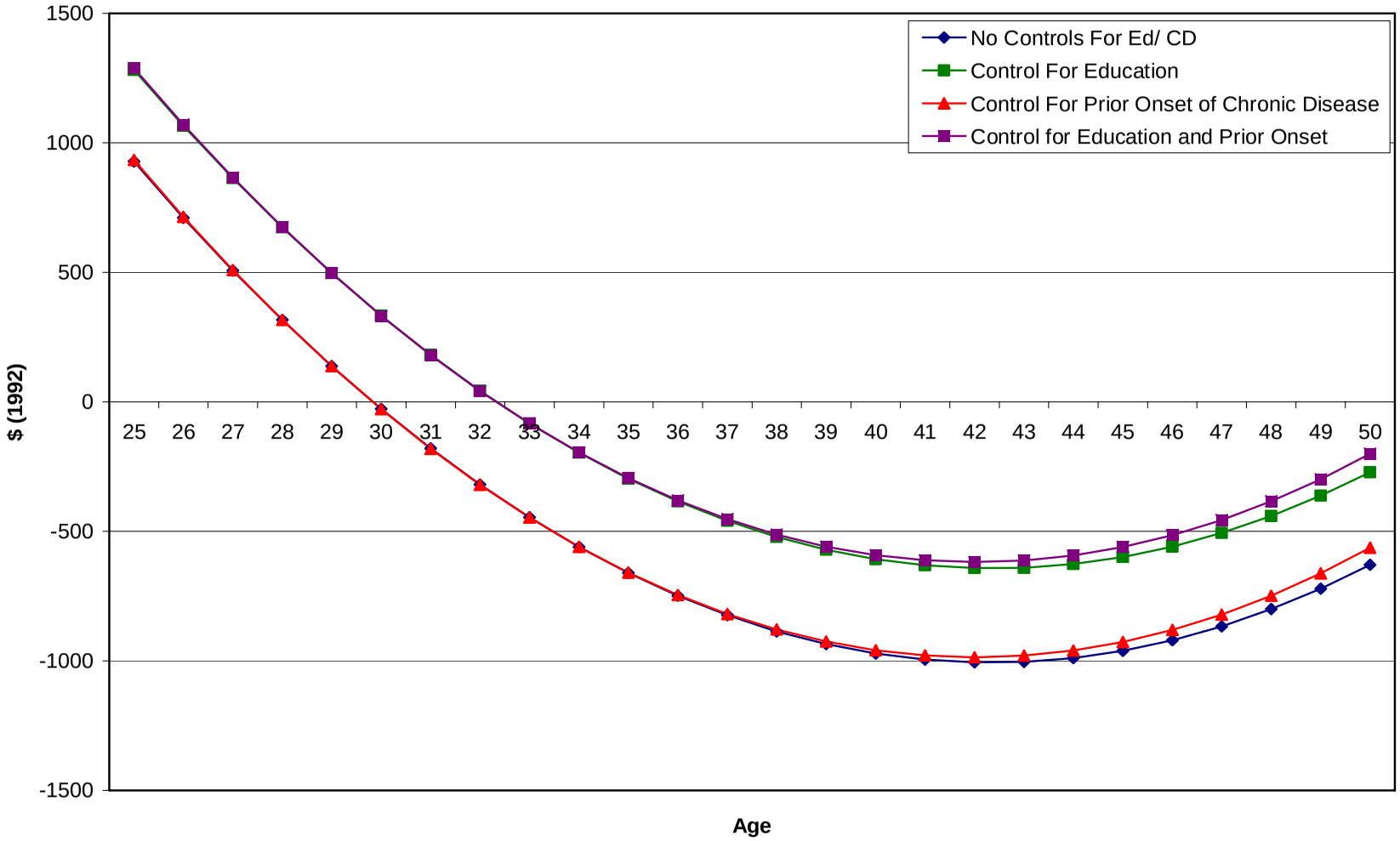

**Figure 5: Annual Earnings Differential Associated with Fair/Poor Childhood