PSID A national study of socioeconomics and health over lifetimes and across generations

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The PSID and Me

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Abstract

I begin with a brief history of the Panel Study of Income Dynamics (PSID) and its brilliant founding father, noting its nearly disastrous initial design, nearly fatal funding cutoffs when Nixon put the Office of Economic Opportunity out of business, and then when Reagan chopped the NSF social science budget in half, and paying honor to its exceptionally talented, long-lived and unsung staff.

Since it is impossible to cover all of the lessons learned from the PSID, I concentrate on what is of greatest interest to me: the surprising degree of economic mobility in the U.S. – both within and between generations, with its attendant implications for understanding the nature and developmental consequences of life cycle processes in general, and poverty and welfare dynamics in particular.

As of four years ago, when I left the PSID and Michigan for Northwestern, I had spent half my life working on the PSID. Not surprisingly, my PSID phase has had a profound effect on my life. The recognition that economic fortunes bob around on a sea of demographic change led to my interest in determinants and sequelae of family composition changes. The heterogeneous nature of poverty and welfare receipt – frequently transitory but a worrisome amount persistent – stimulated my interest in understanding their consequences for children's development. Pursuing these interests has led to many interdisciplinary collaborations, a chance meeting at an airport 17 years ago with the woman who is now my wife and, in 1995, a change of jobs and disciplinary affiliation.

The PSID and Me

Since I was a Grinnell College sophomore when the Panel Study of Income Dynamics (PSID) began, I can claim no credit for its remarkable design or early history. I began working on the project in its fifth and, according to the original plan, final year.

Now thirty years old, the PSID continues to collect data from its loyal but ever-changing national sample of families. These data have been the basis of dozens of dissertations and hundreds of articles. Taken together, the study's data have forced us to confront and learn from the dynamism inherent in economic and demographic processes.

Now fifty years old, I am no longer associated with the study but continue to follow the trajectories begun when I was part of the PSID. I seek in this paper to describe the study and my relationship to it. I begin with a brief history of the PSID, followed by a summary of some of the more important lessons learned from it. Throughout I mix project and personal history and show how my 23 years with the project, and four years since, have shaped my career and life.

THE STUDY ITSELF

As part of Lyndon Johnson's War on Poverty, the Office of Economic Opportunity (OEO) directed the U.S. Bureau of the Census to conduct a nationwide assessment of the extent to which the War on Poverty was affecting people's economic well-being. This Census Bureau study, called the Survey of Economic Opportunity (SEO), completed interviews with about 30,000 households, first in 1966, and again in 1967.

Interest in continuing this survey of economic "trajectories" (the other war going on at the time contributed its share of metaphors to the poverty debate), but avoiding Census Bureau bureaucracy, led James D. Smith and his OEO colleagues to approach James Morgan at the Survey Research Center (SRC) at the University of Michigan about interviewing for five years a nationally representative subsample of approximately 2,000 low-income SEO households. With extensive prior experience in economic surveys, an ability to endear himself to sponsors by generating and then returning budget surpluses, co-authorship of the remarkably underappreciated 1961 book Income and Welfare in the United States, an unlimited supply of

bright ideas, bad puns and funny phrases, and paternal genes inherited from a Ph.D. psychologist who wrote How to Keep a Sound Mind, Morgan, a Professor of Economics and Program Director at SRC, was a natural choice to lead the new study.

Morgan, however, was initially reluctant to take it on because the seriously flawed OEO design called for following only low-income households.[1] Arguing the formidable virtues of complete population representation, pointing out, for example, that understanding why nonpoor households fell into poverty was at least as interesting as knowing why poor households climbed out, Morgan was successful in talking OEO into funding a design in which 2,000 randomly chosen initially-poor OEO households were combined with a fresh cross-section of about 3,000 households from the SRC national sampling frame.[2] When weighted, the combined sample was representative of the entire population of the United States, including non-poor as well as poor households. But the disproportionately large number of low-income households produces large analysis samples for black and other disadvantaged groups.

The year 1972 proved momentous for the PSID. Its original five years were coming to an end and, dramatically, then-President Nixon abolished the OEO virtually overnight. Responsibility for the PSID was transferred to the Assistant Secretary for Planning and Evaluation (ASPE) of the Department of Health, Education and Welfare (now Health and Human Services) where visionary ASPE officials such as Larry Orr saw the value of continuing to support the PSID.[3]

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[1] Morgan also feared OEO micromanagement. But micromanagement proved impossible for overburdened OEO staff and the PSID enjoyed its own form of benign neglect.

[2] Throughout this career, Morgan has responded to requests to perform proposed surveys with details on creative study designs that, in his often firmly-stated opinions, the sponsors should have adopted. It worked in the case of the PSID but rarely afterward.

[3] In personal communication, Larry Orr provided the following story of his behind-the-scenes maneuvering at ASPE: “At some point in the mid-70s, it looked like the Contracts Office was finally losing patience with our annual non-competitive extensions of the contract and was going to make us compete it. We were also starting to get some flak from the other parts of ASPE, who were asking whether this thing was worth the large chunk of the Policy Research budget that it was consuming. So I convened a blue-ribbon panel of folks I knew would be sympathetic to the project (and to Michigan's continued stewardship of it) and got a report saying that this should be just behind the Washington

The year 1972 was also my first with the project. As a second-year economics graduate student at Michigan, I was attracted to work at the Survey Research Center by Morgan's mile-a-minute course on survey methods and by the invaluable experience of spending my senior undergraduate year in Costa Rica as part of a field studies program. My research project focused on how efficiently Costa Rican farmers, truckers, and wholesalers brought to market basic agricultural produce. I conducted and analyzed data from interviews throughout the country. Fortunately, the data I collected over the course of my year in Costa Rica were much better behaved than I was.

I loved working on the PSID project and at the Survey Research Center. My first tour of duty was as a data editor, reading the often lengthy interviewer explanations of complications that rendered responses to the PSID's many closed-ended questions problematic, making sense of the demographic and economic data, observing the myriad events behind families' seemingly tumultuous economic fortunes, and learning which pieces of data deserved the greatest trust.

Morgan' s first quantitative analysis assignment for me was to use as many as necessary of the 2,978 variables gathered over the course of the first five years of the study to understand responses to the fifth-year open-ended question: "We have been visiting you for five years now and asking a lot of questions, but we are also interested in your overall impression of this period. How would you say things have gone for you during the last five years?" Sobering in the responses were precious few references to earnings, capitalist exploitation, family income, class solidarity or another of the other economic and class factors I championed at the time. And almost nothing in the PSID's wealth of variables accounted for differences in reports of either the level or trends in well-being revealed by these open-ended responses. More generally, the assignment was hopelessly beyond my capabilities, but the process of flailing through data and literature planted a number of seeds in my mind that would later sprout.

Other, more manageable, analyses led to chapters published in the first of ten Five Thousand American Families volumes and my first journal articles. With time, my work on the

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monument on the government's list of national treasures. It worked, and from that point on, the continuation of the survey was, as I recall, pretty much a non-issue."

PSID came to include questionnaire development and proposal writing for future waves, and helping to manage many of the other tasks associated with an annual panel survey.

Equally stimulating was the enterprise of the Survey Research Center itself. Dependent for 95% of its budget on the research-grant "overhead" it generated, SRC had developed a strong set of community-building norms, a sense of shared fate, and democratic decision-making. Its periodic staff lunches and, with time, some research collaborations reinforced my appreciation for the value of work going on in other disciplines. The dignity and wisdom with which researchers such as Angus Campbell, Robert Kahn and Leslie Kish conducted themselves, their research, and, when called upon, their administrative duties, left a deep impression on me. I gained my Ph.D. in 1974 and garnered a few job offers but found the option of staying with the PSID was much more compelling - and indeed I remained with the study for the next twenty years.

By the late 1970s, after a decade of operation, the PSID's status properly evolved from a "poverty study" into a unique longitudinal data resource for social scientists from several disciplines. This, combined with ASPE's declining budget fortunes, led to a transfer of primary funding for the study from ASPE to the National Science Foundation. Ronald Reagan's attempt to all but eliminate social science research from the National Science Foundation budget in the early 1980s would have done in the PSID, had it not been for three years of emergency funding, orchestrated by Tom Juster, from the Ford, Sloan and Rockefeller Foundations.

The intellectual agenda of the PSID's data collection has always been two-fold. The first is to maintain a clean and consistent time series of core content - employment, family income and family structure – based on the study's annual interviews. The second, dictated by our desire to maintain the PSID's capacity to address contemporary research issues and, eventually, by the funding structure of the study, has been to complement the core with question supplements.

The poverty focus of the PSID's early years led to the inclusion of an eclectic set of supplemental measures that might be expected to differentiate families that climbed out of poverty from those who stayed poor. Thus, the first five annual questionnaires are filled with measures of locus of control, future orientation, achievement motivation, employment barriers, entrepreneurial activity, trust/hostility, avoidance of unnecessary risks, access to sources of

information and help, and a short sentence-completion test. As explained in the final section of this paper, some of the measures have proved quite powerful in differentiating individuals according to their long- (but not short-)run successes and failures.

