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Socioeconomic Status and Health Over the Life Course and Across Generations: Introduction to a Special Issue and Overview of a Unique Data Resource

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Introduction

Over the last roughly 15 years there has been an explosion of research by economists on the connection between socioeconomic factors and health. This interest is motivated by the fact that there is a very strong association between various measures of socioeconomic status on the one hand—including education, income, wealth, and neighborhood characteristics—and almost all measures of health including specific health conditions, physical functioning, and mortality (e.g., Deaton and Paxson, 1998a, 1998b; Smith, 1999). This association—which was initially documented by scientists from other disciplines (see early reviews by Adler (1994) and McIntyre (1997))—exists in almost every society that has been examined (Mackenbach et al., 2008) and at every point in the lifecycle. Whether this strong association is due to socioeconomic factors causing changes in health, health influencing socioeconomic status, some alternative mechanism, or a combination of all three, has been the focus of much of this research.

Recognizing the unique role that the Panel Study of Income Dynamics (PSID) could play in helping scientists understand the socioeconomic–health gradient, a conference funded by the National Institute on Aging was held in September 2010 where 30 papers using the PSID were presented. A subset of these manuscripts were submitted to the *BE Journal of Economic Analysis and Policy*, reviewed according to the journal's usual procedures, and published in this special issue. While these papers identify important issues and represent the kind of work that can be conducted with the PSID, a vast array of analyses can be supported with these data. The PSID website provides a bibliography of all papers ever written using the PSID, including keyword listings for articles on health topics.

In this introductory article we describe the unique aspects of the PSID that allow scientists to investigate the connections between socioeconomic (SES) factors and health at a point in time, over the life course, and across generations, referencing the articles in the special issue, where relevant. By providing a more in-depth description of the unique characteristics of the PSID, this introductory article serves as a useful companion to the articles in the

special issue. Moreover, we hope this article will stimulate new ideas by scientists who will then use these data to improve our understanding of the causes and consequences of the SES-health gradient.

Overview of the Panel Study of Income Dynamics

The National Science Foundation named PSID one of its 50 most significant discoveries in its first 50 years of existence, and 10 years later one of its 60 most significant discoveries in its first 60 years (National Science Foundation, 2010). With 45 years of data on the same families and their descendants, it is a cornerstone of the data infrastructure for empirically based social science research in the U.S. and the world. While the initial focus of the PSID was on income and demographic events, the content areas captured by the PSID became much more inclusive overtime. In particular, over the last 15 years there has been a major expansion in health-related content. When the health data are combined with unique features of the PSID—the unusual length of the panel, its genealogical design, and the broad content—the archive provides scientists with a powerful resource to study the connections between socioeconomic status and health status over the life course and across generations.

Sample design

The original 1968 PSID sample was drawn from two independent sources: a nationally representative sample of roughly 3,000 families designed by the Survey Research Center at the University of Michigan (the “SRC sample”) and an over-sample of roughly 2,000 low-income families from the Survey of Economic Opportunity (the “SEO sample”). Therefore, there is sufficient sample size to examine in detail low-income and minority—especially African-American—populations. The PSID interviewed and re-interviewed individuals from families in these two samples every year from 1968 to 1996 and biennially thereafter.

PSID’s tracking rules call for following sample members when they set up distinct family units. Children born to or adopted by original sample members are followed when they set up their own economically independent households. In addition, adult sample members who move out of PSID family units (e.g., through divorce) are also tracked to their new family units (Hill, 1992).

A high annual continuation rate is critical to the success of a long panel study. While most cross-sectional surveys have experienced rapid declines in response rates over the past several years (Curtin et al. 2005), the PSID has experienced no such decline. In fact, despite an increasing interview length, the response rates in the most recent waves have been as high as any in the entire 41-year history of the PSID. PSID has achieved response rates of 96–98% for virtually every wave for the core re-interview sample.

Economic, social, and demographic content

Since its inception, the PSID has collected detailed economic, social, and demographic information from its families. With input from the wider scientific community and the PSID Board of Overseers, the PSID has continually reassessed its content to address emerging scientific and policy interests, while also placing a premium on consistency over time. Table 1 highlights economic, social, and demographic content areas in the current instrument, many of which have been included since 1968. Thousands of additional variables in related domains have been collected throughout the history of the PSID (all available online through PSID’s data center). Geospatial data are also available (under a special data use agreement) that allow identification of census block for each PSID family over all waves.

Health content

Table 2 provides a summary of health-related questions currently in the PSID and the year first collected. Since 1968, PSID has collected work and activity limitations due to physical or mental ill health, health insurance coverage, and tobacco and alcohol use. During the late 1970s and the 1980s content was increased again to accommodate questions on workers compensation, hospital and nursing care, disability insurance, general health status, and exercise. In the early 1990s, activities of daily living (ADLs) and instrumental activities of daily living (IADLs) were added (1992–1996). Beginning in 1999 through 2011, the health module was expanded significantly to include a standard series of questions on health conditions and expenditures. Items on health expenditures include: out-of-pocket payments for health insurance premiums; nursing home and hospital bills; doctor, outpatient surgery, and dental bills; prescriptions; in-home medical care; and special facilities.¹ Retrospective measures of childhood health conditions were added in 2007 and medication use was added in 2011. In addition, linkages to the National Death Index (which provides cause of death of PSID sample members) and Medicare claims data are available under special data use agreements.