Health (Women)**

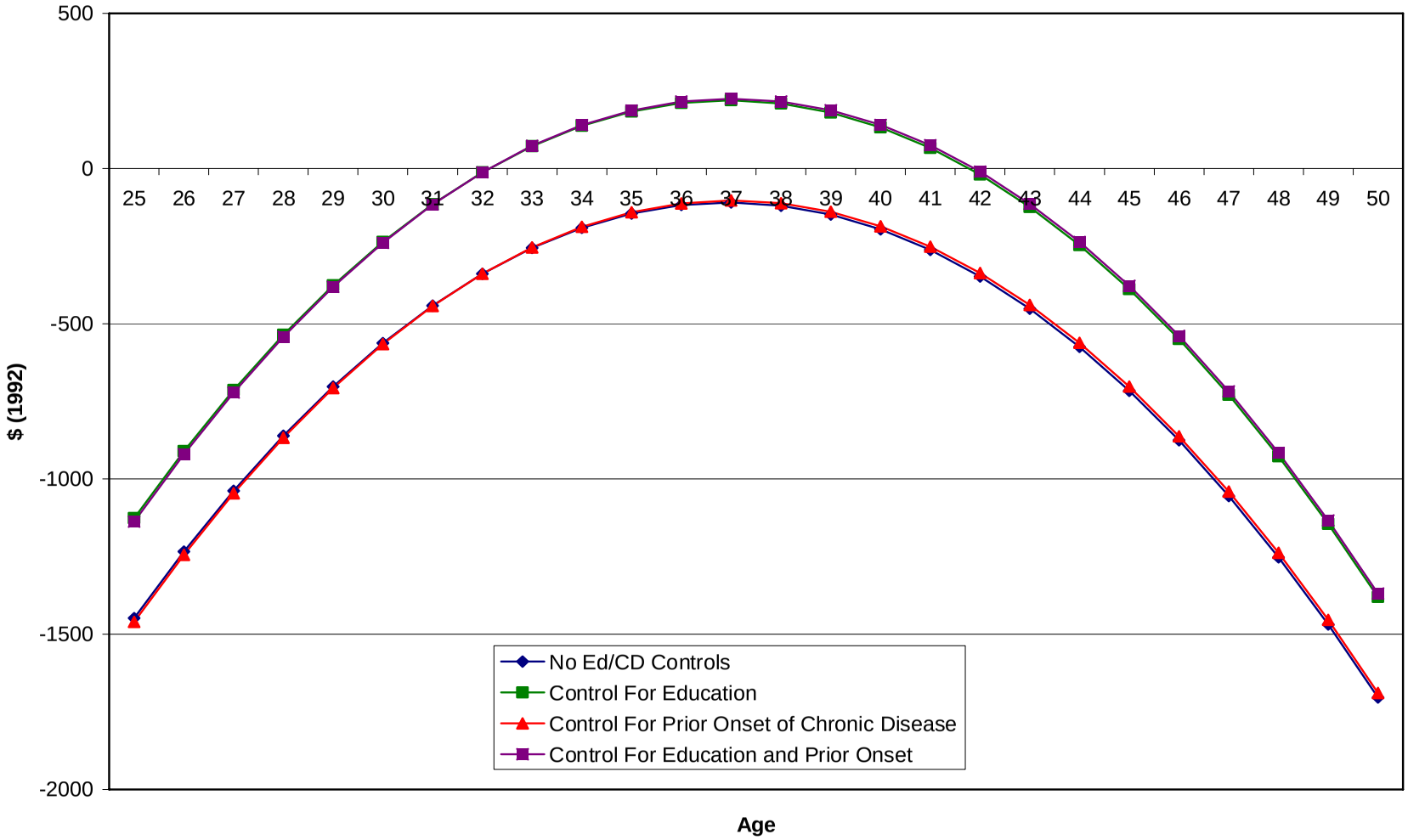

Table A1. Random Effects Model of Annual Earnings (Men)