The surge of labor-market research in the 1970s led us[4] to eliminate the PSID's gender bias in the detail of questions asked of married women and to add interesting question supplements on work histories, labor-market attachment and on-the-job training. In 1980, Morgan anticipated the interest in "social capital" by leading an effort to develop a question supplement on both past and possible future flows of time and money help between households. These were exciting times, since we had the freedom to conceive and develop supplements on contemporary topics which, when coupled with the PSID's ever-expanding time series of core content, would provide us and a growing national network of analysts with unique data drawn from our large national sample of households.

The nature of PSID's operations changed somewhat when its major funding was taken over in the early 1980s by the National Science Foundation. A Board of Overseers began to review and pass judgment on PSID operations. While many of their suggestions have improved the PSID considerably, the burdens of dealing with academic overseers proved considerable.[5] The creative elements of the PSID shifted more and more to the invention and design of question modules that supplemented the PSID's demographic and economic core. Since NSF never funded more than 70% of what it took to collect and process the data, we became much more dependent on Federal agencies and, occasionally, private foundations to fund question supplements that would help cover the PSID's $2.5 million (current dollar) annual cost.

Substantively, the question supplements developed in the 1980s and early 1990s and funded primarily by the National Institute of Child Health and Human Development and the National Institute on Aging enabled the PSID to add many valuable question supplements on

[4] Mary Corcoran, Martha Hill and Karen Mason spearheaded the effort to establish comparability between the labor market information collected from men and women.

[5] As NSF funding increased, the PSID Advisory Board became the PSID Board of Overseers. One prominent member sent a letter to us shortly after the change, making sure that we understood the change was more than semantic!

fertility, health, wealth, child development and intergenerational transfers, as well as a Ford-Foundation-funded supplement sample of Latino households. We also found funding for projects establishing links between PSID sample members and the National Death Index and between PSID respondent addresses every year and geographic identifiers such as census tracts, ZipCodes and counties, which has enabled analysts to match contextual information from the decennial census and other sources to the interview information to explore the nature of neighborhood effects.

Operationally, these supplemental activities required a great deal of proposal writing and other entrepreneurial effort, much of which I assumed when I joined Morgan as the study's co-director in 1982. Although burdensome,[6] the process forced me to come up to speed on many topics that would eventually become part of my research and develop a network of contacts in government agencies. Reducing the burden during this period were an invaluable set of colleagues, in particular Martha Hill, Dan Hill, Charlie Brown and Jim Lepkowski, and a remarkably capable and perceptive set of individuals working in the government agencies, in particular Daniel Newlon in the NSF, Jeffrey Evans in NICHD and Richard Suzman in NIA, all of whom understood both the research issues and how to work their bureaucracies to secure the needed money. I was joined in 1993 by co-director Sandra Hofferth, who, with Frank Stafford, is the principal investigator of the PSID today.

A final set of burdens, which figured in to my willingness to leave the PSID in 1994, began in 1992 when the NSF determined that PSID interviewing needed to be switched from paper-and-pencil to computer-assisted methods. This change was recommended by individuals who had enjoyed great success implementing computer-assisted interviewing methods in cross-sectional surveys. Converting the PSID to computer-assisted methods was a nightmare, since we

[6] Our typical situation had us preparing to release data gathered two years before, cleaning data collected one year before, attending to response rates and costs of the current round of data collection, pretesting questions for the following year and writing proposals for possible question supplements two and three years hence. The highlight of these burdens for me was spending an Easter weekend in the late 1980s writing a proposal to the National Science Foundation that justified why the PSID was THE study for understanding the economic and social consequence of global warming! It seems that a NSF global-warming initiative provided the social science divisions with an opportunity to substitute that initiative's funds for others.

wanted to avoid creating a "seam" in the PSID's long time-series, had very complicated family-relationship question sequences and faced situations every year in which newly-formed families that were discovered during the interviewing process needed to be contacted and interviewed. None of these tasks could be accommodated with existing software. Our costs failed to fall as advertised; our careful hand-editing of the data was eliminated in favor of much less satisfactory questionnaire-related programming; a programmer became part of the delicate questionnaire design process and the lead time needed to develop the next year's questionnaire increased by several months. At least when it comes to inserting technology into an ongoing panel study, I am most decidedly a Luddite.

SOME IMPORTANT LESSONS FROM THE PSID

Fundamental to the success of the PSID are the often-overlooked advantages of following, and keeping as part of the sample, members of the families who moved away from their original households to set up new households, such as children who came of age during the study (Hill, 1992). Since such individuals were originally chosen to be representative of the general U.S. population, the new families they form in the PSID sample are themselves representative of new families formed in the larger U.S. population.[7] Furthermore, since children born to the PSID's representative sample families are themselves a representative sample of children, the study's design also provides continuous representation of births.

When played out over 30 years, these design features enable the PSID to provide: i) data on representative cross-sections of families and individuals in 1968; ii) data on representative annual cross-sections of families and individuals between 1969 and 1997; iii) 30-year longitudinal data on individuals in the initially-representative 1968 sample, including children observed both when they were living with their parents and long after striking out on their own in adulthood; and iv) shorter-run comparative longitudinal data on representative cohorts of individuals at any point between 1968 and 1997.

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[7] An exception is new U.S. families formed through immigration, which have no chance of entering a study like the PSID. Immigrant samples were added to the PSID in 1990 and 1997.

Four other crucial design features of the PSID are that the core content of the study's annual interviews has remained largely unchanged; response rates have been high and largely random (Fitzgerald et al., 1998); remarkable effort has been expended on cleaning the data in exactly the same way in virtually every year of the study;[8] and data have always been released to the larger research community as soon as they are cleaned and documented. Unplanned but inevitable given the stimulating and supportive environment Morgan created and I tried to maintain is the fact that many key support staff have remained with the study for decades.

It is impossible to overemphasize the key role played by support staff in the success of the study. Collectively, they provided the institutional memory needed to keep the data comparable across waves. And in their individual ways, they quickly discovered optimal methods for persuading reluctant respondents to continue with the study, wrote questions that normal (i.e., non-academic) people understood, processed the data and counseled the horde of at times irritating young researchers outside of SRC who wanted to use the data but sometimes, in a few memorable cases, refused to read even the first page of documentation. Their perfectionism caused more than a few headaches in meeting deadlines, but their single-minded dedication to getting things right has produced an extraordinarily detailed and accurate motion picture of American economic family life in the last third of the twentieth century.

These features have made the PSID one of the most widely used and influential data sets in the social science research community. As of 1996, PSID-based articles have appeared in over 100 different refereed journals; the bibliography lists some 1,200 publications in all. In the early

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[8] Data "editing," my first job with the PSID, consisted of a 45-minute-per-completed-interview examination of questionnaire responses as well as interviewer comments by a trained data editor, following detailed and unchanging rules, to produce an unusually clean and, across waves, consistent set of key family and economic variables. Over the course of my 23 years with the PSID I had many occasions to visit the paper questionnaires stored in the subbasement of the Institute for Social Research in order to make sense out of what appeared from my analyses to be erroneously-coded data. Invariably, the problem was with my inability to anticipate the complexities of family economic life; I found virtually no editing or coding errors. The data-cleaning operation changed considerably when computer-assisted interviewing techniques were introduced in 1993.

1990s, publication rates were five per year in the top four economics journals, six per year in the top labor-economics journals, and five per year in the top five sociology and family journals.[9]

I cannot hope to present a comprehensive summary of what has been learned from these many studies. In the spirit of the conference, my approach is decidedly selective and personal.

What a family's "life cycle" is really like

Despite the study's longitudinal nature, most analysts, myself included, typically approached the PSID's first decade of data as though they were drawn from a cross section. Longitudinal methods were not well developed in the 1970s, and the PSID questionnaire provided many novel measures that, when analyzed using cross-sectional methods, produced interesting and, most importantly, publishable articles. My own studies were inspired by my training as a labor economist and focused on then-popular topics such as earnings differences between men and women and between union and nonunion workers, economic rewards of on-the-job training, childcare choices of working parents, and, using retrospective reports, intergenerational models of completed schooling.

Lurking in the background, however, were persistently puzzling PSID data suggesting a striking degree of economic turbulence and perhaps genuine mobility at all income levels (Morgan et al., 1974; Duncan et al., 1984). Incomes fluctuated a great deal from one year to the next, producing many transitions into and out of both poverty and affluence, and onto and off the welfare rolls. Moreover, other important changes frequently took place: roughly one in five families changed composition from one year to the next and a comparable fraction pulled up stakes and moved from one location to another.

What was going on? Were the income changes merely the result of measurement errors, or were families' economic fortunes really more volatile than previously believed? If the turbulence was real, what caused it and to what extent was it voluntary or at least anticipated? And how much of the turbulence reflected true mobility – permanent changes in economic and, perhaps, social position?