Motivating Conceptual Framework: Connections Between Health and SES

The PSID serves the needs of a diverse set of scholars from various disciplines as they investigate the social and behavioral origins of health and mortality—including the roles of social, economic, environmental, and genealogic forces. As a result, a single theory does not guide the selection of interview content in the PSID. Nevertheless, to illustrate the power of the PSID design, it is helpful to sketch out a simple but broad model of life course health and mortality (Figure 1), as shaped by the interacting factors of biologic inheritance (G), socioeconomic conditions (S), health (H), and other environmental factors (E). In this simple model, domains are indexed ($t = 1, 2, 3, \dots$) to portray different stages in the life course. Here we see biologically inherited factors (G), prenatal socioeconomic environment (S_0)—e.g. maternal education—as leading to early childhood health (H_1) and socioeconomic status (S_1). Within each stage effects may interact—e.g. biologic and environmental factors—and over time the process unfolds to the next life course stage as effects accumulate. At each life course stage there is a risk which gives rise to mortality ($M_1, M_2, \dots$).

Figure 1 is oversimplified in that it represents an individual's life course, yet one can envision correlations between multiple members of a given family (e.g. among siblings) or across generations (parents, children, and grandchildren). Such a model illustrates hypotheses about the nature of familial influences on health and mortality. Pathways not shown in Figure 1 could be added: e.g. relationships between socio-economic factors and the environment (S may influence E) or cross-generational anticipatory behaviors (parents' health H_2 may influence an adult child's economic pathway S_3).

Before PSID began collecting health data, hypotheses that flow from Figure 1 were largely untestable. The vast majority of research to date on determinants of health and mortality in older ages still approach this topic by focusing only on the later stages of the life course, typically those aged 50 and older or 65 and older, or the retired population. Such studies do not have the required measures at early stages of the life course. The addition of retrospective measures to studies of adults has broadened analytic capability, but such retrospective measures (particularly those tapping earlier-life socioeconomic status) often lack the rich detail of prospective reports and are less accurate than prospective reports. Moreover, studies that focus on individuals and/or couples do not have the required

¹Bracket techniques are used to reduce item non-response.

information to account for G . And studies that do follow related individuals, such as twin studies, can account for G , but are not representative of the broader population, and often these studies do not have the rich socioeconomic data.

Several features of the PSID make it uniquely suited to shift the paradigm for studying the connections between health and socioeconomic factors. First, the PSID offers the combination of prospective measures of high-quality socioeconomic status including income over its sample members' life course, a combination of validated prospective and retrospective measures of health (Smith, 2009) and a full accounting of mortality across all ages. Articles in this special issue take advantage of these features of the PSID. For example, Halliday (2011) demonstrates that the variance in health at age 60 is as much as five times the variance at age 25. Golberstein, Hirth, and Lantz (2011) use the education and health data to demonstrate that an additional year of schooling is associated with an incremental discounted lifetime value of between \$26,000 and \$49,000 worth of health. Johnson (2011) and Johnson and Schoeni (2011) examine the life course pattern of health as it relates to socioeconomic experiences in early life such as childhood poverty and neighborhood characteristics. Moorefield, Ribar, and Ruhm (2011) demonstrate that a history of employment in blue-collar and service occupations subsequently leads to higher transition rates into bad health.

The PSID's genealogic design also allows one to explore the influence of relatedness (versus socioeconomic status or environment) in shaping health and mortality in later life. That is, with the PSID one can operationalize biologic inheritance as a measure of relatedness (R) to other family members (rather than zygosity as is common in twin samples). R can be operationalized, for instance, as the degree of identity in the genome (with values ranging from 1.0 for the few monozygotic twins in the PSID, 0.5 for siblings, 0.25 for grandparents/grandchildren, etc.), and in turn can be used to explore the relationship among relatedness, health behaviors, and socioeconomic status. Articles in this special issue utilize the genealogical design in various ways. Fitzgerald (2011), for example, examined intergenerational models of health, earnings, and education, with a focus on assessment of the impact of selective attrition for such parameter estimates, and Zhang et al. (2011) focused on intergenerational connections in obesity in particular. Mazumder (2011) finds that sibling correlations in birth weight, cognitive ability in childhood, and wages as an adult are of similar magnitude, roughly 0.5–0.6.

Third, the probability-based nature of the PSID sample offers external generalizability, allowing researchers to make statements about behavior for the US population as a whole. The SES–health gradient is distinct at different ages, and the fact that the entire US population is represented by the PSID allows analysts to both describe and understand disparities at all ages. Moreover, the over sample of low income and African-American families ensures adequate sample sizes to investigate these disadvantaged groups in detail.

