

---

# Using the Panel Study of Income Dynamics (PSID) to Conduct Life Course Health Development Analysis

Narayan Sastry, Paula Fomby,  
and Katherine McGonagle

---

## 1 Introduction

The Panel Study of Income Dynamics (PSID) is a nationally representative, longitudinal study of families in the USA that began in 1968—nearly 50 years ago. It is the longest-running household panel survey in the world, and has been the model for similar studies launched in a number of other countries. Data from PSID are widely used by researchers for scientific and public policy research. The study is a unique resource for answering many questions that can be answered with no other data source.

PSID data are a cornerstone of social science research in the USA. To date, approximately 3800 publications have used PSID data, including over 700 dissertations. Nine US federal agencies use the data in fulfilling their missions. Each year, nearly 25,000 data extracts are downloaded by over 2500 different users, and there are nearly five million visits to the PSID web site. As an indicator of its significance, the study's lead sponsor, the National Science Foundation (NSF), named PSID one of the 60 most important innovations that NSF played a key role in creating.

PSID's innovative design, broad content, and long duration have been central to understanding many key research and policy issues, including income and poverty dynamics; demographic behavior such as marriage and cohabitation, teen childbearing, and migration; child health and development; cyclical behavior of wages, labor supply, and consumption; savings and wealth accumulation; disparities in health and health behaviors including obesity, exercise, and smoking; the intergenerational transmission of socioeconomic status; and the effects of neighborhoods. PSID data have shaped a new and still emerging definition of economic well-being by transforming research in this area from a static and narrow view of rich and poor to a dynamic one in which families experience episodes of poverty or affluence (e.g., Brooks-Gunn and Duncan 1997; Hirschl et al. 2003; Sandoval et al. 2009; Rank and Hirschl 2014) and shocks to wealth (e.g., Stephens 2001; Conley and Thompson 2013). The growing number of three- and four-generation families is now supporting important new analyses of multigenerational associations in socioeconomic status attainment (e.g., Sharkey and Elwert 2011; Hertel and Groh-Samberg 2014; Pfeffer 2014; Wightman and Danziger 2014).

Across these and other topics, research based on PSID data has demonstrated the importance of a life course approach, in which factors much earlier in life have lasting influences on outcomes

---

N. Sastry (✉) • P. Fomby • K. McGonagle  
Survey Research Center, Institute for Social  
Research, University of Michigan,  
426 Thompson Street, Ann Arbor, MI 48106, USA  
e-mail: [nsastry@umich.edu](mailto:nsastry@umich.edu)

later in life. The PSID data allow researchers unique opportunities to test specific hypotheses that emerge from the seven principles of life course health development (see Halfon and Forrest 2017). In particular, by spanning the entire life course from conception to death, the study allows researchers to focus on multiple specific life course functional phases for individuals within their social and economic context. Researchers can examine *generativity* by examining the family and socioeconomic context of mothers during the preconception and prenatal period; *acquisition of capacity*, through components of the study that focus on health and development during childhood; *maintenance of capacity*, by examining how individuals function across the prime adult years; and *managing decline*, through focused components of PSID that examine how individuals manage, adjust, and adapt to old age (see Halfon and Forrest 2017: Principle 2, health development evolves over the life course).

Beginning in the late 1990s, several developments further increased the research potential of the PSID archive for studying life course health development. Most notably, content was expanded in the areas of health, wealth, expenditures, philanthropy, development, the transition to adulthood, and time use. Two important supplements were also added to the study, focusing on child health and development and the young adult years.

In this chapter we provide a profile of PSID and its recent supplemental studies, highlighting features that support life course health development research. In the next section, we describe the origins of PSID. We then provide an overview of the design and evolution of PSID. This is followed by a description of the content of the PSID interviews and the unique features of PSID for life course health development analysis. Next, we provide an introduction to PSID supplements that focus on children and young adults—the Child Development Supplement and the Transition into Adulthood Supplement. We then provide illustrations of topics of life course health development research using PSID, highlighting prominent studies that have used the PSID data. This is fol-

lowed by a description of PSID’s companion international studies. Finally, we explain how to obtain data from PSID and its supplements and end the chapter with an outline of future plans for the PSID project.

---

## 2 Origins of PSID<sup>1</sup>

PSID started with the “War on Poverty,” which President Lyndon B. Johnson launched in the 1960s. Although the Social Security Retirement, Unemployment Insurance, and the Aid to Dependent Children programs were established in the mid-1930s at the height of the Great Depression, welfare programs were greatly expanded in the mid-1960s with the establishment of the Food Stamp Program in 1964, Medicare and Medicaid in 1965, and the School Lunch and Breakfast Programs in 1966. In order to assess the effectiveness of these new programs, the US Office of Economic Opportunity directed the US Bureau of the Census to design and field a survey that was later named the Survey of Economic Opportunity (SEO). In 1966 and 1967, SEO conducted interviews with approximately 30,000 households.

There was subsequently an interest at the Office of Economic Opportunity in extending the duration of the SEO study, in order to better understand the dynamics of poverty. However, there was also a desire to avoid the bureaucratic difficulties associated with conducting the study through the Census Bureau. These circumstances led the Office of Economic Opportunity to the Survey Research Center (SRC) at the University of Michigan and to commissioning SRC to conduct a 5-year follow-up survey with approximately 2000 low-income households from SEO.

The goal of the SEO follow-up study was to understand a number of crucial and highly policy-relevant issues related to poverty dynamics. A key question was tracking the reasons for changes in household poverty over time. In particular, if

---

<sup>1</sup>This section draws on previous descriptions of the history of PSID, including publications by McGonagle et al. (2012), Brown et al. (1996), and Hill (1992).

household poverty rates were estimated at 20% each year over the 5-year study period, were the same 20% of households in poverty in each of those 5 years, or were households entering and leaving poverty during that time? In order to answer this question and other similar questions, it was essential for the study to include not just low-income households, but also to include a representative sample of nonpoor households. SRC researchers convinced the Office of Economic Opportunity to launch the study with a nationally representative sample by adding 3000 households from the SRC national sampling frame to the 2000 households from the SEO sample. The 5000 households that comprised PSID at its launch in 1968 were representative of the entire US population, while also including a large oversample of low-income households.

A second major design innovation at the launch of the study was to incorporate into the sample the family members who “split off” from study households to form their own independent households. These split-off households were largely comprised of adult children of the original sample members who were forming their own nuclear families. This design feature allowed the study to remain representative over time of all (nonimmigrant) households and, combined with the study’s high wave-to-wave response rates, led to substantial growth in the study’s sample size and supported research on outcomes across multiple generations of the same family.

Although the study was planned to last for just 5 years, at the end of this initial period its considerable value became clear, and there was support for its continuation. At the same time, responsibility for PSID was shifted from the Office of Economic Opportunity to the Office of the Assistant Secretary for Planning and Evaluation in the US Department of Health, Education, and Welfare. As the study continued, its prominence grew steadily as a major data source for analyzing changes in poverty over time, over the life course, and across generations, as well as for studying a wide range of additional topics. In the early 1980s, the NSF became the primary sponsor for PSID. NSF currently initiates funding for PSID and provides the majority of support for the

Core PSID component, although the National Institute on Aging and the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development also provide major support for the Core PSID and additional funding comes from other sponsors and agencies such as the Food and Nutrition Service of the US Department of Agriculture. Since 1982, PSID has had an NSF-sponsored Board of Overseers that provides input to the study from a national and international community of researchers and survey research experts.

### 3 Design and Evolution of PSID

The Core PSID survey was conducted annually from 1968 through 1997 and has been conducted biennially since 1997. As of 2015, a total of 39 waves of data have been collected over 47 years. In 1997, because of the escalation in costs driven by the doubling of the sample size during its 30-year history, PSID was forced to drop some families from the study. The cuts were made from the SEO sample. Between 1997 and 1999, an immigrant refresher added to the PSID sample a total of 441 families who had moved to the USA between 1968 and 1997. Because some of the 441 immigrant families created split-off families, by 2013 the number of post-1968 immigrant families increased to 685. In 2013, the PSID sample comprised 9063 family units with 13,693 heads and spouses and 9747 other family members, for a total of 23,440 individuals. Table 1 shows the age composition in 2013 of PSID heads and spouses and other family members. Heads and spouses are largely prime-aged adults. Other

**Table 1** PSID sample members (heads and spouses and other family members), by age, 2013

| Age group | Heads and spouses |       | Other family members |       |
|-----------|-------------------|-------|----------------------|-------|
|           | N                 | %     | N                    | %     |
| ≤18 years | 20                | 0.1   | 7485                 | 76.8  |
| 19–39     | 5917              | 43.2  | 1778                 | 18.2  |
| 40–59     | 5009              | 36.6  | 285                  | 2.9   |
| 60+       | 2747              | 20.1  | 199                  | 2.0   |
| All ages  | 13,693            | 100.0 | 9747                 | 100.0 |

family members are largely composed of children and young adults—almost all of whom are the children of the heads and spouses. The 2013 interview was about 82 min in length, which is slightly higher than the average length of the post-1997 biennial interviews but about twice as long as the pre-1997 annual interviews.