[9] These publication data come from the PSID's 1996 proposal to the National Science Foundation.

The prevalent academic conceptions of social and economic position in the 1970s were of unchanging social class; slowly building stocks of economically valuable (human capital) skills; or fairly predictable life-cycle changes experienced by individuals as they age. In the life-cycle view, early adulthood is usually seen as a period of relatively low income as career and marital arrangements are being sorted out. Income grows as careers stabilize and, in some cases, blossom, and as multiple earners in households increase the household's total income. Retirement usually occasions a drop in income, cushioned by social security and private pension payments in both nominal income and work-related expenses.

Lenore Weitzman's (1985) sensational but erroneously overstated depiction of the dire economic consequences of divorce was still years in the future and had not yet been integrated into life-cycle theories. Elder's landmark studies of the Great Depression (1974) provided a vivid picture of the consequences of severe macroeconomic disruptions, but few thought that these kinds of disruptions were a regular feature of many families' lives in the prosperous second half of the 20th century.

This life-cycle view of income changes conforms closely to (and, indeed, has been developed from) family-income data drawn from representative cross-sections of the population showing higher levels of household income for older individuals until the late 40s, and then lower levels at older ages. If we succumb to the temptation to use these cross-sectional data on different families at various life cycle stages to represent the likely economic path of individuals as they age, then we might view individual income trajectories as fairly smooth, with fluctuations occurring infrequently and at discrete points of the life cycle such as early adulthood and retirement.

PSID as well as subsequent longitudinal household and administrative data reveal economic and social trajectories that are much more disparate and chaotic than envisioned by a life-cycle view. An idea of the scope of these fluctuations can be gleaned from Table 1, which is taken from Duncan's (1988) PSID-based analysis of household income trajectories over the

eleven-year period between 1969 and 1979.[10] Since the longitudinal experiences of men and women are quite different, data are presented separately by gender.

[INSERT TABLE 1 HERE]

The first column shows the average level of family income over the 11-year period and displays typical life-cycle patterns. Household incomes are highest for individuals who spent the entire period in their prime earning years, and are somewhat lower for the initially 46-to-55-year-olds, some of whom will have retired during the 11-year period, and lower still for the next older cohort, who were between the ages of 56 and 65 when the 11-year period began. The gap between the family incomes of men and women increases substantially over the life cycle as a result of the increasing proportion of women who are not living with spouses or partners.

To what extent do these averages conceal diverse individual experiences? The second and third columns of Table 1 show the fractions of the sample in various age and sex groups with either very rapid growth (more than 5 percent per year) or sharp declines (falling by at least 5 percent per year) in inflation-adjusted living standards over the period.[11] Several startling facts emerge, the foremost of which is the prevalence of either large positive or large negative trajectories. With the exception of 46-55-year-old men, at least 40% of all groups displayed either large positive or negative economic trajectories. Life-cycle average income figures do indeed obscure a great deal of offsetting change at the individual level.

The direction of the trajectories varies predictably across the age groups. Rapid increases are concentrated in the early adult years, while most of the rapid decreases are experienced by the retirement cohort. But there are many exceptions to these age patterns.

Duncan (1988) also estimated the incidence of adverse income "events," which he defined as instances in which family-size-adjusted income fell by 50 percent or more in consecutive years. This yardstick is similar to that employed by Elder and his colleagues in their

[10] An extension of this analysis by Burkhauser and Duncan (1994) shows that the basic patterns changed little between the 1970s and late 1980s.

[11] Over an eleven-year period, an annual real growth rate of 5 percent will increase a family's real income by over 70 percent; a negative 5 percent rate will nearly cut it in half.

studies of the effects of the Great Depression, which found long-lasting effects of income drops of one-third or more.

The incidence of sharp drops in income-to-needs over the life course is shown in the fourth column of Table 1. The overall risk is high: between 18% and 39% of the various groups are estimated to have experienced such a drop at least once during the eleven-year period. Most of these decreases left the individuals involved with, at best, modest incomes. Not shown in Table 1 is the fact that 87% of the individuals experiencing these decreases saw their family incomes fall to less than $25,000.

Since the PSID questions respondents about their expectations of future changes in economic status,[12] it is possible to calculate what fraction of the 50%+ income drops were preceded in either of the previous two annual interviews by a report that the respondent expected his or her family economic status to decline. The fifth column of Table 1 shows that a majority of all income declines and the vast majority of pre-retirement income drops were unexpected.

Taken together, longitudinal PSID data show that it is a mistake to treat the "path" of average incomes as the typical income course of individuals as they age. Family incomes are quite volatile at nearly every point in the life cycle, making rapid growth or decline in living standards more the rule than the exception. We do not have to look with Elder and his colleagues to the Great Depression to find frequent instances of economic loss and hardship; the risk of sharp decreases in living standards is still significant at virtually every stage of life. Most of the losses are unexpected. These losses occur despite our system of government safeguards (unemployment insurance, Aid to Families With Dependent Children) and intrafamily transfers that might be expected to reduce or eliminate them.

So what?

Should these newly-discovered economic fluctuations be a concern? Elder's data provide compelling but historical evidence of circumstances in which economic shocks can have

[12] After a sequence of other questions about household income, respondents were asked "What about the next few years, do you think you will be better off, or worse off, or what?"

devastating effects on both adults and children. In Falling From Grace, (1988) Katherine Newman draws data from the 1980s to document the psychological and other damage brought about by downsizing, divorce and other events. Countless more specialized studies focus on the consequences of individual events such as layoffs, divorce and widowhood. Perhaps contemporary economic dislocations are even more damaging than those in the 1930s, since there is much less of a sense that these events are shared by others.

On the other hand, some events producing economic losses may have benign or even beneficial effects. Children leave parental homes and older parents decide not to move in with their adult children, despite economic advantages they would otherwise enjoy, because they value their independence. Although their incomes are lower than before retirement, retired individuals may be better off because they have more leisure time than when they were working, and the predictability of retirement has allowed them time to prepare for its financial and psychological consequences. Despite their unstable incomes, construction workers may be well off because their higher rates of pay compensate them for the instability of their jobs, while the self-employed may value "being their own bosses" over a stable salary. In short, not all instances of income instability have the same negative implications. Indeed, some have argued explicitly that income variability over the life cycle is of little analytic and policy interest (Murray, 1986).

Research on the consequences of economic fluctuations is difficult because few data sets combine reliable longitudinal information on family income with well-measured subsequent physiological or psychological outcomes. An interesting exception using PSID data related the level and stability of income to mortality (McDonough, Duncan, et al., 1997). They treat PSID data as if they were a series of independent 6-year panels, the first spanning calendar years 1972-78, the second spanning 1973-79, and so forth, with the last one spanning the decade from 1983-1989. Within each six-year period they use the first five years to measure the level and stability of household income and the sixth and final year to measure possible mortality.

Key results are presented in Table 2. They are taken from a logistic regression in which the dependent variable is whether the individual died during the sixth and final year of the given period. Income level and stability over the five-year period preceding the possible death are combined into a single classification of: i) low and unstable income (i.e., mean income under

$20,000 and at least one big income drop[13] over the given five-year period; ii) low but stable income; iii) middle-class (mean income between $20,000 and $70,000) and unstable; iv) middle-class and stable; v) affluent and unstable. Affluent individuals with stable incomes served as the reference group.[14]

[INSERT TABLE 2 HERE]

Consistent with a number of other studies, mortality risks fall with income level. Individuals with low incomes have 3 to 4 times the mortality risk of the affluent individuals in the reference group. New in the analysis is the result that unstable incomes also contribute to mortality risk, but only among the middle class. When compared with the consistently-affluent reference group, middle-income individuals with stable incomes had a marginally significant 1.5-times elevation of mortality risk. In contrast, an individual with middle-class but unstable income had a risk ratio more than three times that of individuals in the reference group, and almost as high as individuals in the two low-income groups. Instability mattered neither at the low nor high end of the income distribution, perhaps because the disadvantages of low incomes and the advantages of affluence overwhelm the possible effects of instability. An important item for future research is whether it is the income fluctuations per se or the events (e.g., unemployment, widowhood) producing them that increase the mortality risks.

Poverty and welfare dynamics

Published in 1984, the book Years of Poverty, Years of Plenty was an attempt by me and my coauthors to summarize the most important lessons from the first ten years of the PSID.[15] It included chapters on family economic and labor-market mobility, labor market differences between blacks and whites and between men and women, and poverty and welfare dynamics. We

[13] Consistent with Table 1, an income drop is defined as a situation in which size-adjusted family income fell by 50% or more in consecutive years.

[14] Control variables include age of individual, calendar year, race, and the average size of the given person's household over the first five years of the window.

[15] The coauthors – Morgan, Richard Coe, Martha Hill, Saul Hoffman, Mary Corcoran – were cherished collaborators in my first years with the PSID.

wrote it to be an accessible summary of findings and were pleased by the extent to which it found its way into classrooms and policy discussions.