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Poor Childhood Health | 1008.86 | 1293.60 | 1030.13 | 1315.11 |
| | [898.55] | [894.18] | [897.69] | [893.30] |
| Age | 1099.67*** | 1099.67*** | 1095.60*** | 1095.60*** |
| | [16.95] | [16.94] | [16.93] | [16.93] |
| $Age^2$ | -25.12*** | -25.12*** | -24.69*** | -24.69*** |
| | [0.65] | [0.65] | [0.65] | [0.65] |
| Poor Childhood Health x Age | -251.52*** | -251.51*** | -260.29*** | -260.29*** |
| | [70.79] | [70.79] | [70.74] | [70.74] |
| Poor Childhood Health x $Age^2$ | 6.81* | 6.81* | 7.45* | 7.45* |
| | [2.74] | [2.73] | [2.73] | [2.73] |
| Black | -5987.48*** | -5507.86*** | -6028.04*** | -5548.04*** |
| | [582.66] | [583.09] | [582.09] | [582.51] |
| Hispanic | -6389.14*** | -5299.11*** | -6443.74*** | -5352.83*** |
| | [786.03] | [797.96] | [653.20] | [797.16] |
| Mother's Education | 314.91*** | 234.27** | 304.98*** | 234.42** |
| | [78.83] | [79.23] | [65.21] | [79.15] |
| Mother's Education Missing | -1198.97 | -439.74 | -1384.67* | -454.40 |
| | [848.33] | [850.19] | [785.26] | [849.32] |
| Father's Education | 86.16 | 2.69 | 84.72 | 1.18 |
| | [71.66] | [72.28] | [71.59] | [72.20] |
| Father's Education Missing | -5.067 | 415.31 | 53.86 | 474.61 |
| | [801.64] | [798.47] | [800.87] | [797.68] |
| Father's Occupation | -129.68 | 38.92 | -126.62 | 42.12 |
| | [232.60] | [232.36] | [232.37] | [232.12] |
| Father's Occupation Missing | -2139.70** | -1630.03* | -2108.82*** | -1598.72* |
| | [737.13] | [735.96] | [736.40] | [735.22] |
| Father's Occupation Farm | -1031.52 | -215.28 | -1020.02 | -203.10 |
| | [688.67] | [695.00] | [687.99] | [694.30] |
| Father's Occupation Millitary | -5494.71** | -5326.83** | -5542.38** | -5374.39** |
| | [2005.96] | [1991.72] | [2003.98] | [1989.69] |
| Education | | 467.31*** | | 467.70*** |
| | | [71.41] | | [71.33] |
| Prior Onset of Chronic Disease | | | -3958.52*** | -3960.39*** |
| | | | [364.51] | [364.43] |
| Intercept | 15929.21 | 9476.39 | 15944.80 | 9486.63 |
| $R^2$ Within | 0.158 | 0.158 | 0.159 | 0.159 |
| $R^2$ Between | 0.108 | 0.121 | 0.110 | 0.123 |
| $R^2$ Total | 0.129 | 0.137 | 0.131 | 0.138 |
| N (Groups) | 75296 (2870) | 75296 (2870) | 75296 (2870) | 75296 (2870) |

**P<.05; **P<.01; ***P<.001 (Two Tailed Test) [standard error]*

Table A2. Random Effects Model of Annual Earnings (Women)

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Poor Childhood Health | -926.42 | -630.59 | -918.89 | -623.79 |
| | [513.66] | [503.57] | [513.70] | [503.61] |
| Age | 311.69*** | 311.69*** | 312.24*** | 312.23*** |
| | [11.42] | [11.42] | [11.42] | [11.42] |
| $Age^2$ | 0.69 | 0.69 | 0.79 | 0.79 |
| | [0.44] | [0.44] | [0.44] | [0.44] |
| Poor Childhood Health x Age | 162.01*** | 162.01*** | 162.84*** | 162.83*** |
| | [40.50] | [40.50] | [40.50] | [40.50] |
| Poor Childhood Health x $Age^2$ | -8.31*** | -8.31*** | -8.25*** | -8.25*** |
| | [1.56] | [1.56] | [1.56] | [1.56] |
| Black | 1588.24*** | 1651.92*** | 1584.56*** | 1648.15*** |
| | [358.15] | [352.11] | [358.19] | [349.45] |
| Hispanic | -1057.79* | 863.70 | -1067.16* | 606.95 |
| | [506.32] | [349.40] | [531.90] | [509.68] |
| Mother's Education | 182.68*** | 46.04 | 183.65*** | 47.29 |
| | [50.05] | [50.97] | [50.05] | [49.89] |
| Mother's Education Missing | -1286.38* | 577.32 | -1294.45* | -586.86 |
| | [572.28] | [560.77] | [572.35] | [560.85] |
| Father's Education | 87.90 | -6.79 | 87.21 | -7.27 |
| | [47.48] | [46.85] | [47.48] | [46.86] |
| Father's Education Missing | -1167.37* | -478.21 | -1148.53* | -461.08 |
| | [475.56] | [466.76] | [475.63] | [466.84] |
| Father's Occupation | -50.33 | 196.65 | -46.32 | 200.08 |
| | [159.94] | [157.11] | [159.97] | [157.14] |
| Father's Occupation Missing | -479.97 | 474.02 | -462.53 | 489.17 |
| | [484.24] | [477.73] | [484.32] | [477.81] |
| Father's Occupation Farm | -806.62 | 321.40 | -790.21 | 335.16 |
| | [489.42] | [469.97] | [ 474.03] | [470.05] |
| Father's Occupation Millitary | -2910.52* | -2409.02 | -2935.09* | -2434.42 |
| | [1440.97] | [1406.160] | [1441.16] | [1406.37] |
| Education | | 719.83*** | | 718.25*** |
| | | [53.82] | | [53.83] |
| Prior Onset of Chronic Disease | | | -1307.22*** | -1293.04*** |
| | | | [200.17] | [199.96] |
| Intercept | 3717.21 | -5935.74 | 3711.88 | -5919.82 |
| $R^2$ Within | 0.131 | 0.131 | 0.131 | 0.131 |
| $R^2$ Between | 0.033 | 0.08 | 0.033 | 0.080 |
| $R^2$ Total | 0.076 | 0.103 | 0.076 | 0.103 |
| N (Groups) | 91208 (3508) | 91208 (3508) | 91208 (3508) | 91208 (3508) |