Core PSID includes a telephone interview with a single respondent in each household, using computer-assisted interview software. Interviews are conducted by SRC's Survey Research Operations group, and households receive a financial incentive for completing the interview. The PSID respondent is typically the head or the spouse of the head, but may be another adult household member. An attempt is made to interview the same family member in each wave in order to maximize the consistency of respondent reports over time; approximately 95% of families that appear in successive waves have the same respondent for both interviews. The respondent provides information on himself or herself, the spouse or partner, other household members, and characteristics of the household. Individuals in PSID households are classified as other family members if, at the time of interview, they are members of the respondents' family and either residing in an interviewed family unit or temporarily away in an institution (e.g., college, jail, hospital, or the military). Family members are individuals who are related to the head or spouse by blood, marriage, or adoption, although unrelated individuals are included in the family unit if they are permanently living together and share income and expenses. PSID's tracking rules call for following the sample members' children, who are themselves classified as sample members and are eligible for tracking as separate family units when they set up their own economically independent households. Adult sample members who move out of PSID family units are tracked to their new family units (see Hill 1992). Two strengths of the PSID sample are the large representation of African-Americans and families below the poverty line. Across all ages, approximately one-third of individuals in PSID families are African-American, and 14% reside in families below the poverty line; among children, 41% are black and over 20% are in poor families.

Consistently achieving high response rates is critical to the success of a long-term panel study such as PSID. Although most cross-sectional surveys and other telephone surveys have experienced major declines in response rates over the past several years (Curtin et al. 2005; National Research Council 2013), PSID has experienced no such decline (Schoeni et al. 2013). In fact, the study's response rates in the most recent waves have been as high as any in its nearly 50-year history. PSID has achieved reinterview response rates of 96–98% in virtually every wave. In 2003 and later, the 1997 immigrant sample's reinterview response rate increased to more than 93% on average. These high rates are attributable to a number of factors, including incentive payments, experienced interviewers matched with the same families, use of tailored techniques to address respondents' concerns, and inter-wave communications with respondents.

Despite PSID's extremely high wave-to-wave response rates, the cumulative loss to follow-up after nearly 50 years now exceeds 40%. Attrition has been higher for certain groups—in particular, for men and low-income individuals. However, PSID's weights are designed to adjust for attrition (Gouskova et al. 2009), after incorporating the original sampling probabilities (see Heeringa and Connor 1999). Weighted PSID estimates show close agreement with estimates based on corresponding samples from benchmark studies, including income to the Current Population Survey (Gouskova et al. 2010), wealth to the Survey of Consumer Finances (Bosworth and Anders 2008; Pfeffer et al. 2014), expenditures to the Consumer Expenditure Survey (Li et al. 2010; Andreski et al. 2014), health behaviors and outcomes to the National Health Interview Survey (Andreski et al. 2009), and children's demographic characteristics to the American Community Survey (Sastry and Duffy 2012). Moreover, research suggests that attrition is random within families (Wiemers et al. 2010), does not account for health-wealth relationships (Meer et al. 2003) or the substantial intergenerational correlations in income (Schoeni and Wiemers *forthcoming*), and does not consistently bias sibling models (Fitzgerald 2011).

## 4 PSID Interview Content

PSID interviews collect information on a wide range of economic, demographic, social, and health topics. However, a considerable focus is on individual and household economic status, with detailed information collected on employment, earnings, income from other sources, consumption expenditures, welfare program participation, borrowing and saving, and wealth. Table 2 summarizes the PSID instrument content in PSID's most recent wave, which was fielded in 2013. Many of these content domains, and many specific questions, have been included in the instrument since 1968.

PSID has collected an increasing amount of health content over the years. Beginning in 1968, information was collected on work and activity limitations, health insurance, smoking and alcohol use, and mortality. Data were later added on workers' compensation (1977), hospital and

nursing care (1982), general health status and Social Security Disability Insurance (1984), and exercise, height, and weight (1986). A major increase in health content in the 1990s added information on activities of daily living and instrumental activities of daily living (1992) and health conditions, health expenditures, and general health status in childhood (1999).

Two Core PSID modules offer special opportunities for life course health development research. First, the childhood health calendar, which was added in 2007, asks a series of retrospective questions for the household head and spouse about health conditions that arose during their own childhood including asthma, diabetes, respiratory disorders, speech impairment, depression, drug or alcohol problems, and other emotional problems. These data appear to have high validity (Smith 2009) and allow researchers to examine the effects of health conditions on life course health development by providing markers very early in the life span. Second, beginning in 2009, new questions were added to Core PSID about mortgage distress, including foreclosure activity, falling behind in payments, mortgage modifications, and expectations about payment difficulties in the coming year. These data support research on the medium-term effects of the recent economic recession for family formation and dissolution, childbearing, and educational attainment. Researchers can examine, for instance, whether higher unemployment rates and declines in income and wealth have led young adults to postpone or avoid higher education, marriage and cohabitation, and childbearing.

**Table 2** Core PSID instrument content in 2013

| Section    | Description of content  |
|------------|---|
| Roster     | Family composition update, split-off information, location of family unit members       |
| A          | Housing, utilities, computer use  |
| B, C, D, E | Employment  |
| F          | Housework, child care, food expenses, and food assistance                               |
| F          | Transportation, education expenses, other expenditures                                  |
| G          | Income  |
| G          | Education updates for other family unit members   |
| H          | Health status and behavior, health insurance, health-care use and expenditures          |
| J          | Marriage, fertility, and newborn children   |
| K and L    | New head or spouse background and existing head and spouse updates, including education |
| M          | Philanthropic giving, volunteering, religiosity, help received                          |
| P          | Pensions  |
| R          | Off-year income and welfare receipt   |
| W          | Wealth and active savings; intergenerational transfers of time and money                |

## 5 Unique Features of PSID for Life Course Analysis

The extended time series and high response rates of PSID provide substantial analytic power to study the antecedents of a range of social, economic, and health factors as well as their effects on life course health development. PSID's design supports research based on several different analytical perspectives. First, PSID provides a nationally representative cross-sectional sample

of families and of children and adults of all ages. Cross-sectional analyses based on PSID data are able to draw on a rich set of covariates that describe individual and family background characteristics, behavior, and outcomes. The vast majority of PSID respondents are themselves—or have family members who were—part of the original 1968 sample (the remainder come from the 1997 immigrant refresher samples), providing information (as of 2015) from 39 waves of data collection. Moreover, PSID now collects retrospective childhood health measures for all household heads and their partners and obtains them for new entrants (who marry into or split from a family unit) making this content available irrespective of timing of entry into the study.

Second, PSID provides prospective panel data for conducting longitudinal analyses of individuals and families. PSID follows adults over the entire life course, and hence, the number of observations for an individual is related to his or her current age and age at entry into the sample. However, individuals who were born into PSID families also have information on their childhood circumstances from their parents' reports. This combination of information on childhood circumstances and later adult behavior and outcomes represents a major analytical strength of PSID that supports a variety of different analyses. Moreover, these analytical samples are large—for instance, over 2700 children who were under 18 years of age in 1968 and were residing in the original PSID families have been followed for 43 years by the 2011 wave.

Third, PSID provides rich intergenerational and intragenerational samples. The intergenerational sample is composed of adult children of respondents who split off from their parents to form their own households and who are recruited into the study. In the 2011 wave of PSID, there were 4800 parent-child pairs in which both the parent and the adult child completed a core interview. This sample supports analyses of concurrent effects of one (or more) generations on another—for example, how current parental or grandparental circumstances affect adult children's outcomes (and vice versa). In 2011, PSID interviewed over 1200 triples that included

grandparents, parents, and adult children. These data provide unique opportunities for research on the equality or inequality in opportunity and the extent to which the life prospects of youth in the USA are shaped by their parents' and grandparents' social and economic status. For many PSID families, self-reported information is currently available on up to four generations within the same family at various points in their life course. Intragenerational analyses using PSID have focused on outcome comparisons among siblings (and, to a lesser extent, among cousins) as a means to control for, or examine, unmeasured family effects. In PSID in 2011, there were 3647 pairs of siblings in which both were interviewed as a head or partner. As the size of PSID's three-generation sample increases, so too does the number of first cousins (who share a common grandmother and grandfather). In 2011, there were 4330 first-cousin pairs in PSID participating as a head or partner.

---

## 6 PSID Supplements Focusing on Children and Young Adults

From its inception, the Core PSID interview has collected information primarily about the activities and characteristics of adult household members, with the largest share of data pertaining to the head of household and his spouse or partner. As a result, PSID supports research on intragenerational and intergenerational mobility in adulthood, but has historically lacked direct, prospective measures of childhood experience to operationalize theoretically informed models of the role of early life events and circumstances in shaping adult status attainment and mobility.

### 6.1 Original PSID Child Development Supplement

To address this limitation, in 1997 PSID launched the Child Development Supplement (CDS) to gather longitudinal information on children in PSID families. The original CDS sample included

up to two randomly selected children aged 0–12 years ( $N = 3563$  at Wave I of CDS) and their primary caregivers (who were usually the children's mother). Eligible CDS participants were descended by blood or adoption from the original 1968 PSID lineage or the 1997 PSID immigrant refresher sample. In most cases, this means that the child's father or mother is the child or grandchild of an original 1968 PSID respondent. Following a longitudinal cohort design, the same children and their caregivers were reinterviewed in 2002/2003 and again in 2007/2008 with a child-based response rate of approximately 90% in each wave.