The interest generated by the book focused overwhelmingly on its findings on the dynamic nature of poverty and welfare use. As with the more general life-cycle results, there was a huge gap between popular perceptions of these phenomena and the data's clear message of turbulence and mobility. When the PSID began, and continuing today, popular perceptions of the permanence of poverty and welfare receipt are widespread. We speak easily of "the poor" as if they were an ever-present and unchanging group. Indeed, the way we conceptualize the "poverty problem," the "underclass problem" or "the welfare problem" seems to presume the permanent existence of well-defined groups within American society.

Much of our data on poverty is based on large annual Census Bureau surveys in which family annual cash incomes are compared with a set of "poverty thresholds" that vary with family size. In 1998, a three-person family with an income below $12,802 would be designated as poor; the threshold for a four-person family is $16,400. Although the poverty rates calculated each year by the Census Bureau generate a great deal of publicity, they rarely change by as much as a single percentage point from one year to the next. Longer-run trends show jumps during recessions and a disturbing secular increase in the poverty rate among families with children.

Evidence that, say, one in five children was poor in two consecutive Census-Bureau survey "snapshots," and that those poor children shared similar characteristics (e.g., half lived in mother-only families) is consistent with an inference of absolutely no turnover in the poverty population and seems to fit the stereotype that poor families with children are likely to remain poor, and that there is a hard-core population of poor families with little hope of self-improvement. However, the same evidence is equally consistent with 100 percent turnover – or any other percentage one might pick – assuming only that equal numbers of people with similar characteristics cross into and out of poverty.

In fact, longitudinal data from the PSID have always revealed a great deal of turnover among both the poor and welfare recipients (Duncan et al., 1984). Only a little over half of the individuals living in poverty in one year are found to be poor in the next, and considerably less

than one-half of those who experience poverty remain persistently poor over many years. Similarly, many families receive income from welfare sources at least occasionally, but relatively very few do so year after year.

Many descriptions of poverty experiences are possible with the PSID; perhaps the simplest is a count of the number of years in which an individual lived in a family with total annual income that fell short of the poverty threshold in that year. In the case of the eleven-year period used for Table 1, if poverty were a persistent condition, then the sample would cluster at one of two points -- no poverty at all or poverty in all of the eleven years. If much contact with poverty is occasional, then we would expect that the persistently poor would be a small subset of the larger group that had at least some experience with poverty.

The last two columns of Table 1 show what fractions of individuals in the various age-sex groups spent at least one of the eleven years below the poverty line and those who spent more than half of the time (at least six of eleven years) in poverty.

The difference in the sizes of these two groups at all stages of the life cycle is striking. Depending on the life-cycle stage, between 20% and 27% of adult women experienced poverty at least once during the eleven-year period. The risk of at least occasional poverty was considerably lower for adult men than women. Persistent poverty, defined as living in poverty for more than half of the eleven-year period, characterized fewer than one-tenth of any of the subgroups. An older woman's chance of experiencing persistent poverty was roughly twice that of a 25-44-year-old woman and nearly five times as high as that of a 25-44-year-old man. Poverty rates for children and, especially, minority children are much higher, with nearly one-quarter of black children living in persistent poverty (U.S. Department of Health and Human Services, 1997).

By adopting “event history” methods such as the life table and Cox regression (Tuma and Groeneveld, 1979), Mary Jo Bane and David Ellwood (1986, 1994) furthered the transformation in how social scientists and policy analysts viewed poverty and welfare dynamics. These methods enabled them to characterize the nature and determinants of poverty and welfare experiences by the length of their “spells” (i.e., continuous periods of poverty or receipt).

Essential data from the Bane and Ellwood analyses are presented in Table 3. In the case of poverty, they use the PSID to estimate what fraction of families who first begin a poverty experience do so for short (i.e., 1-2 years), medium (3-7 years) and longer-run (8 or more years) periods of time. They find that while a clear majority of poverty spells are short, a substantial subset of poor families have longer-run experiences. Heterogeneity of experiences is thus key.

Striving to discover THE correct characterization of poverty - transitory or persistent - is fruitless, since poverty experiences are always a mixture of transitory and long-term. The policy implications of these data are profound, since the heterogeneous nature of poverty experiences demands a heterogeneous set of policies to address the needs they create. The short-term needs associated with short spells call for social-insurance approaches in which fears of "dependence" need not be a concern. Long-term poverty spells are a different matter, and call for policies that address the causes of the longer-run problems of the poor.

In the data presented in the second column of Table 3, Bane and Ellwood (1994) calculate the likely total number of years of receipt for families just starting to receive Aid to Families With Dependent Children (AFDC).[16] They find a roughly even distribution of first-time welfare recipients across the three time intervals; roughly one-third have very short welfare experiences, a third medium-length experiences and the final third long-term receipt.

[INSERT TABLE 3]

With welfare, as with poverty, heterogeneity is a key feature. Prior to the reforms of 1996, AFDC operated simultaneously as a short-term insurance and long-run support program. As shown in Table 3, many families using AFDC did so for only a few years, received help from it, got back on their feet and never returned. However, a substantial fraction of recipients was indeed long-term, raising all of the inflammatory rhetoric that seems to surround contemporary discussions of welfare.

These data figured prominently in the debate over welfare reform. David Ellwood (1988) himself proposed time limits as a means of addressing some of the problems associated with

[16] In contrast to the poverty data, which are based on single spells of poverty, the welfare-receipt data allow for multiple spells of receipt. Since transitions out of poverty or off welfare are often followed in a year or two by another spell, it is important to attempt to capture multiple spells in these calculations.

long-run receipt, although in the context of a comprehensive package of supports designed to ensure that families who wanted work could get it and that the incomes of working families remain above the poverty line. In fact, welfare reform is being implemented in 50 different ways across the states, with some incarnations resembling Ellwood's desired policies but others quite different.

Road trip

News of and use of data from the PSID soon spread to several European countries and generated interest in launching similar studies. The most ambitious and widely-used are the German Socio-Economic Panel, which collected its first wave in 1984, and the British Household Panel Survey, which collected its first wave in 1990. Luxembourg, the Netherlands and the Lorraine region of France ran panels in the 1980s; quite comparable household panels in all European Community countries began in the early 1990s.

I had the privilege of serving as a consultant to many of these studies and am grateful to the Survey Research Center for allowing me leaves ranging from a week to six months to do this work. The personal rewards to this work were immense: in the process of returning from a 1981 trip to Sweden and standing in line in front of the TWA ticket counter at JFK airport, I struck up a conversation with the woman who, 18 months later, would marry me and, 17 years later, is still willing to put up with my workaholic nature. Flying in and out on different planes, but with just enough of a snow delay to give us a couple of hours to get to know one another -- the improbability of it all leads me to attach a large stochastic component to people's fates.

There have been intellectual rewards to this work as well. One very surprising result from comparative longitudinal analyses of income data is that the United States is far from alone in its high degree of economic mobility, particularly among the poor. This issue has important implications for the poverty debate in the United States.

Tim Smeeding's Luxembourg Income Study project has documented the much higher rates of poverty prevailing in the United States than in other Western industrialized countries. Conservatives have argued that these uniquely high rates of U.S. poverty are the price we pay for our economic dynamism. Poverty is certainly less of a worry if the economy will ensure that

prosperity is a year or two away. To what extent are the lower poverty rates of European countries associated with lower amounts of economic mobility?

With funding from the Russell Sage Foundation, I coordinated a project that examined poverty dynamics in the nine countries listed in the first column of Table 4 (Duncan et al., 1995). Data from Canada, Finland and Sweden came from administrative records; all other results were from household panel surveys. Considerable effort was expended to insure that all studies were based on representative and comparable samples and defined income levels and changes in comparable ways. To establish a comparable poverty line across countries, we used a relative threshold – 50% of the median income of all households in the country.

[INSERT TABLE 4 HERE]

The first column in Table 4 presents a cross-sectional snapshot of poverty rates across the countries. Consistent with data from the cross-sectional Luxembourg Income Study project, the poverty rate is found to be much higher in the United States, particularly among blacks, than in European countries, with the Canadians somewhere in between.

Poverty dynamics are gauged by the fraction of poor families (defined as having incomes below 50% of the median in year t) which, in year t+1, have income above 60% of the median.[17] If one calculates the poverty escape rates based on the entire poor population within each country (data not shown in Table 4), then the U.S. poor rank near the bottom. However, this is due largely to the fact that the U.S. poor are, on average, much further away from the poverty line than the poor in other countries. If we take only those families with year-1 incomes close to the poverty line (i.e., with incomes between 40% and 50% of the median), then the poverty escape rates are remarkable similar across the countries (second column of Table 4). A more direct calculation of the degree of income instability among low-income families (third column of Table 4) shows, if anything, less instability in the United States.[18]

[17] 60% rather than 50% was used to avoid classifying instances of small income changes as transitions out of poverty.