**P<.05; **P<.01; ***P<.001 (Two Tailed Test) [standard error]*

**Figure A1: Annual Earnings Differential Associated with Fair/Poor Childhood Health Including Zeros (Men)**

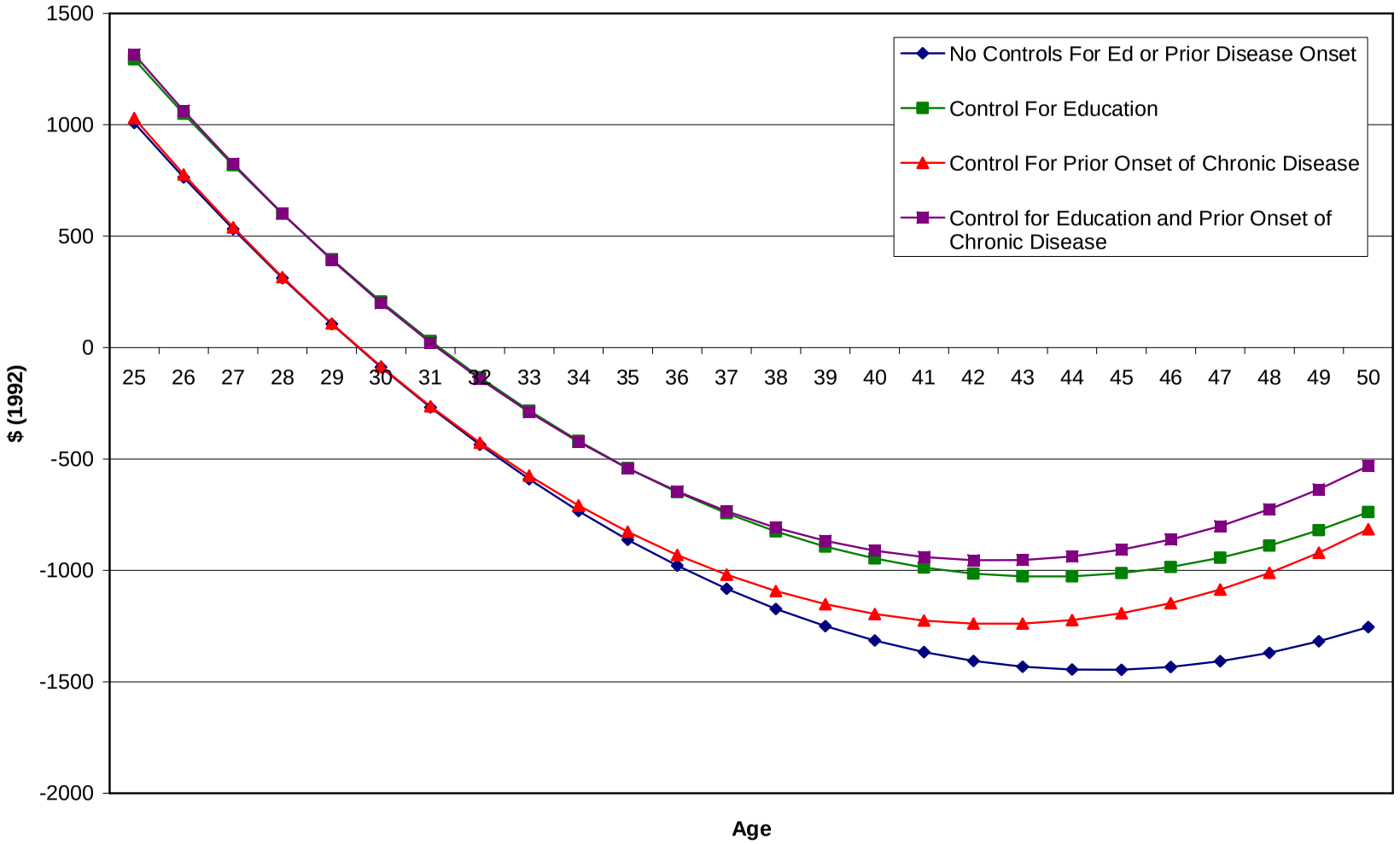

**Figure A2: Annual Earnings Differential Associated with Fair/Poor Childhood Health Including Zeros (Women)**