The content of CDS is shaped by the theoretical perspective that child development is determined by financial, time, and social-psychological resources. Research in this area generally views resources very broadly, defining them to include purchased resources, time, interpersonal connections, and institutions that parents, schools, and communities may use to promote the develop-

ment of children (e.g., Bronfenbrenner 1979; Bronfenbrenner and Morris 2006). Access to and use of these resources shape the future health, cognitive ability, and productive social behavior of children, with development at each age building upon levels attained in previous periods (Kail 2006; Shonkoff and Phillips 2000). The design of the CDS instrument also incorporates the main pathways through which the intergenerational transmission of social, economic, and health status is theorized to operate—such as wealth, human capital, learning at home and at school, kin, local institutions, social interactions, and genetic factors.

To build a comprehensive portrait of family resources and child development, CDS collected information from multiple reporters in a variety of modes. Table 3 provides an overview of the measures collected in CDS. At each wave, primary caregivers completed a telephone interview about their own and their children's characteristics and home, school, and neighborhood environments.

**Table 3** Domains and measures in the original CDS and in the new CDS

| Domain                                    | Measures   |
|---|--|
| Child health status and behavior          | <i>PCG</i> : Child's general health rating; chronic conditions; limitations; health-care use and expenditures<br><i>Child</i> : General health rating; nutrition; exercise; sleep; smoking; sexual behavior; height and weight for BMI; and weight status (underweight, normal, risk for overweight, and overweight)   |
| Child psychological and social well-being | <i>PCG</i> : Child's internalizing and externalizing behavior problems index (BPI); positive behaviors scale; social well-being; closeness with parents, absent parent, and siblings<br><i>Child</i> : Relationship with parents, siblings, friends, peers, and romantic partners; depression, self-esteem, worry, social well-being; risky behaviors, thrill seeking, antisocial behaviors; drug and alcohol abuse/dependence; dating behaviors; parental psychological control; initiative; languishing and flourishing; non-cognitive skills such as self-regulation, optimism, conscientiousness, and coping |
| Family environment                        | <i>PCG</i> : Child's <i>home</i> environment; conflict with father and mother; financial training; whether child has an allowance and savings; whether child has own bank account; parental warmth; involvement in daily activities and school; household tasks; parental aggravation; disagreement in parenting   |
| Parental monitoring                       | <i>PCG</i> : Caregivers' knowledge of the child's whereabouts, activities, and associations<br><i>Child</i> : Child disclosure of activities, family rules, and limits   |
| Child education                           | <i>PCG</i> : Child's enrollment; type of school; tuition; attendance; participation in federal lunch and breakfast programs; participation in special class/school for gifted students; classified as needing special education; repeated grade; dropped out; parental expectations for future schooling<br><i>Child</i> : Goals and expectations for own future schooling and academic success; attitudes toward and connectedness with school; ability self-concepts for reading and math; peer bullying   |

(continued)

**Table 3** (continued)

| Domain  | Measures   |
|---|--|
| School environment                              | <i>NCES-CCD</i> and <i>PSS</i> : School type; student racial/ethnic composition; other enrollment characteristics; pupil/teacher ratio; completion rates; expenditures per child; other school resources<br><i>Child</i> : Perceived characteristics of school and classroom; discrimination experience by race, sex, etc.   |
| Cognitive achievement                           | <i>Child</i> : Courses and grades; rewards, including awards and honors received<br><i>Assessment</i> : WISC-III Digit Span short-term memory; forward and backward scores   |
| Child care                                      | <i>PCG</i> : Child's type of care, frequency of use, and costs of arrangements   |
| Child time use                                  | <i>PCG</i> : Child's stylized time use on structured and unstructured extracurricular activities; costs and frequency of participation; activities with parents<br><i>Child</i> : Stylized time use on sport; extracurricular, community, religious, and part-time work activities; frequency of participation and peer group involvement<br><i>Time diary</i> : Child's type, number, duration, location of activities for 1 weekday and 1 weekend day; social context of activities describing who participated with child |
| Religiosity                                     | <i>Child</i> : Comfort, importance of religious affiliation, or spirituality   |
| Future work, family, and schooling expectations | <i>Child</i> : Negative economic expectations; achieved occupational certainty and identity; job values, career orientation, and expectations for future; ideal age at marriage and birth of children; attitudes toward marriage and childbearing out of wedlock; understanding of the implications of having a child, of leaving school   |
| Sib relationships                               | <i>Child</i> : Type and frequency of cooperation with sibs, kindness, and helping behaviors toward sibs  |
| PCG sociopsychological characteristics          | <i>PCG</i> : Rosenberg self-esteem; Pearlin self-efficacy; psychological distress and well-being; social support; parenting attitudes and styles; family conflict; economic strain; work schedules; community involvement  |
| Child expenses and savings                      | <i>PCG</i> : Child's expenses; savings mechanisms for child, including savings for future postsecondary education  |
| Absent parents                                  | <i>PCG</i> : Frequency/types of activities absent parents are involved with their children; conflict between resident and absent parent  |

During a home visit, children aged 8–17 years completed an interviewer-administered questionnaire, and older children (ages 12–17 years) responded to an audio computer-assisted self-interview covering more sensitive topics such as sexual behavior and drug and alcohol use. Children and primary caregivers also completed cognitive tests from the Woodcock-Johnson Revised battery that assessed reading and math skills and provided height and weight measurements during the home visit. A restricted-use data file includes school identifiers that analysts may link to administrative data to incorporate information about CDS participants' school composition and quality.

CDS is unique among national child health development studies for its inclusion of diaries of children's time use. At each wave, time diary instruments were mailed to households prior to the interviewer's home visit. Children (or caregivers acting on behalf of younger children) were assigned to

complete diaries on one randomly selected weekday and weekend day. Each time diary provides a chronological report of a child's activities over a specified 24-hours period, beginning at midnight. It collected information about the flow of activities, such as what the child was doing at that time, when the activity began and ended, and what else they were doing (if they were engaged in multiple activities), as well as asking questions about who was doing the activity with the child and who else was present. These questions provide information on the extent and nature of both parent/child interactions and the more general availability of parents. These questions also provide unbiased estimates about activities that children do with their siblings, their peers, and nonfamily adults. The time diaries include specific questions about media use whenever it is mentioned, yielding information about the total time spent using media, the timing of media use during the day, the content of media used (e.g., names of

television programs, movies, web sites, and electronic games), and the social context of media use (e.g., who was participating with the child).

## 6.2 The PSID Transition into Adulthood Supplement

In recognition that the early years of adulthood (ages 18–26 years) are critical for life span development, PSID began a new study in 2005 designed to follow the children from CDS who had turned age 18 years and had completed or left high school and had families still active in PSID, called the Transition into Adulthood Supplement (TAS). The primary scientific aim of TAS was to understand the causes and consequences of social, economic, and health transitions of young adults. To describe significant milestones in the transition to adulthood in their developmental context, TAS bridges substantive content from the CDS and the Core PSID survey instruments, in addition to introducing new age-appropriate content areas. Information is collected about educational pursuits, employment, occupational choices, education and career expectations, family responsibilities, skills and abilities, intimate relationships, and more. TAS respondents who also respond to the Core PSID interview (with eligibility based on establishing their own independent household) have a shorter TAS instrument because many of the questions of interest (e.g., employment and income) are already asked in the Core PSID interview.

Across CDS and TAS, detailed information is available about development from early and middle childhood through adolescence and into adulthood. Additional information will be collected on this cohort over its life course as these youth transition to economic independence and become Core PSID respondents. TAS data have been collected biennially for 2005–2013 and will be collected through 2015 at which time all children from CDS will have been observed at least once in the study. For 2017 and beyond, a successor study to TAS is planned. As of 2013, 2571 young adults had participated in at least one wave of TAS. The response rate for TAS was 90% in the most recent wave.

## 6.3 2014 Child Development Supplement

By 2013, all children in the original CDS cohort had aged into adulthood. A new round of CDS began in 2014 to collect information on the next generation of children in PSID families. The new CDS includes all children who were aged 0–17 years during the 2013 Core PSID interview and their primary caregivers (approximately 5800 children and 3300 primary caregivers). This universe represents two design changes compared to earlier rounds of CDS: first, the sample includes all eligible children in a household, rather than a limit of two children; and, second, the age range has been expanded to include all years in childhood and adolescence. In the future, CDS will adopt a steady-state model in which previously recruited children and their caregivers will be reinterviewed every 5 years until children reach adulthood and children born since the last round of the study will be added to the sample. This will produce a longitudinal data resource that is also cross-sectionally representative of children of all ages at each wave.

Primary caregivers in the new CDS participate in a computer-assisted 75-min telephone interview. Children aged 12–17 years complete a 30-min interviewer-administered questionnaire by telephone and then transition to a computerized telephone interview administered by interactive voice response (IVR) technology to answer questions on sensitive topics. The IVR approach was adopted in order to protect respondent privacy and confidentiality and to maximize data validity. To permit analysis of changes over time and across cohorts, all of the content domains from the original CDS are maintained in the new CDS caregiver and child interviews. Changes in the instrument reflect theoretical and methodological advancements in the relevant disciplines and the goal of a shorter overall instrument length. One significant addition is the expansion of questionnaire content about computer and media use. Children and primary caregivers report on the number and types of computers and other electronic devices used in the household; the types of online educational, social, and entertainment activities in which children engage; and household rules governing the use of computers and mobile devices. To date, no other

nationally representative study of child development in the USA or elsewhere includes a similar level of detail about children's computer and media use. The new CDS provides a unique opportunity to study how health and social behavior correlate with children's use of digital technologies across the early life course.