[18] The instability measure used here is the median absolute percentage change in income among families in the bottom decile of the income distribution. Note that since data from the Scandanavian countries are based on administrative records, not subject to interview response errors, and do not show consistently different patterns, measurement error is not likely to be an overwhelming factor in these relative rankings.

Thus, the surprising result from this comparative study is that patterns of economic turbulence in other industrialized countries are similar to those in the United States. The extent of genuine economic mobility in these data is another matter. Most of the families climbing out of poverty do not end up in the middle class, and more than a few return to below-poverty-level incomes from time to time. A companion analysis of welfare dynamics (Duncan et al., 1995) found, if anything, that the U.S. recipients had shorter-term experiences than recipients in most other countries.

Poverty and child development

The PSID's fascinating data on family income and poverty dynamics began to take precedence over my interest in traditional labor economics topics. My research began to focus on understanding the patterns of change in family economic well-being. Since family structure itself figured so prominently in the income changes, a number of my studies were of the economic determinants and consequences of events such as divorce, widowhood and out-of-wedlock childbearing. Economists such as Gary Becker had developed interesting models of these kinds of behavior, but so too had sociologists and psychologists.

By the mid-1980s, my attention turned to the "so what?" questions. PSID analysts were able to describe in exquisite detail the dynamic patterns of poverty, family structure and social conditions, but collectively knew little of the effects of these changes and events on the psychological and physical health of adults and on the life chances of individuals who experienced these events while growing up.

Addressing the "so what?"questions with the PSID's now 30-year motion picture of economic, demographic and social conditions and events has had the most profound impact on the evolution of my academic career. My early efforts to link economic and other events in the sample produced a mixed record of success, perhaps because older adults' formative years predated the PSID's first waves. Much more promising has been my research on child and adolescent development, which has been able to draw upon more complete information, much of

it dating from birth and extending to the early-adult point at which developmental outcomes are assessed.

No single discipline monopolizes theoretical and methodological insights in this field of research, but there have been remarkably few collaborations among the relevant social-science disciplines. Consequently, developmental studies designed by psychologists and sociologists attend to neither the economic dimension of family life nor economic aspects of the policy implications of the research. Moreover, economist-driven studies give short shrift to the idea of critical periods and to the careful measurement of outcome and process favored by psychologists and sociologists.

Although my mentoring by Morgan, SRC upbringing, and occasional contact with Glen Elder and some of the other major figures in human development predisposed me to read portions of the research literatures in sociology and developmental psychology, it became clear to me that fruitful interdisciplinary collaborations require major mutual investments of time and energy.

My truly formative moments in the process came over the course of my many meetings with the Social Science Research Council's Working Group on Communities, Neighborhoods, Family Processes and Individual Development. Launched in 1989 as part of SSRC's initiative on the underclass, this working group brought me into sustained contact with a stimulating set of developmental psychologists and sociologists.[19] Group interactions forced me to explain and reflect on the economic and policy underpinnings of links between child development and neighborhood and family processes, and taught me approaches and insights from these other disciplines. My association with Jeanne Brooks-Gunn has proved particularly stimulating, fruitful and enjoyable; our research collaborations continue to this day.

One thing has led to another; I now belong to a number of interdisciplinary research networks and committees and relish my role as the token economist. It enables me to ask naive questions without embarrassing myself and to contribute economic, econometric and policy

[19] Tom Cook was the initial head of the group. Other members included Larry Aber, Jeanne Brooks-Gunn, Linda Burton, Lindsay Chase-Lansdale, Jim Connell, Warren Critchlow, Ron Ferguson, Frank Furstenberg, Robin Jarrett, Vilma Ortiz, Tim Smeeding, Margaret Spencer and Mercer Sullivan.

insights into the woefully insular studies of development by psychologists.[20] More importantly, these collaborations have borne fruit, as exemplified by my work with Brooks-Gunn, Jean Yeung and others on links between poverty and child development.

Many studies, books and reports have demonstrated correlations between children's poverty and various measures of child achievement, health and behavior (e.g., Duncan and Brooks-Gunn, 1997; Brooks-Gunn and Duncan, 1997; Children's Defense Fund, 1994; Mayer, 1997). As summarized in Brooks-Gunn and Duncan (1997, Table 1), the strength and consistency of these associations is striking. For example, the risk of poor relative to nonpoor children is: 2.0 times as high for grade repetition and high school dropout; 1.4 times for learning disability; 1.3 times for parent-reported emotional or behavior problems; 3.1 times for a teenage out-of-wedlock birth; 6.8 times for reported cases of child abuse and neglect; and 2.2 times for experiencing violent crime.

But literature on the causal effects of poverty on children has major shortcomings, the most important of which is that family income is not reported in many data sources that contain crucial information about child outcomes. As a result, studies using these kinds of data have often used variables such as occupation, single-parenthood or low maternal education to infer family income levels. But income and social class are far from synonymous. As we have seen, family incomes are surprisingly volatile, which means that there are only modest correlations between economic deprivation and typical measures of socioeconomic background.

How best to combine insights from economics and developmental psychology to understand the effects of poverty on children? Psychology emphasizes the importance of conditions surrounding developmental stages and transitions. In the context of poverty studies, the greater malleability of children's development and the overwhelming importance of the family (as opposed to school or peer contexts) lead to expectations that economic conditions in early childhood may be far more important for shaping children's ability and achievement than conditions later in childhood.

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[20] Don't get me wrong: economists and sociologists are just as insular in their separate ways.

The possibility that the effects on children's development of economic conditions depend upon childhood stage is foreign to most economists, whose developmental models are very simplistic and tend to focus on the role of "permanent" income and assume that families anticipate bumps in their life-cycle paths and can save and borrow freely to smooth their consumption across these bumps. But while some economists recognize the potential importance of credit and other constraints faced by poor families, none had attempted to gauge the implications of the bumps in the context of children's development.

The PSID's long-run scope and careful measurement of income enabled Duncan et al. (1998) to investigate the importance of childhood-stage-specific poverty for completed schooling. Their sample consisted of 1,323 children born between 1967 and 1973, who were observed in PSID families for the entire period between birth and age 20-25 and constitute a representative sample of children in these birth cohorts. To allow for the differential impact of income by childhood stage, they related years of children's completed schooling to measures of family income averaged over the first, second and third five-year segments of the children's lives (Table 5).[21]

[INSERT TABLE 5 HERE]

Taken as a whole, the results show that the timing of economic deprivation matters a great deal for the schooling outcomes, with income early in life by far the most important. The coefficients reported in Table 5 suggest that, controlling for income in other stages and other family conditions, children in families with birth-to-age-five incomes between $15,000 and $25,000 average two-thirds of a year more schooling – about one-third of a standard deviation – relative to children in families with less than $15,000 income. In contrast, income from middle childhood and adolescence failed to predict strongly to the schooling outcomes.[22]

[21] The regression models also control for mother's schooling, family structure, race, gender, and the age of the mother at the birth of the child, total number of siblings, whether ever lived in South, number of geographic moves and number of years mother worked for 1000+ hours. Parental income is inflated to 1993 price levels.

[22] As shown in Table 5, Duncan et al. (1998) did find that high parental income during adolescence had a strong positive effect on completed schooling. Additional analyses produced the unsurprising result that having affluent parents as a teenager increases your chances of attending college.

In short, economic deprivation occurring early in childhood appears to have the most pronounced and longest-lasting effects on children's achievement. The lens of early childhood as the critical period with respect to economic deprivation leads to some important policy implications (Duncan and Brooks-Gunn, 1998). For example, the five-year time limits in the 1996 welfare reform legislation are not as worrisome as sanctions, since few families hitting five-year limits will contain young children living with them but many families sanctioned off TANF programs will. More generally, income support programs are much less expensive if directed at families with young children rather than children of any age.

Are there undiscovered dynamics in noneconomic phenomena?

John Modell encourages me to speculate about whether an annual or even more frequent panel study version of the General Social Survey, the National Election Study, or some of the landmark long-term developmental studies would revolutionize our thinking about the dynamic nature of attitudes or developmental pathways as the PSID has done with respect to poverty, welfare use, labor supply and other economic phenomena. Of course there are many examples of two- or three-wave panels involving noneconomic phenomena, some of which take their measurements at long intervals. None, to my knowledge, interviews frequently enough to provide the kind of motion picture that the PSID produces about its economic and demographic core.

Cast in event-history terms, such studies would enable us to ask whether attitudes, psychological states or behaviors follow predictable "spell" patterns. Are changes gradual or sudden, perhaps in response to important individual or environmental events? How often and for what kinds of people do changes in attitudes and behaviors prove transitory?

Such data would also enable us to address whether our conceptions of constancy and change should be supplemented with a focus on instability. Is instability in domains other than income a predictor of important health and other significant outcomes?

Nesselroade and Featherman (1997) argue that developmentalists' preoccupation with stability has led them to ignore powerful theoretical and empirical reasons for needing to understand the nature and determinants of intra-individual change. They point out that the life-

span perspective's focus on changes in individuals' capacity and performance as well as adaptations to changing environments should lead us to view variability as the norm and stability as the exception.