Recent and future supplemental data collections with PSID families

Disability and Use of Time

The PSID “main interview” described above is conducted every other year. Several additional data collections have been conducted with PSID families recently. In 2009 the Disability and Use of Time (DUST) supplement to the PSID collected time diaries and measures of disability and wellbeing from approximately 400 older couples. This study demonstrated the feasibility of collecting multiple, same-day time diaries from PSID families and created a rich archive on disability, time use, and wellbeing for older couples (Freedman and Cornman 2012). Over 1500 diaries were made publicly available in the spring of 2010. A second wave of DUST is planned for 2013, but this time with all PSID

respondents (and spouses) ages 60 and older. Called DUST II, this data collection effort will have many of the same features of the initial DUST project.

Child Development Supplement

Beginning in 1997, the Child Development Supplement (CDS) collected information on up to two randomly selected 0–12 year old children (N=3,563) and caregivers residing in PSID families. The sample provides researchers with a comprehensive national prospective database of young children and their families to study the dynamic process of early human capital formation. The same children (while they were under 18) and caregivers were re-interviewed in 2002/2003 and again in 2007/2008. Topic areas include: health, skills assessment, parenting styles, time use, the learning environment in the home & school resources; and socio-emotional characteristics of children and parents. If funding is secured, we plan to conduct a new CDS on all PSID children 0 to 18 in 2014. In addition to interviews with primary caregivers, older children will also be interviewed, collecting content similar to that contained in prior waves of the CDS. These plans also include collecting saliva for the children and their caregivers.

Transition into Adulthood

In 2005, the PSID began a new study designed to follow children who had participated in the CDS who had turned age 18, called Transition into Adulthood (TA). Data are collected on young adult developmental pathways and outcomes, providing detailed information about development from early and middle childhood through adolescence (as measured in CDS-I, CDS-II, and CDS-III), and on adulthood once these youth transition to economic independence. TA data have been collected in 2005, 2007, 2009, and 2011, and funding has been secured to conduct the survey in 2013 and 2015. The PSID-CDS-TA archive is unique in the scientific research opportunities it presents for intergenerational and life course analysis.

Web-based data collections

PSID has plans to begin to administer supplements over the internet (with mail back up for those without web access). Two topics are currently in the design phases: one on early-life family context and the other on wellbeing and psychosocial factors. The first supplement, scheduled for 2014, will ask respondents to provide retrospective reports on their childhood, including characteristics and behaviors of their parents, their friends, and school environment. The second, tentatively scheduled for 2016, will include measures of wellbeing, personality, and/or some of the psychological scales that PSID included in its earliest years (i.e., aspiration-ambition, trust-hostility, efficacy-planning, achievement motivation; see Veroff et al. 1971). Because of its importance in predicting economic wellbeing (Bishop 1989; Hoffman 1979; Mason 2000; Cohn & Kiker 1986) and potential for extending models of intergenerational transmission of wealth and health, we also plan to consider a brief intelligence measure for inclusion.

Conclusion

The association between socioeconomic factors and health is strong and pervasive. Almost all measures of socioeconomic status – income, wealth, education, race/ethnicity – are strongly associated with health. And almost every specific measure of health status – general health status, mortality, activities of daily living, physical functioning, specific conditions – is somehow associated with socioeconomic factors. This relationship has been shown to exist in almost every country in the world, and in most time periods of history.

Over the last roughly 10–20 years there has been an explosion of research on this topic. But despite this expansion, there is no broad consensus on a number of fundamental questions: how much of the correlation between SES and health is due to the effects of health on SES, SES on health, or some other factor? How much of the transmission of economic status across generations is due to the transmission of health status from parents to children? Why do disparities in health appear to be smaller at the youngest ages, increase through adulthood, but then decline in older ages? What specific dimensions of socioeconomic status are most important for specific health conditions? Do SES factors influence the onset of disease, the course of disease after onset, both, or neither?

These and other questions need to be answered. Because of its unique features combined with the expanded data on health, the PSID can be an important resource for scientists to address these questions.

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Figure 1.
Life Course Health and Socioeconomic Status

Table 1

Economic, Social, and Demographic Content in the PSID Main Interview

Content area	Year first collected
Housing (& Mortgage distress)	1968 (2009)
Employment	1968
Income	1968
Government transfer program participation	1968
Consumption expenditures	1968
Housework and childcare	1968
Family composition, marriage, fertility, education, & residential changes	1968
Geospatial data (tract, block)	1968
Pensions	1976
Wealth & Active savings	1984
Philanthropic giving and volunteering	2001

Table 2

Health-related Content in the PSID Main Interview

Content area	Year first collected
Work & activity limitations	1968
Health insurance	1968
Smoking & Alcohol	1968
Deaths	1968
Workers' compensation	1977
Hospital & nursing care	1981
Social security disability insurance	1984
General health status	1984
Exercise	1986
Height & weight	1986
Activities of daily living	1992
Instrumental activities of daily living	1992
Health conditions	1999
Health expenditures	1999
General health status in childhood	1999
Health conditions in childhood	2007
Medication use	2011
Health-related Linkages	Year first linked
National Death Index	1979
Medicare claims	1991