The new CDS introduces two additional components of interest to health researchers. First, primary caregivers and children aged 5–17 years were asked to contribute saliva samples using an Otagene OG-500 DNA Genotek saliva kit for subsequent genetic analysis. This is the first effort to collect genetic material from two generations of family members in a large-scale nationally representative study. Second, primary caregivers were asked to complete administrative record linkage consent forms providing access to children's and caregivers' birth records and to children's school records including transcripts and state-standardized test scores for children aged 8 years and older. Birth record data provide objective, detailed information on children's health status at birth, and information from both the child and caregiver generation permit study of the intergenerational transmission of early health risk factors. State-standardized test scores obtained through school records data will provide objective measures of students' academic achievement, and school transcripts will summarize students' course taking and course performance, which are important predictors of eventual college readiness.

Finally, a randomly selected 50% of CDS 2014 households received supplemental home visits

from interviewers. During these visits, children aged 3–17 years and caregivers completed the Woodcock-Johnson cognitive assessments used in previous rounds of CDS. Interviewers also reviewed and collected children's completed weekday and weekend time diaries and record home and neighborhood observations. Finally, during the in-person visits by interviewers, children aged 8–11 years complete an abbreviated version of the child questionnaire. Due to methodological constraints, these study components were not administered to families that were not selected for the supplemental home visit. Fieldwork for CDS 2014 began in October 2014 and is scheduled to end in April 2015. We expect to release final data from the study to researchers through the PSID Online Data Center in April 2016.

#### 6.4 Life Course Health Development Analysis with CDS-TAS-PSID

With the addition of CDS and TAS to the PSID suite of studies, researchers have a comprehensive, nationally representative, prospective database of young children and their families for studying the dynamic process of child health development. Embedded in the context of PSID, CDS and TAS provide a unique framework for considering how long-range family background factors influence children's health development. As shown in Fig. 1, the value of these supplements continues to increase as sample children

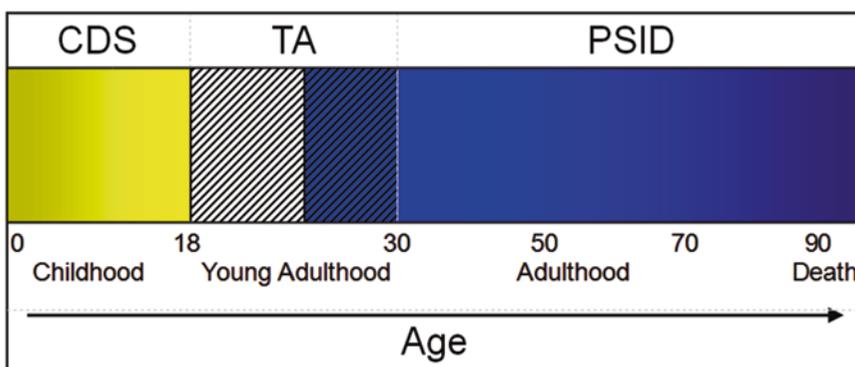


Fig. 1 Life course data from CDS-TAS-Core PSID

**Table 4** Summary of key features of the original CDS, TAS, and the new CDS

|   | Child Development Supplement I–III (1997–2007)   | Transition into Adulthood Supplement (2005–2015)  | Child Development Supplement 2014  |
|---|--|---|--|
| Sample eligibility                        | Up to two PSID children ages 0–12 years in 1997 and their primary (PCGs) and other caregivers (OCGs)   | CDS children who finished or left high school and were ages 18–26 years   | All PSID children ages 0–17 years in 2013 and their primary caregivers (PCGs)  |
| Sample size                               | 3563 children and 2394 PCGs/OCGs at Wave I   | 765 in 2005; 2000 in 2013   | 5300 children and 3000 caregivers (projected)  |
| Response rate                             | Child-centered response rate of 88% at Wave I, 90% at Wave III   | 90% in most recent wave (2013)  | Child-centered response rate of 88% (projected)  |
| Interview mode and length                 | PCG: 35-min telephone or in-person<br>Child: 20-min in-person<br>OCG: mailback questionnaire<br>Follow-up home visit to full sample  | 74-min telephone interview (for non-heads/spouses) or 51 min (for heads/spouses)  | PCG: 75-min telephone<br>Child (age 12–17 years), 30-min telephone + 15-min IVR; child (age 8–11 years, home visit sample only), 15-min in-person<br>Follow-up home visit to half of sample  |
| Cognitive assessments                     | PCG (Wave I only) and children ages 3–17 years (all waves); Woodcock-Johnson assessments of reading and math; WISC Digit Span  | None  | PCG and children ages 3–17 years (in-home sample); Woodcock-Johnson assessments of reading and math  |
| Time diaries                              | Child: random weekday and weekend day  |   | Child (in-home sample): random weekday and weekend day   |
| Anthropometry                             | PCG and children: height and weight  | Self-reported height and weight   | PCG and children ages 2–17 years: height and weight  |
| Biological samples                        | None   | None  | PCG and children (ages 5–17 years): saliva samples (Oragene OG-500 DNA Genotek saliva kit)   |
| Administrative linkages (restricted data) | School characteristics from the National Center for Education Statistics' Common Core of Data and Private School Universe Survey<br>Neighborhood characteristics based on residential location | Characteristics of postsecondary education institutions from the National Center for Education Statistics' Integrated Postsecondary Education Data System<br>Neighborhood characteristics based on residential location | School characteristics from the National Center for Education Statistics' Common Core of Data and Private School Universe Survey. Future linkages to child and PCG birth records and child (age 8–17) school records<br>Neighborhood characteristics based on residential location |

age and form their own economically independent households and join the Core PSID as respondents. Table 4 summarizes the key features of the original CDS, TAS, and the new CDS.

As with Core PSID, the sample design of CDS and TAS makes it possible to analyze the data based on several different analytical perspectives. First, CDS and TAS provide nationally representative cross-sectional sample of children and young

adults at each wave. Second, CDS and TAS support prospective analyses of outcomes using previously collected information on basic demographic, education, and socioeconomic outcomes, but will also provide baseline data for conducting longitudinal analyses of children and young adults. Third, CDS and TAS provide samples for conducting intergenerational and intragenerational analyses focused on childhood and the young adult years.

Almost all children in CDS and TAS have parents and grandparents who have been followed over many years in Core PSID. Approximately one-quarter of the new CDS children—a total of about 1500 children—will have a parent who participated in the original CDS and, subsequently, in the TAS study, providing extremely rich information about parent-child pairs that includes detailed developmental and behavioral data from both members of the dyad. These unique data will support innovative intergenerational analysis of key outcomes such as educational achievement, the acquisition of non-cognitive skills (e.g., self-regulation, conscientiousness, social competency, coping skills, and optimism), and behavioral problems when both individuals were children. The CDS and TAS intragenerational samples comprise of siblings and cousins. In both the original and new CDS, approximately 70% of children had a sibling in the study.

---

## 7 Topics of Life Course Research Using PSID

PSID data provide opportunities for conducting life course health development research on a variety of topics, including the dynamic process of early human capital formation; the intergenerational transmission of human capital and social capital, as well as health development assets; the historical family and contextual processes that may underlie both cohort and generational differences in children's health development; and issues related to continuity and change across generations in a wide variety of indicators of adaptive and maladaptive functioning. These data support studies of the ways in which time, social capital, and economic resources at the family, school, and neighborhood levels, as well as parenting practices and characteristics of caregivers, grandparents, extended family members, and siblings, are linked to health development over the full range of childhood, adolescence, and early adulthood. This section provides a small number of illustrations of the ways that PSID data have been used for life course health development research.

### 7.1 Fertility and Birth Outcomes

PSID is an important data source for understanding the causes and consequences of fertility and birth outcomes. The study has been a leading data source for understanding the causes and consequences of teen childbearing, with several articles published recently (e.g., Meadows et al. 2013; Sullivan et al. 2011; South and Crowder 2010; Wodtke 2013) that build on numerous PSID-based studies from the 1990s and early 2000s (Geronimus and Korenman 1992, 1993; Haveman et al. 1997, 2001; Corcoran and Kunz 1997; Hoffman et al. 1993; Foster and Furstenberg 1998; Foster et al. 1998). Studies of the determinants of fertility among women of all ages have examined the effects of child support (Anderson 2011), family wealth shocks (Lovenheim and Mumford 2013), and neighborhood poverty (South and Crowder 2010). PSID has become a key source of data to understand the effects of birth outcomes and health in early childhood on later health and well-being (Johnson and Schoeni 2011a, b; Johnson 2012; Johnson et al. 2012; Delaney and Smith 2012; Haas 2007; Smith 2009), reflecting the theoretical and empirical advances provided by Barker and colleagues (Barker 1998; Barker and Osmond 1986; Barker et al. 2001), by Wadsworth (1987, 1991), and by others (Kuh and Ben-Shlomo 1997; Kuh and Shlomo 2004; Hertzman and Power 2003).