And yet most developmental research focuses on either relatively stable differences between individuals, or on changes in a given individual that occur between measurement points months or even years apart (Alwin, 1994, Costa and McCrae, 1980), but almost never on duration or stability. Lacking panel data, we are tempted to infer life-cycle change by comparing individuals of different ages from cross-sectional data, which is precisely the mistake made in life-cycle studies of economic well-being.

Even with panel data, however, we refuse to take instability and short spells seriously. We compute test-retest correlations from panel data gathered over short intervals to measure reliability rather than instability, which reflects our belief that most of our constructs are stable over at least short periods of time. Measures that exhibit instability are discarded by this process, rather than seen as potentially valuable examples of short-duration or unstable phenomena. Few developmental or attitudinal analyses are cast as event-histories. [23] Think of how much less we would know about subatomic processes if we required particles to live for at least one second! Analogously, consider the fact that we would miss at least half of the action in understanding welfare receipt if we required spells to be at least three years in duration. What are we missing if we don't have a PSID-type motion picture of developmental processes?

Some intriguing evidence suggests that turbulence matters in other-than-economic domains. Eizenman et al. (1997) gathered measures of locus of control and perceived competence over 25 consecutive weeks from a sample of elderly residents of a Pennsylvania retirement community. They derive measures of both the level and the stability of these two constructs and then relate both dimensions to the mortality status of their sample five years after

[23] The 1997 meetings of the Society for Research on Child Development featured a wonderful lecture by Mark Applebaum, who nominated "cutting edge" methodologies for inclusion in developmentalists' methodological toolkits. I was shocked when he included event-history methods, since I had presumed that they were widely known and used. But then I reflected on my limited reading of the developmental literature and realized that there were virtually no examples in which developmental processes and stages were analyzed with duration-based methods.

their final measurement. As McDonough et al., (1997) found in the case of income instability, they discover that the instability of locus of control and perceived competence is highly predictive of subsequent mortality. In fact, instability in these dimensions was considerably more predictive of mortality than was level.

The more general answer to the question of whether motion-picture panel studies of other-than-economic phenomena would revolutionize conceptions of these phenomena is, of course, "we do not know." Nor are we likely to find out soon, since duration and turbulence are understudied dimensions of the constructs that interest us. It makes sense to begin to investigate these issues with small, well-focused Eizenman et al.-type studies before thinking about more expensive large-scale studies.

ME, WITHOUT THE PSID

In 1994 I left Michigan and the PSID and joined the faculties of the Human Development and Social Policy (HDSP) program and Institute for Policy Research at Northwestern University. Although my attachment to both the PSID and the Survey Research Center caused me to agonize over the decision, it is now clear that the change was a good one.

My interests in interdisciplinary work involving human development, economics and social policy meshed perfectly with the structure and philosophy of HDSP. Fulfilling an ambition formed as a Grinnell undergraduate, I traded administrative duties running the PSID for the rewards of teaching and mentoring the remarkably motivated, capable and mature HDSP graduate students. And the Institute for Policy Research has provided a fertile environment for sustaining my research program. I surprised myself with the extent of my comfort with only an interdisciplinary affiliation and pushing for neither a joint nor even courtesy appointment in Northwestern's prestigious economics department.

My experiences have reinforced my excitement over the synergistic possibilities of incorporating economic and policy insights into studies of human development. At the risk of oversimplication, developmentalists are strong on theory and measurement but weak in thinking critically about the fact that peoples' contexts are, in large part, chosen (endogeneous) and in thinking systematically about the policy implications of their research.

The endogeneity problem is especially important. Does a positive association between a high-quality child care setting and a child's school subsequent readiness tell us that child care quality promotes school readiness or that school readiness is caused by the same, often-unmeasured parental characteristics that led to the choice of high-quality child care? The psychologist's and sociologist's first instinct is to assume the former; the economist's the latter. If most resilient children are found to have had an adult mentor, does this indicate that adult mentors would help unresilient children or merely that a manifestation of resilience is the seeking out of mentors? The policy implications depend fundamentally on the answers to these questions.

Economists are strong on the policy side, ask some interesting theoretical questions and have developed a useful toolkit of techniques and approaches for the endogeneity problem. The gulf in vocabulary, methods and instinct is wide, but by no means insurmountable.

Some of my research still uses data from the PSID. Intriguing in this work are results indicating that some of the social-psychological measures included in the PSID's early waves are much more predictive of long-run and intergenerational success than of short-run outcomes. Early analyses of the short-run (i.e., five-year) effects on labor-market earnings of measures such as personal control and achievement motivation failed to show robust and important connections (Duncan and Morgan, 1981; Augustyniak, et al., 1985). However, when Rachel Dunifon and I (1998) related levels of labor-market success in the early 1990s to the early-wave measures of personal control and components of achievement motivation, we found linkages that are much more powerful. In fact, the collection of 25-year-old social-psychological measures accounted for as much of the variation in current earnings as did completed schooling.

Moreover, recent work on the intergenerational effects of these early-wave measures (Yeung, Duncan and Hill, forthcoming) shows the power for boys' future success of some behavioral traits of their fathers. In particular, having a risk-averse father (i.e., reports fastening his seat belt, having car or medical insurance, etc.) is a highly predictive of the son's completed schooling and early-career attainments. Perhaps having a father who dampens rather than reinforces the excesses of youth is beneficial for boys. At any rate, these two sets of long-run results suggest the value for attainment research of taking a very long view.

For the most part, though, I have also surprised myself at the speed with which other data have replaced the PSID in my research. My work with the MacArthur Middle Childhood Network has led John Modell, post-doctoral fellow Lori Kowaleski-Jones and me to apply some of the methods developed for understanding the dynamics of income trajectories to children's achievement and behavior-problem trajectories.[24] Every-other-year data on behavior problems and achievement from the National Longitudinal Surveys of Youth Child Survey display developmental trajectories that bounce around almost as much as does family income. Surprisingly, the seemingly chaotic developmental trajectories share many of the characteristics of income trajectories: heterogeneous levels and slopes and a substantial random component. In the case of the developmental trajectories, there is a tendency for girls to return more slowly than boys to their individual "permanent" trajectories if thrown "off course" (Kowaleski-Jones and Duncan, forthcoming).

More ambitious are my projects involving randomized experiments, which offer much greater power than population surveys for addressing endogeneity problems. Such problems became painfully clear as Jeanne Brooks-Gunn, other members of the SSRC committee and I worked with PSID and other data to understand how neighborhood conditions affected children's development. Families are not assigned randomly to their neighborhoods, raising the question of whether the apparent neighborhood "effects" emerging from our regressions merely reflected unmeasured family factors that affected both choice of neighborhood and child well-being (Duncan and Raudenbush, 1999).

Few developmental studies of contextual effects recognize, much less solve, the problem of bias caused by unmeasured selection factors. Jens Ludwig and I tackle these problems by taking advantage of Ludwig's involvement with the Department of Housing and Urban Development's Moving to Opportunity (MTO) experiment. In MTO, poor families from public housing projects in five of our nation's largest cities are offered a chance to enter a program that facilitates moves to low-poverty neighborhoods. Since families are randomly assigned to one of three "treatments," one of which provides no additional help at all, the problem of omitted-

[24] John Modell's proper insistence on an historical element to our research has led him to conduct a parallel analysis of life-course patterns of communion attendance in 19th century Sweden.

variable bias is eliminated. Early results indicate large beneficial effects of moving to lower-poverty neighborhoods on the criminal behavior (for violent but not property crimes) of adolescent boys in these families (Ludwig, Duncan and Hirschfield, 1998).

A second project that has added a developmental component to a randomized anti-poverty experiment is called New Hope. Beginning in the early 1990s, New Hope offered low-income families in two poor areas of Milwaukee the chance of a "contingent social contract" – work 30 hours per week and receive a generous set of supports (a wage subsidy, childcare, health insurance and, if needed, a temporary community service job). Interested families were randomly assigned to a group eligible to receive these supports and a control group that was eligible to receive only the supports available to all low-income families from the city and state.

Understanding how this program affects family functioning and child development is the goal of our eclectic subgroup (Aletha Huston, Robert Granger, Vonnie McLoyd and Tom Weisner) of MacArthur Network members. Our methods include surveys two and five years into the program as well as qualitative interviews with a randomly-chosen subset of both program and control families.

Since Milwaukee is only a 90-minute drive from Evanston, we have been able to involve four HDSP graduate students in both the qualitative and quantitative work, three of whom are using both methods simultaneously. Working with these talented students and fellow Network members to make sense out of results from both ethnographic and survey data from a randomized experiment is my working definition of a research Nirvana. Although this work is still in progress, it is already clear that it is the interaction between the qualitative and quantitative methods that has proved most interesting and rewarding. We simply would not have been able to nail down the experimental-effects story without the insights gathered by the students over the course of their many hours of conversations in the living rooms of New Hope families.

With data from many other welfare experiments and new developmental surveys coming on line in the next few years, we will have the opportunity to learn much more about the nature and policy implications of welfare reforms for family process and children's development. Two ambitious child development supplements, in 1997 and planned for 2001, will keep the PSID in

the forefront of this work. I do not yet know whether I will become one of the analysts of these new sets of PSID data. Whatever my future may bring, the PSID's marks on my own development will remain indelible.

References

Alwin, D.F. 1994. "Aging, Personality and Social Change: The Stability of Individual Differences Over the Adult Life Span." In *Life-Span Development and Behavior*, edited by D.L. Featherman, R.M. Lerner, and M. Perlmutter. Hillsdale, NJ: Lawrence Erlbaum Associates.

Augustyniak, Sue, Greg J. Duncan and Jeffrey Liker. 1985. "Panel Data and Models of Change: A Comparison of First Difference and Conventional Two-Wave Models." *Social Science Research* 14: 80-101.

Bane, M. J. and David T. Ellwood. 1986. "Slipping In and Out of Poverty: The Dynamics of Spells." *Journal of Human Resources* 21: 1-23.

Bane, M. J. and David T. Ellwood. 1994. *Welfare Realities*. Cambridge, MA: Harvard University Press.

Brooks-Gunn, J. and Greg J. Duncan. 1997. "The Effects of Poverty on Children." *The Future of Children* 7(2): 55-71.

Burkhauser, R. and Greg J. Duncan. 1994. Sharing prosperity across the age distribution: A comparison of the United States and Germany in the 1980s. *The Gerontologist* 34:150-160.

Children's Defense Fund. 1994. *Wasting America's Future*. Boston: Beacon Press.

Costa, P.T. and R.R. McCrae. 1980. "Still Stable After All These Years: Personality as a Key to Some Issues in Adulthood and Old Age" in *Life-Span Development and Behavior*, edited by P. Baltes and O.C. Brim. New York: Academic Press.

Dunifon, Rachel and Greg J. Duncan. 1998. "Long-Run Effects of Motivation on Labor Market Success." *Social Psychology Quarterly* 61(1): 33-48.

Duncan, Greg J. 1988. "The Volatility of Family Income Over the Life Course." In *Life-Span Development and Behavior*, edited by P. Baltes, D. Featherman, and Richard M. Lerner. Hillsdale, NJ: Lawrence Erlbaum Associates.

Duncan, Greg J., and Jeanne Brooks-Gunn (eds.) 1997. *The Consequences of Growing Up Poor*. New York: Russell Sage.

Duncan, Greg J., Bjorn Gustafsson, Richard Hauser, Guenther Schmaus, Stephen Jenkins, Hans Messinger, Ruud Muffels, Brian Nolan, Jean-Claude Ray, and Wolfgang Voges. 1995. "Poverty and Social-Assistance Dynamics in the United States, Canada and Western Europe" in *Poverty, Inequality and the Future of Social*

Policy: Western States in the New World Order, edited by Katherine McFate, Roger Lawson and William J. Wilson. New York: Russell Sage.

Duncan, Greg J., Richard Coe, Mary Corcoran, Martha Hill, Saul Hoffman, and James N. Morgan. 1984. *Years of Poverty, Years of Plenty: The Changing Economic Fortunes of American Workers and Families*. Ann Arbor: Institute for Social Research.

Duncan, Greg J. and James N. Morgan. 1981. "Sense of Efficacy and Changes in Economic Status--A Replication." *Journal of Human Resources* 16(4): 649-657.

Duncan, Greg J. and Stephen Raudenbush. 1999. "Assessing the Effects of Context in Studies of Child and Youth Development." *Educational Psychologist* 34(1): 29-41.

Duncan, Greg J., Wei-Jun Yeung, Jeanne Brooks-Gunn and Judith Smith. 1998. "How Much Does Childhood Poverty Affect the Life Chances of Children?" *American Sociological Review* 63(3): 406-423.

Eizenman, D. R., J.R. Nesselroade, D.L. Featherman, and J.W. Rowe. 1997. "Intra-Individual Variability in Perceived Control: The MacArthur Successful Aging Studies." *Psychology and Aging* 12: 489-502.

Elder, G. H. 1974. *Children of the Great Depression*. Chicago: University of Chicago Press.

Ellwood, David. 1988. *Poor Support: Poverty and the American Family*. New York: Basic Books.

Fitzgerald, John, Peter Gottschalk, and Robert Moffitt. 1998. "An Analysis of Sample Attrition in Panel Data: The Michigan Panel Study of Income Dynamics." *Journal of Human Resources* 33(2): 251-299.

Hill, Martha. 1992. *The Panel Study of Income Dynamics*. Beverly Hills: Sage Publications.

Kowaleski-Jones, Lori and Greg. J. Duncan. Forthcoming. "The Structure of Achievement and Behavior Across Middle Childhood" *Child Development*.

Liker, J. K., and Glen H. Elder. 1983. "Economic Hardship and Marital Relations in the 1930's." *American Sociological Review* 48: 343-359.

Luwig, Jens, Greg. J. Duncan, and Paul Hirschfield. 1998. "Urban Poverty and Juvenile Crime: Evidence from a Randomized Housing-Mobility Experiment." Northwestern University/University of Chicago Joint Center for Poverty Research Working Paper, November 1998, #2.

Mayer, Susan. 1997. *What Money Can't Buy*. Cambridge, MA: Harvard University Press.

McDonough, Peggy, Greg J. Duncan, David Williams, and James House. 1997. "Income Dynamics and Adult Mortality in the U.S., 1972-1989." *American Journal of Public Health* 87(9): 1476-1483.

Morgan, James N. et al., 1974. *Five Thousand American Families--Patterns of Economic Progress*, Vol. I. Ann Arbor: Institute for Social Research.

Murray, Charles. 1986. "According to Age: Longitudinal Profiles of AFDC Recipients and the Poor by Age Group". Prepared for the Working Seminar on the Family and American Welfare Policy.

Newman, Katherine. 1988. *Falling From Grace: The Experience of Downward Mobility in the American Middle Class*. New York: Free Press.

Nesselroade, J. R. and D. L. Featherman 1997. "Establishing a Reference Frame Against Which to Chart Age-Related Changes" in *Studying Aging and Social Change: Conceptual and Methodological Issues* edited by M. A. Hardy. Newbury Park, CA: Sage Publications.

Tuma, N.B. and L.D. Groeneveld. 1979. "Dynamic Analysis of Event Histories." *American Journal of Sociology* 84: 820-854.

Weitzman, Lenore. 1985. *The Divorce Revolution*. New York: Free Press.

Yeung, Wei-Jun J., Duncan Greg J., and Martha S. Hill. Forthcoming. "Putting Fathers Back in The Picture: Parental Activities and Children's Attainment", *Journal of Marriage and Family Review*

Table 1: Level and stability of income, 1969-79 by age and sex

Age in 1969/Sex	Mean income level, in thousands of 1985 $	Percent with income rising rapidly	Percent with income falling rapidly	% with big (>50%) drops in income at least once	Of those with drops, % expecting income loss	P a
25-54 yrs						
Men	$43.1	35%	6%	18%	9%	
Women	40.0	32	10	24	6	
46-55 yrs						
Men	38.7	22	13	26	12	
Women	32.3	21	20	33	24	
56-65 yrs						
Men	29.5	7	38	38	34	
Women	22.1	6	35	39	25	

Note: Taken from Duncan (1988). “Rapid rise” in size-adjusted income is an increase greater than 5% per ye
adjusted income is a decrease greater than 5% per year. Over an eleven-year period, an annual real growth r
increase a family's real income by over 70 percent; a negative 5 percent rate will nearly cut it in half.

Table 2: Odd-ratios of mortality for individuals aged 45-64 years, by income level and stability, 1972 through 1989

Five-year mean income level and stability	Odds ratio	95% confidence interval
Income <$20,000 and 1+ income drops	3.7*	2.4-5.7
Income <$20,000 and no income drops	3.4*	2.2-5.1
Income $20-$70,000 and 1+ drops	3.2*	1.9-5.5
Income $20-$70,000 and no drops	1.5*	1.0-2.0
Income >$70,000 and 1+ drops	1.4	0.7-2.6
Income >$70,000 and no drops	1.00 (reference group)	-

Note: Taken from McDonough et al. (1997), Table 3. "Income drop" is defined as a situation in which size-adjusted family income fell by 50% or more in consecutive years.

"*" indicates that the coefficient is at least twice its standard error. Odds ratios are adjusted for age, sex, race, family size and period.