### 7.2 Neighborhood Effects

The design of PSID and its supplements recognizes the theoretical perspective that human health development is determined by a broad set of family, social, cultural, and community resources (e.g., Bronfenbrenner 1979; Bronfenbrenner and Morris 2006). A major research focus based on this paradigm is the study of neighborhood effects on a variety of outcomes. The availability across the life course of PSID individuals' census tract of residence (and census block beginning in 2009) through a restricted-use contract permits the study of neighborhood effects. PSID has been used extensively to examine migration and the

effects of neighborhoods, as evidenced by more than 400 publications on these topics with about half published in the past decade. PSID was one of the earliest data sources for studying contextual effects on socioeconomic status (Corcoran et al. 1990; Dachter 1982) and remains one of the most important and widely used sources across multiple disciplines for examining neighborhood effects on a variety of outcomes including child, adolescent, and young adult health development (Dearing et al. 2009; Jackson and Mare 2007; Timberlake 2009a, b; Wimer et al. 2008; Sharkey and Elwert 2011), health (Do and Finch 2008; Halliday 2007; Halliday and Kimmitt 2008; Johnson and Schoeni 2011b; Do et al. 2013; Wen and Shenassa 2012), education (Brooks-Gunn et al. 1993; Crowder and South 2003; Galster et al. 2007; Harding 2003; Crowder and South 2011; Galster et al. 2013; Wodtke et al. 2011), income and earnings (Islam and Tonmoy 2013; Sharkey 2008; Sharkey 2012), the intergenerational transmission of neighborhood context (Dawkins 2005a; Sharkey 2008; Sharkey and Elwert 2011; Solon et al. 2000), family migration and labor force outcomes (Blackburn 2010; Shauman 2010), and fertility behavior (South and Crowder 2010; South 1999, 2001a, b; South and Crowder 2010; Wodtke 2013). Because of its oversample of African-American families, the data have been used to examine levels and trends in racial equality in neighborhood economic status and migration (Sharkey 2008; Dawkins 2005b, 2006; Freeman 2005a, b, 2008; South and Crowder 2005; Timberlake 2007; White et al. 2005; Vartanian et al. 2007; Crowder and South 2005; Bruch 2014; Pais et al. 2012, 2014; Sharkey 2012; South et al. 2011; Wagmiller 2013).

### 7.3 Outcomes Across Generations of the Same Family

Because PSID follows adult children as they form their own households, it is uniquely positioned to investigate outcomes across generations of the same family. Recent studies have examined correlations across generations in health (Fitzgerald 2011; Vandewater et al. 2014;

Lê-Scherban et al. 2014; Li 2015; Johnson and Schoeni 2011a), income (Bloome 2015; Chau 2012; Shore 2011), education (Roksa and Potter 2011; Torche 2011; Wightman and Danziger 2014), socioeconomic status (Eberharther 2014; Gouskova et al. 2010; Hertel and Groh-Samberg 2014), consumption expenditures (Charles et al. 2013), and cognitive ability (Sharkey and Elwert 2011). This recent research builds on the extensive work that began in the early 1990s (e.g., Corcoran et al. 1992; Solon 1992; Charles and Hurst 2003). In fact, because of the length of the panel, PSID has been used to estimate changes over time in the intergenerational transmission of economic status (Lee and Solon 2009; Mayer and Lopoo 2008). Researchers are also beginning to use the health data in conjunction with the socioeconomic data to examine the extent to which transmission of health across generations within the same family accounts for the transmission of socioeconomic status and vice versa (Johnson and Schoeni 2011b). Studies have used the CDS and TAS data in combination with the Core PSID data to examine associations across multiple generations. For example, a highly cited article in the *American Economic Review* examines the effect of parents' income on children's health to explain the intergenerational transmission of socioeconomic status (Case et al. 2002). The CDS child height and weight data were the basis of the first national study to examine the intergenerational transmission of body weight over three generations, finding an association of childhood obesity with grandparental obesity distinct from parental obesity (Davis et al. 2008).

### 7.4 Time Use

The CDS time diary data in particular have been the basis of a large and influential body of research examining the relationships among time spent in various activities, the family environment, and outcomes related to achievement, social and behavioral development, and health development. A frequently cited article in the *Journal of Marriage and Family* showed marked differences in child time use associated with poverty

and maternal employment, with poor children spending substantially less time with fathers and more time with extended kin such as grandmothers; among poor children, those whose mothers were employed spent more time per week watching television, in daycare, and less time in sport activities (Yeung et al. 2001). Using the rich codes for television program content in CDS, an article in *JAMA Pediatrics* found that violent television programming was associated with an increased risk for antisocial behavior for boys but not for girls; neither educational nor nonviolent programming was associated with increased risk for boys or girls (Zimmerman and Christakis 2007). Several studies have used the time diary data to provide national portraits of time use among American children in various domains. A recent article in *JAMA Pediatrics* used the data to establish nationally representative sleep duration norms for US children (Williams et al. 2013). The CDS data were also featured in an article in the journal *Child Development* to document time spent by American children aged 6–12 years playing video games, using the computer, and watching TV in 1997 and 2003 and the association of early media use with academic achievement and behavior in adolescence and differences in outcomes by race (Hofferth 2010).

---

## 8 PSID's Companion International Surveys

PSID has a set of companion international studies with comparable samples and harmonized measures that allow researchers to conduct comparative international analysis of health and well-being outcomes across a range of key domains and across the life course. These companion studies are based in the UK (British Household Panel Survey/Understanding Society), Germany (Socio-Economic Panel), Canada (Survey of Labor and Income Dynamics), Australia (Household, Income and Labour Dynamics in Australia Survey), Switzerland (Swiss Household Panel), South Korea (Korea Labor and Income Panel Study), and South Africa (National Income Dynamics Study). Future studies that are planned

or recently underway in China, Israel, and elsewhere will further enhance researchers' ability to conduct international comparative research that includes the USA. The Cross-National Equivalent File (CNEF) facilitates comparisons between PSID and many of these studies by providing a set of equivalently defined and constructed variables measuring income and other household attributes.

---

## 9 Obtaining Data from PSID and Its Supplements

The majority of PSID data and documentation is freely and publicly available on the Internet through the PSID Data Center ([www.psidonline.org](http://www.psidonline.org)). Information is currently available on more than 70,000 variables, on approximately 75,000 individuals, and for all waves of the main PSID and its supplements. Users can create customized data extracts from any set of waves by searching or browsing for variables, obtain customized codebooks specific to their data extract, and archive data extracts for shared and later use. Data carts may be saved, allowing specific extracts to be shared with colleagues, reviewers, and students. A range of file formats is available when the user is ready to "check out," including widely used statistical software formats such as SAS, STATA, and SPSS. For researchers wishing to create genealogical samples, an application on the PSID web site called the Family Identification Mapping System (FIMS) automatically creates a customized file containing identifiers for PSID respondents' relatives (including biological and adoptive children, parents, grandparents, great-grandparents, and siblings). Online PSID courses, or webinars, are available to users on demand through the PSID web site to introduce the sample design and facilitate hands-on use of the PSID data for a variety of research purposes. PSID provides support to users through the PSID help desk, accessible by email at [psidhelp@umich.edu](mailto:psidhelp@umich.edu).

PSID provides restricted data to authorized users under contract. Restricted data contain sensitive or potentially identifying information, and

must be used in a secure data environment under a research plan approved by the user's institutional review board and by PSID administrators. Restricted data resources include a geocode-matched data file that provides the census tract and block codes for each dwelling occupied by PSID householders since 1968 and links PSID households to aggregated decennial census data (1970–2000) and American Community Survey data (2005 to the present). These data permit analyses of changing neighborhood context and the influence of neighborhood characteristics on health and well-being over time.

PSID has also developed links to administrative data sources in recent waves to expand opportunities for life course health development research on social context, health care, and outcomes. Since 2005, PSID has tracked known study decedents in the National Death Index (NDI). There are now nearly 6000 individuals from PSID families included in the PSID-restricted mortality files, which contain information on date of death, location of death, and International Statistical Classification of Diseases and Related Health Problems (ICD) codes for cause of death. In a separate Medicare claims file, up to 20 years of claims data (1991–2010) are available for approximately 2000 age-eligible PSID respondents and decedents. Claims data begin with a respondent's first service after Medicare entitlement, which is at age 65 or when qualification for disability insurance is met. Claims files include short-stay inpatient, skilled nursing facilities, hospital outpatient, physician/supplier, home health, and hospice services. Health plan enrollment files provide exact dates of respondent enrollment in Medicare health maintenance organizations. Although utilization information has not been reported for HMO enrollees in the past, characteristics of respondent health plans are reported. Summary files are compiled annually and by quarter.

Other external data sources provide information on housing and education. An assisted housing data file indicates whether each PSID family in every year through 2009 (except 1969, for which the addresses are not available) was living in a housing unit subsidized by the US Department

of Housing and Urban Development, the Farmers Home Administration, through tax credits administered by the Department of Treasury, or state housing programs (Newman et al. 2009). PSID has also created linkable files for several data sources from the National Center for Education Statistics (NCES). Information from the Integrated Postsecondary Education Data System (IPEDS) describing the characteristics of postsecondary education institutions has been linked to the names of colleges that PSID heads and wives reported attending for all waves since 1975. Common Core of Data (CCD), Private School Universe Survey (PSS), and IPEDS data have also been linked to the CDS and TAS data and made available to users under restricted data use contract. Together, CCD and PSS provide general descriptive information on schools and school districts, data on students and staff, and fiscal data for nearly the entire universe of elementary and secondary schools attended by US students.

---

## 10 Conclusions and Future Plans

The history and evolution of PSID have resulted in a unique data set that spans 50 years, 10,000 households, and multiple generations of each family in the sample. These data have provided valuable insights into numerous topics related to life course research—most notably, the dynamics of poverty, its consequences for health development, childhood well-being, and its transmission across generations.

In this final section, we briefly discuss future plans for PSID that will likely enhance the value of the study for life course health development research. The main element of future planning for PSID is to continue the core interview every 2 years. In 2018, between the planned waves for Core PSID in 2017 and 2019, the study will mark its 50th anniversary—a major milestone for the study.

Plans for the next two waves of Core PSID include an addition to the study of a sample of post-1997 immigrants—that is, families who

moved to the USA after 1997 (when PSID last added an immigrant refresher sample) and who would otherwise not be captured in the study. Screening and recruitment for this new immigrant refresher sample is planned for 2016 and 2017, with a target sample size of approximately 750 families. The proportion of the Core PSID sample these families would represent (approximately 7.5%) is similar to their representation among all US families (approximately 6.5%).

Adding a new immigrant refresher sample to PSID will provide many new research opportunities. The addition will increase the coverage of PSID's national representative sample, which is particularly salient for studying children's outcomes; expand diversity within the PSID sample, particularly by race and ethnicity; and support research that examines outcomes for new immigrant families. Hispanics are estimated to comprise 47% of the new immigrant refresher sample, Asians 26%, whites 16%, blacks 9%, and others 2%. We expect to conduct interviews with new immigrants in either English or Spanish (as is the case for Core PSID); due to cost constraints, we will likely exclude families who are unable to complete an interview in either English or Spanish. The new immigrant refresher sample will lead to virtually complete coverage by PSID of the national population of US families in 2017. The new immigrant refresher will also lead to PSID capturing the increasing diversity of the US population, especially by race and ethnicity and by immigration status. In 2017, we estimate that 12% of PSID's approximately 10,000 households will be Hispanic—a substantial increase from the current 8%. Researchers will be able to use these new data to study how the life course trajectories of individuals from recent immigrant families compare to those from nonimmigrant families and from immigrant families who arrived in earlier periods.

A second major future goal for PSID is to obtain genetic markers for all sample members. This effort has already begun, through the collection of saliva samples for children and primary caregivers in the new CDS. We expect in the future to expand the collection of saliva

samples to other family members and families. Obtaining genetic markers for PSID individuals is among our top priorities because of the high scientific impact of new research on the genetic basis of social, economic, and health behavior. PSID's rich genealogical structure will allow researchers to investigate, and adjust for, the influence of gene-environment correlation by controlling for parents' and grandparents' genetic characteristics. It will allow for sharper gene-environment interaction estimates by using sibling differences—leading to better causal estimates. Among numerous topics, the data could be used to understand how genes interact with economic shocks in models that exploit both within-family and cross-time variation. Collecting genetic markers from all PSID sample members would distinguish PSID as the only national source in the USA for genetic data over multiple generations. Linking genetic information with life course data will open new opportunities to test theories that involve epigenetic and biological mechanisms (Jayasinghe 2011; Davey Smith 2012).

Future data collection activities include plans to repeat the CDS every 5 years. Future waves of CDS will collect data on all children from the previous wave who are still under age 18 years and will add all new children who were subsequently born or adopted into PSID households. We plan to field the next wave of the new CDS in 2019, on the heels of the Core PSID data collection for that year. PSID is also planning a separate initiative to directly interview all sample family members aged 18–26 years, whether they are primary respondents, spouses/partners, or other household members. This new project will build on the original TAS and will continue to focus on understanding the demographic, health, psychological, and socioeconomic development of young adults. The new CDS and the TAS successor together will offer researchers a unique opportunity to study pathways and outcomes from early and middle childhood through adolescence and into adulthood. Furthermore, the new CDS and TAS will allow researchers to study differences in early life course trajectories across

cohorts, beginning with the original CDS cohort (born from 1985 to 1996) and continuing through to the most recent birth cohorts. Comparisons of life course trajectories across cohorts will provide insights into the effects of important period factors on child, adolescent, and young adult health development. For example, researchers will be able to examine the effects of the Great Recession on family behavior and outcomes and on children's health development and well-being, such as, whether parents' experience of unemployment and declines in income and wealth have led to lower investments in children (such as less schooling, a shift between private and public schools, less frequent visits to health-care providers, and changes in the time children and parents spend together and in their specific activities during this shared time).

**Acknowledgment** This document was supported by funding from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (R01-HD069609; R01-HD059779; R01-HD072493; R01-HD052646).

## References

- Anderson, K. G. (2011). Does paying child support reduce Men's subsequent marriage and fertility? *Evolution and Human Behavior, 32*(2), 90–96.
- Andreski, P., McGonagle, K. A., & Schoeni, R. F. (2009). Analysis of the quality of the health data in the panel study of income dynamics. Panel Study of Income Dynamics Technical Paper Series, #09-02.
- Andreski, P., Li, G., Samancioglu, M. Z., & Schoeni, R. (2014). Estimates of annual consumption expenditures and its major components in the PSID in comparison to the CE. *The American Economic Review, 104*(5), 132–135.
- Barker, D. J. P. (1998). *Mothers, babies and health in later life*. Edinburgh: Churchill Livingstone.
- Barker, D. J., & Osmond, C. (1986). Infant mortality, childhood nutrition, and ischaemic heart disease in England and Wales. *Lancet, 1*(8489), 1077–1081.
- Barker, D. J. P., Forsen, T., Uutela, A., Osmond, C., & Eriksson, J. G. (2001). Size at birth and resilience to effects of poor living conditions in adult life: Longitudinal study. *British Medical Journal, 323*(7324), 1273.
- Blackburn, M. L. (2010). Internal migration and the earnings of married couples in the United States. *Journal of Economic Geography, 10*(1), 87–111.
- Bloome, D. (2015). Income inequality and intergenerational income mobility in the United States. *Social Forces, 93*(3), 1047–1080.
- Bosworth, B. B., & Anders, S. (2008). Savings and Wealth Accumulation in the PSID 1984–2005. Center for Retirement Research at Boston College Working Paper 2008–2.
- Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, MA: Harvard University Press.
- Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. In R. M. Lerner & W. Damon (Eds.), *The handbook of child psychology, Vol. 1: Theoretical models of human development* (6th ed., pp. 793–828). Hoboken: Wiley.
- Brooks-Gunn, J., Duncan, G. J., Klebanov, P. K., & Sealand, N. (1993). Do neighborhoods influence child and adolescent development? *American Journal of Sociology, 99*, 353–395.
- Brooks-Gunn, J., & Duncan, G. J. (1997). The effects of poverty on children. *Children and Poverty, 7*(2), 55–71.
- Brown, C., Duncan, G. J., & Stafford, F. P. (1996). Data watch: The panel study of income dynamics. *Journal of Economic Perspectives, 10*(2), 155–168.
- Bruch, E. E. (2014). How population structure shapes neighborhood segregation. *American Journal of Sociology, 119*(5), 1221–1278.
- Case, A., Lubotsky, D., & Paxson, C. (2002). Economic status and health in childhood: The origins of the gradient. *The American Economic Review, 92*, 1308–1334.
- Charles, K. K., & Hurst, E. (2003). The correlation of wealth across generations. *Journal of Political Economy, 111*(6), 1155–1182.
- Charles, K. K., Hurst, E., & Killewald, A. (2013). Marital sorting and parental wealth. *Demography, 50*(1), 51–70.
- Chau, T. W. (2012). Intergenerational income mobility revisited: Estimation with an income dynamic model with heterogeneous age profile. *Economics Letters, 117*(3), 770–773.
- Conley, D., & Thompson, J. (2013). The effects of health and wealth shocks on retirement decisions. *Federal Reserve Bank of St. Louis Review, 95*, 389–404.
- Corcoran, M., & Kunz, J. P. (1997). Do unmarried births among African-American teens lead to adult poverty? *Social Service Review, 71*(2), 274–287.
- Corcoran, M., Gordon, R., Laren, D., & Solon, G. (1990). Effects of family and community background on economic status. *The American Economic Review, 80*(2), 362–366.
- Corcoran, M., Gordon, R., Laren, D., & Solon, G. (1992). The association between men's economic status and their family and community origins. *Journal of Human Resources, 27*(4), 575–601.
- Crowder, K. D., & South, S. J. (2003). Neighborhood distress and school dropout: The variable significance of community context. *Social Science Research, 32*, 659–698.
- Crowder, K. D., & South, S. J. (2005). Race, class and changing patterns of migration between poor and non-

- poor neighborhoods. *American Journal of Sociology*, 110, 1715–1763.
- Crowder, K. D., & South, S. J. (2011). Spatial and temporal dimensions of neighborhood effects on high school graduation. *Social Science Research*, 40(1), 87–106.
- Curtin, R., Presser, S., & Singer, E. (2005). Changes in telephone survey nonresponse over the past quarter century. *Public Opinion Quarterly*, 69, 87–98.
- Dachter, L. (1982). Effects of community and family background on achievement. *Review of Economics and Statistics*, 64, 32–41.
- Davey Smith, G. (2012). Epigenesis for epidemiologists: Does evo-devo have implications for population health research and practice? *International Journal of Epidemiology*, 41(1), 236–247.
- Davis, M., McGonagle, K., Schoeni, R., & Stafford, F. (2008). Grandparental and parental obesity influences on childhood overweight: Implications for primary care practice. *Journal of American Board of Family Medicine*, 21, 549–554.
- Dawkins, C. J. (2005a). Evidence on the intergenerational persistence of residential segregation by race. *Urban Studies*, 42, 545–555.
- Dawkins, C. J. (2005b). Racial gaps in the transition to first-time homeownership: The role of residential location. *Journal of Urban Economics*, 58, 537–554.
- Dawkins, C. J. (2006). Are social networks the ties that bind families to neighborhoods? *Housing Studies*, 21, 867–881.
- Dearing, E., Wimer, C., Simpkins, S. D., Lund, T., Bouffard, S. M., Caronongan, P., Kreider, H., & Weiss, H. (2009). Do neighborhood and home contexts help explain why low-income children miss opportunities to participate in activities outside of school? *Developmental Psychology*, 45, 1545–1562.
- Delaney, L., & Smith, J. P. (2012). Childhood health: Trends and consequences over the life course. *The Future of Children*, 22(1), 43–63.
- Do, D. P., & Finch, B. K. (2008). The link between neighborhood poverty and health: Context or composition? *American Journal of Epidemiology*, 168, 611–619.
- Do, D. P., Wang, L., & Elliott, M. R. (2013). Investigating the relationship between neighborhood poverty and mortality risk: A marginal structural modeling approach. *Social Science and Medicine*, 91, 58–66.
- Eberharter, V. V. (2014). The intergenerational dynamics of social inequality: Empirical evidence from Europe and the United States. *Global Journal of Human Social Science*, 14(1), 95–108.
- Fitzgerald, J. M. (2011). Attrition in models of intergenerational links using the PSID with extensions to health and to sibling models. *The B.E. Journal of Economic Analysis and Policy*, 11(3), 3444.
- Foster, E. M., & Furstenberg, F. F. (1998). Most disadvantaged children: Who are they and where do they live? *Journal of Poverty*, 2(2), 23–47.
- Foster, E. M., Jones, D., & Hoffman, S. (1998). The economic impact of nonmarital childbearing: How are older, single mothers faring? *Journal of Marriage and the Family*, 60(1), 163–174.
- Freeman, L. (2005a). Black homeownership: The role of temporal changes and residential segregation at the end of the 20th century. *Social Science Quarterly*, 86, 403–426.
- Freeman, L. (2005b). Displacement or succession? Residential mobility in gentrifying neighborhoods. *Urban Affairs Review*, 40, 463–491.
- Freeman, L. (2008). Is class becoming a more important determinant of neighborhood attainment for African-Americans? *Urban Affairs Review*, 44, 3–26.
- Galster, G., Marcotte, D. E., Mandell, M., Wolman, H., & Augustine, N. (2007). The influence of neighborhood poverty during childhood on fertility, education and earnings outcomes. *Housing Studies*, 22, 723–751.
- Galster, G., Marcotte, D. E., Mandell, M., Wolman, H., & Augustine, N. (2013). The influence of neighborhood poverty during childhood on fertility, education and earnings outcomes. In J. Blasius, J. Friedrichs, & G. Galster (Eds.), *Quantifying neighbourhood effects: Frontiers and perspectives* (pp. 95–123). New York: Routledge.
- Geronimus, A. T., & Korenman, S. (1992). The socioeconomic consequences of teen childbearing reconsidered. *Quarterly Journal of Economics*, 109(4), 1187–1214.
- Geronimus, A. T., & Korenman, S. (1993). The socioeconomic costs of teenage childbearing: Evidence and interpretation. *Demography*, 30(2), 281–290.
- Gouskova, E., Heeringa, S. G., McGonagle, K. A., Schoeni, R., & Stafford, F. (2009). Construction and Evaluation of the Longitudinal Sample Weights, Panel Study of Income Dynamics, Working Paper, Institute for Social Research, University of Michigan.
- Gouskova, E., Chiteji, N., & Stafford, F. (2010). Estimating the intergenerational persistence of lifetime earnings with life course matching: Evidence from the PSID. *Labor Economics*, 17, 592–597.
- Haas, S. A. (2007). The long-term effects of poor childhood health: An assessment and application of retrospective reports. *Demography*, 44(1), 113–135.
- Halfon, N., & Forrest, C. B. (2017). The emerging theoretical framework of life course health development. In N. Halfon, C. B. Forrest, R. M. Lerner, & E. Faustman (Eds.), *Handbook of life course health-development science*. Cham: Springer.
- Halliday, T. J. (2007). Business cycles, migration and health. *Social Science and Medicine*, 64, 1420–1424.
- Halliday, T. J., & Kimmitt, M. (2008). Selective migration and health in the USA, 1984–1993. *Population Studies*, 62, 321–334.
- Harding, D. (2003). Counterfactual models of neighborhood effects: The effect of neighborhood poverty on high school dropout and teenage pregnancy. *American Journal of Sociology*, 109(3), 676–719.
- Haveman, R., Wolfe, B., & Wilson, K. (1997). Childhood poverty and adolescent schooling and fertility outcomes: Reduced-form and structural estimates. In G. J. Duncan & J. Brooks-Gunn (Eds.), *Consequences of growing up poor* (pp. 419–460). New York: Russell Sage Foundation.

- Haveman, R., Wolfe, B., & Pence, K. (2001). Intergenerational effects of nonmarital and early childbearing. In L. L. Wu & B. Wolfe (Eds.), *Out of wedlock: Causes and consequences of nonmarital fertility* (pp. 287–316). New York: Russell Sage Foundation.
- Heeringa, S. G., & Connor, J. H. (1999). 1997 Panel Study of Income Dynamics Analysis Weights for Sample Families and Individuals. Panel Study of Income Dynamics, Technical Report, Institute for Social Research, University of Michigan.
- Hertel, F. R., & Groh-Samberg, O. (2014). Class mobility across three generations in the U.S. and Germany. *Research in Social Stratification and Mobility*, 35, 35–52.
- Hertzman, C., & Power, C. (2003). Health and human development: Understandings from life-course research. *Developmental Neuropsychology*, 24(2–3), 719–744.
- Hill, M. S. (1992). *The panel study of income dynamics: A user's guide*. Newbury Park: Sage Publications.
- Hirschl, T. A., Altobelli, J., & Rank, M. R. (2003). Does marriage increase the odds of affluence? Exploring the life course probabilities. *Journal of Marriage and the Family*, 65(4), 927–938.
- Hofferth, S. L. (2010). Home media and children's achievement and behaviour. *Child Development*, 81, 1598–1619.
- Hoffman, S., Foster, E. M., & Furstenberg, F. F. (1993). Reevaluating the costs of teenage childbearing. *Demography*, 30(1), 1–13.
- Islam, T., & Tonmoy, M. (2013). Childhood neighborhood conditions and the persistence of adult income. *Regional Science and Urban Economics*, 43(4), 684–693.
- Jackson, M. I., & Mare, R. D. (2007). Cross-sectional and longitudinal measurements of neighborhood experience and their effects on children. *Social Science Research*, 36, 590–610.
- Jayasinghe, S. (2011). Conceptualising population health: From mechanistic thinking to complexity science. *Emerging Themes in Epidemiology*, 8(1), 2.
- Johnson, R. C. (2012). Health Dynamics and the Evolution of Health Inequality over the Life Course: The Importance of Neighborhood and Family Background. *The B.E. Journal of Economic Analysis and Policy*, 11(3).
- Johnson, R. C., & Schoeni, R. F. (2011a). Early-life origins of adult disease: National longitudinal population-based study of the United States. *American Journal of Public Health*, 101(12), 2317–2324.
- Johnson, R. C., & Schoeni, R. F. (2011b). The influence of early-life events on human capital, health status, and labor market outcomes over the life course. *The B.E. Journal of Economic Analysis and Policy*, 11(3).
- Johnson, R. C., Schoeni, R. F., & Rogowski, J. A. (2012). Health disparities in mid-to-late life: The role of earlier life family and neighborhood socioeconomic conditions. *Social Science and Medicine*, 74(4), 625–636.
- Kail, R. (2006). *Children and their development*. New York: Prentice Hall.
- Kuh, D., & Ben-Shlomo, Y. (1997). Introduction: A life course approach to the aetiology of adult chronic disease. In *Life course approach to chronic disease epidemiology* (pp. 3–14). Oxford: Oxford University Press.
- Kuh, D., & Shlomo, Y. B. (Eds.). (2004). *A life course approach to chronic diseases epidemiology* (2nd ed.). Oxford: Oxford University Press.
- Lê-Scherban, F., Diez Roux, A. V., Yun, L., & Morgenstern, H. (2014). Associations of grandparental schooling with adult grandchildren's health status, smoking, and obesity. *American Journal of Epidemiology*, 180(5), 469–481.
- Lee, C. I., & Solon, G. (2009). Trends in intergenerational income mobility. *Review of Economics and Statistics*, 91, 766–772.
- Li, M. (2015). Chronic exposure of grandparents to poverty and body mass index trajectories of grandchildren: A prospective intergenerational study. *American Journal of Epidemiology*, 181(3), 163–170.
- Li, G., Schoeni, R. F., Danziger, S., & Charles, K. K. (2010). New expenditures in the PSID: Comparison with the CE. *Monthly Labor Review*, 133(2), 29–39.
- Lovenheim, M. F., & Mumford, K. J. (2013). Do family wealth shocks affect fertility choices? Evidence from the housing market. *Review of Economics and Statistics*, 95(2), 464–475.
- McGonagle, K. A., Schoeni, R. F., Sastry, N., & Freedman, V. A. (2012). The panel study of income dynamics: Overview, recent innovations, and potential for life course research. *Longitudinal and Life Course Studies*, 3(2), 268–284.
- Mayer, S. E., & Lopoo, L. M. (2008). Government spending and intergenerational mobility. *Journal of Public Economics*, 92(1–2), 139–158.
- Meadows, S. O., Beckett, M. K., Elliott, M. N., & Petersen, C. (2013). Maternal health status and early childbearing: A test of the weathering hypothesis. In N. Hoque, M. A. McGehee, & B. S. Bradshaw (Eds.), *Applied demography and public health*. New York: Springer.
- Meer, J., Miller, D. L., & Rosen, H. S. (2003). Exploring the health-wealth nexus. *Journal of Health Economics*, 22(5), 713–730.
- National Research Council. (2013). *Developing new national data on social mobility: A workshop summary*. Amy Smith, Rapporteur. Washington, DC: The National Academies Press.
- Newman, S. J., Holupka, C. S., & Harkness, J. M. (2009). The long-term effects of housing assistance on work and welfare. *Journal of Policy Analysis and Management*, 28(1), 81–101.
- Pais, J., Crowder, K., & Downey, L. (2014). Unequal trajectories: Racial and class differences in residential exposure to industrial hazard. *Social Forces*, 92(3), 1189–1215.
- Pais, J., South, S. J., & Crowder, K. (2012). Metropolitan heterogeneity and minority neighborhood attainment: Spatial assimilation or place stratification? *Social Problems*, 59, 258–281.
- Pfeffer, F. T. (2014). Multigenerational approaches to social mobility. A multifaceted research agenda. *Research in Social Stratification and Mobility*, 1(35), 1–12.

- Pfeffer, F. T., Schoeni, R., Kennickell, A., & Andreski, P. (2014). Measuring wealth and wealth inequality: Comparing two U.S. surveys. PSID Technical Paper #14-03.
- Rank, M. R., & Hirschl, T. A. (2014). Economic security and the American dream. In M. Crain & M. Sherraden (Eds.), *Working and living in the shadow of economic fragility* (pp. 140–156). Oxford: Oxford University Press.
- Roksa, J., & Potter, D. (2011). Parenting and academic achievement: Intergenerational transmission of educational advantage. *Sociology of Education*, 84(4), 299–321.
- Sandoval, D. A., Rank, M. R., & Hirschl, T. A. (2009). The increasing risk of poverty across the American life course. *Demography*, 46(4), 717–737.
- Sastry, N., & Duffy, D. (2012). *An assessment of the national representativeness of children in the 2007 panel study of income dynamics* (pp. 12–01). Ann Arbor: Panel Study of Income Dynamics Technical Paper.
- Schoeni, R. F., & Wiemers, E. (Forthcoming). The implication of selective attrition for estimates of intergenerational elasticity of family income. *Journal of Economic Equality*.
- Schoeni, R. F., Stafford, F. P., McGonagle, K. A., & Andreski, P. (2013). Response rates in national panel surveys. *The Annals of the American Academy of Political and Social Science*, 645(1), 60–87.
- Sharkey, P. (2008). The intergenerational transmission of context. *American Journal of Sociology*, 113, 931–969.
- Sharkey, P. (2012). Temporary integration, resilient inequality: Race and neighborhood change in the transition to adulthood. *Demography*, 49(3), 889–912.
- Sharkey, P., & Elwert, F. (2011). The legacy of disadvantage: Multigenerational neighborhood effects on cognitive ability. *American Journal of Sociology*, 116(6), 1934–1981.
- Shauman, K. A. (2010). Gender asymmetry in family migration: Occupational inequality or interspousal comparative advantage? *Journal of Marriage and the Family*, 72(2), 275–392.
- Shonkoff, J. P., & Phillips, D. (2000). *From neurons to neighborhoods: The science of early childhood development*. Washington, DC: National Academies Press.
- Shore, S. H. (2011). The intergenerational transmission of income volatility: Is riskiness inherited? *Journal of Business and Economic Statistics*, 29(3), 372–381.
- Smith, J. P. (2009). The impact of childhood health on adult labor market outcomes. *Review of Economics and Statistics*, 91(3), 478–489.
- Solon, G. (1992). Intergenerational income mobility in the United States. *The American Economic Review*, 82, 93–408.
- Solon, G., Page, M. E., & Duncan, G. J. (2000). Correlations between neighboring children in their subsequent educational attainment. *Review of Economics and Statistics*, 82(3), 383–392.
- South, S. J. (1999). Historical changes and life course variation in the determinants of premarital childbearing. *Journal of Marriage and the Family*, 61, 752–763.
- South, S. J. (2001a). The variable effects of family background on the timing of first marriage: United States, 1969–1993. *Social Science Research*, 30, 606–626.
- South, S. J. (2001b). Time-dependent effects of wives' employment on marital dissolution. *American Sociological Review*, 66, 226–245.
- South, S. J., & Crowder, K. D. (2005). Exiting and entering high-poverty neighborhoods: Latinos, Blacks and Anglos compared. *Social Forces*, 84, 873–900.
- South, S. J., & Crowder, K. D. (2010). Neighborhood poverty and nonmarital fertility: Spatial and temporal dimensions. *Journal of Marriage and the Family*, 72(1), 89–104.
- South, S. J., Crowder, K. D., & Pais, J. (2011). Metropolitan structure and neighborhood attainment: Exploring intermetropolitan variation in racial residential segregation. *Demography*, 48, 1263–1292.
- Stephens, M., Jr. (2001). The long-run consumption effects of earnings shocks. *Review of Economics and Statistics*, 83(1), 28–36.
- Sullivan, K., Clark, J., Castrucci, B., Samsel, R., Fonseca, V., & Garcia, I. (2011). Continuing education mitigates the negative consequences of adolescent childbearing. *Maternal and Child Health Journal*, 15(3), 360–366.
- Timberlake, J. M. (2007). Racial and ethnic inequality in the duration of children's exposure to neighborhood poverty and affluence. *Social Problems*, 54, 319–342.
- Timberlake, J. M. (2009a). "Scratchin' and surviving" or "movin' on up?" Two sources of change in children's neighborhood SES. *Population Research and Policy Review*, 28, 195–219.
- Timberlake, J. M. (2009b). Effects of household and neighborhood characteristics on children's exposure to neighborhood poverty and affluence. *Social Science Research*, 38, 458–476.
- Torche, F. (2011). Is a college degree still the great equalizer? Intergenerational mobility across levels of schooling in the United States. *American Journal of Sociology*, 117(3), 763–807.
- Vandewater, E. A., Park, S. E., Carey, F. R., & Wilkinson, A. V. (2014). Intergenerational transfer of smoking across three generations and forty-five years. *Nicotine and Tobacco Research*, 16(1), 11–17.
- Vartanian, T. P., Buck, P. W., & Gleason, P. (2007). Intergenerational neighborhood-type mobility: Examining differences between blacks and whites. *Housing Studies*, 22(5), 833–856.
- Wadsworth, M. E. J. (1987). Follow-up of the first national birth cohort: Findings from the Medical Research Council National Survey of Health and Development. *Paediatric and Perinatal Epidemiology*, 1(1), 95–117.
- Wadsworth, M. E. J. (1991). *The imprint of time: Childhood, history, and adult life*. Oxford: Oxford University Press.
- Wagmiller, R. L. (2013). Blacks' and whites' experiences of neighborhood racial and ethnic diversity: Intercohort variation in neighborhood diversity and integration in early and early middle adulthood. *Urban Affairs Review*, 49(1), 32–70.
- Wen, X., & Shenassa, E. (2012). Interaction between parenting and neighborhood quality on the risk of

- adolescent regular smoking. *Nicotine and Tobacco Research*, 14(3), 313–322.
- White, K. J. C., Crowder, K. D., Tolnay, S. E., & Adelman, R. M. (2005). Race, gender, and marriage: Destination selection during the great migration. *Demography*, 42, 215–241.
- Wimer, C., Simpkins, S. D., Dearing, E., Bouffard, S. M., Caronongan, P., & Weiss, H. B. (2008). Predicting youth out-of-school time participation: Multiple risks and developmental differences. *Merrill-Palmer Quarterly: Journal of Developmental Psychology*, 54, 179–207.
- Wiemers, E., Schoeni, R. F., & Andreski, P. (2010). Attrition of second generation sample members in the PSID. Paper presented at the 2nd Panel Survey Methods Workshop, Mannheim Germany, July, 2010.
- Wightman, P., & Danziger, S. (2014). Multi-generational income disadvantage and the educational attainment of young adults. *Research in Social Stratification and Mobility*, 35, 53–69.
- Williams, J. A., Zimmerman, F. J., & Bell, J. F. (2013). Norms and trends of sleep time among US children and adolescents. *JAMA Pediatrics*, 167, 55–60.
- Wodtke, G. T. (2013). Duration and timing of exposure to neighborhood poverty and the risk of adolescent parenthood. *Demography*, 50(5), 1765–1788.
- Wodtke, G. T., Harding, D. J., & Elwert, F. (2011). Neighborhood effects in temporal perspective the impact of long-term exposure to concentrated disadvantage on high school graduation. *American Sociological Review*, 76(5), 713–736.
- Yeung, W. J., Sandberg, J., Davis-Kean, P., & Hofferth, S. L. (2001). Children's time with fathers in intact families. *Journal of Marriage and Family*, 63, 136–154.
- Zimmerman, F. J., & Christakis, D. A. (2007). Associations between content types of early media exposure and subsequent attentional problems. *JAMA Pediatrics*, 120, 986–992.

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