Table 3: Distribution of lengths of spells of poverty and AFDC, for individuals first beginning spells of poverty and AFDC

	Poverty, for nonelderly persons beginning a poverty spell	Aid to Families With Dependent Children, for women first beginning an AFDC spell
1-2 years	60%	36%
3-7	26	35
8+	14	29
TOTAL	100%	100%

Source: Poverty data taken from Bane and Ellwood (1986, Table 2); AFDC data taken from Bane and Ellwood (1994, Table 2.3)

Table 4: Poverty rates, poverty transitions and income changes of low-income families in mid-1980s

Country	% of families with incomes below 50% of median	% of "near poor" climbing out of poverty	Typical % income change for families in bottom decile
Canada	17%	23	21%
Finland	3	47	28
France-Lorraine	4	32	10
Germany (West)	8	24	18
Ireland	11	22	22
Luxembourg	4	29	10
Netherlands	3	23	8
Sweden	3	45	9
United States	20	22	15
German foreign residents	18	23	12
U.S. Blacks	49	15	8

Note: Taken from Duncan et al., 1997, Table 11.2. "Poverty" is defined by income less than 50% of median income in given country. "Near poor" are families with incomes 40-50% of median in base year. "Climbing out" is defined as year 1 to year 2 income change from <50% of the median to >60% of the median.

Table 5: Effects of stage-specific parental income on completed schooling and high-school graduation rates

Income averaged over:	Years of completed schooling
AGE 0-5	
Below $15,000	.00 (reference group)
$15,000-$24,999	.66*
$25,000-$34,999	.73*
$35,000-$49,999	.78*
$50,000 and above	1.41*
AGE 6-10	
Below $15,000	.00 (reference group)
$15,000-$24,999	.16
$25,000-$34,999	.24
$35,000-$49,999	.44
$50,000 and above	.33
AGE 11-15	
Below $15,000	.00 (reference group)
$15,000-$24,999	.34
$25,000-$34,999	.41
$35,000-$49,999	.36
$50,000 and above	1.08*

Note: Based on Duncan et al., (1998), Table 3. "*" indicates that the coefficient is at least twice its standard error. All regressions include controls for mother's schooling, family structure, race, gender, and the age of the mother at the birth of the child, total number of siblings, whether ever lived in South, number of geographic moves and number of years mother worked for 1000+ hours. Parental income is inflated to 1993 price levels.

Notes on the 'Income Plus' Files

1994-1997 Family Income and Components Files

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FIRST REVISION April 2000
SECOND REVISION December 20, 2000

I. Introduction and Overview

These files contain data and documentation for the Panel Study of Income Dynamics' 1994, 1995, 1996, and 1997 Total Family Income and its components. These files also include the state of residence for each of these four waves as defined by the PSID and FIPS state codes. Originally, these files included the three-digit 1970 Census occupation and industry codes for head's and wife's/"wife's" current or most recent main jobs, for the 1996 wave only. In April 2000, these codes were added for the 1994 and 1995 waves as well. Coding for 1997 has not been completed as of this writing. We expect to post 1999 occupations with the 1999 files. Also in April 2000, both USDA and Census Needs Standards were added for all four waves. This file provides basic information about these 1994-1997 income files. We recommend that you carefully review the following material before proceeding with any work using the data files.

Over the last two years the PSID Staff have taken steps to develop new processing software to be applied to the (Computer Assisted Telephone Interviewing) CATI output for family income and its components. For those familiar with the complex PSID income sequences for head, wife and other family unit members, this will be recognized as an ambitious project. An initial version of the Income Processing Software (IPS) was completed in the early fall of 1997 (CATIINC 1.0), and a modified version was completed (CATIINC 2.0) in the late summer of 1998. A further revised version was developed (CATINC 3.0) in the summer of 2000. This CATI 3.0 is more sophisticated in identifying anomalous cases. For example, the newest IPS version incorporates information from prior waves (and, if available, subsequent waves) to identify potentially problematic cases of data entry error.

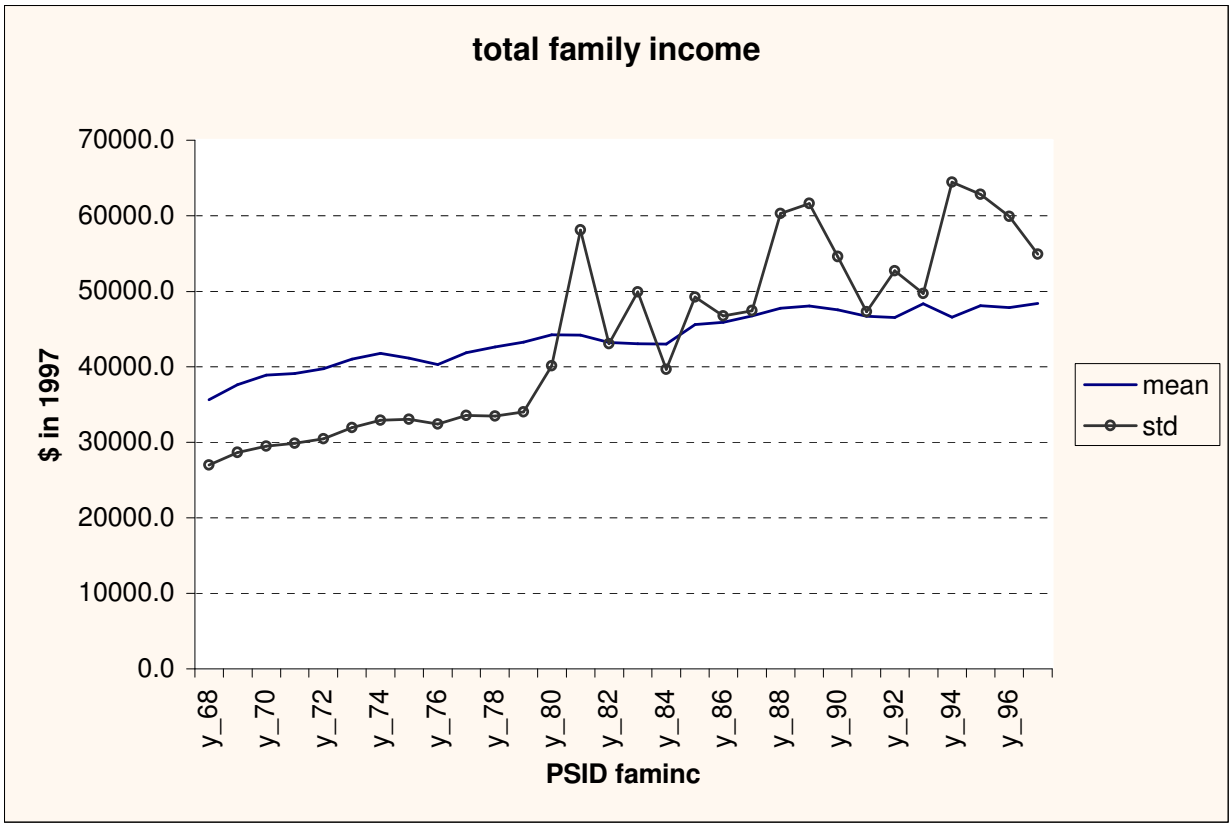
1. Early work with the income data from the PSID Income Plus files showed that the post-CATI data, 1993-1997, have a higher variance and that this seems to be concentrated in about 50 cases per year (out of 7,000 – 8,500 cases). Having extensively reworked our Income Processing Software (IPS) in the spring and summer of 2000 to create CATINC 3.0, we have recently applied it and edited additional cases. This new version of IPS is meant to work in tandem with our new editing system—more on this below. The IPS calculates income and its components in a straightforward way if all elements are there and there are no item non-responses or other anomalies in the underlying components. For the cases with unusual features one can calculate values from partial information. But this has limits. Also, simple keystroke errors in CATI can give rise to valid, but extreme values. To identify large, artificial changes in income

components—such as labor income—the program flags 'large changes,' particularly if not accompanied by a change in occupation and/or industry. These flagged cases are looked up to assess the larger context of the record including possible interviewer text fields of notes taken during the interview. If a better judgment edit can be made, a value is assigned. If not, a simple imputation may be used. Cases so modified are recorded as modified for the user.

2. The IPS output is intended to be then edited within an editing system. This system is described more fully below. In the interim we have effected a simpler (but time intensive) version of that system by creating Excel files of the input that goes into an income calculation and using that information for editing. This has lead to what we regard as very good income data for labor income and total family income. There are still some very minor improvements to the income files, 1994-1997 and 1999 which will be carried out for final archiving in our new edit system. How does our pre-archived income data look?

An overview of Total Family Income, 1968-1999 is provided in Figure 1 where we have carried out the application of the extensively revised IPS to process income from its detailed components and have carried out numerous checks for both cross-sectional and cross-wave outliers to identify potentially anomalous cases. IPS has also treated the SEO sample (see the PSID website under 'Overview' and then 'Sample') differently. In the case of imputations for missing data it has developed within-SEO sample conditional values to avoid imparting a systematic upward bias for those cases. Across all four waves, 1994-1997, there were about 800 cases deemed to need some case-by-case checking. (Sort of like challenges in the NFL.) Overall, about 200 cases were changed, 1994-1997, with more of the changes in 1994, and fewer per year going forward to 1997. These changes are mostly designed to improve the data quality for panel analysis, but show up as a modest reduction in the cross-sectional variance of income.

Figure 1



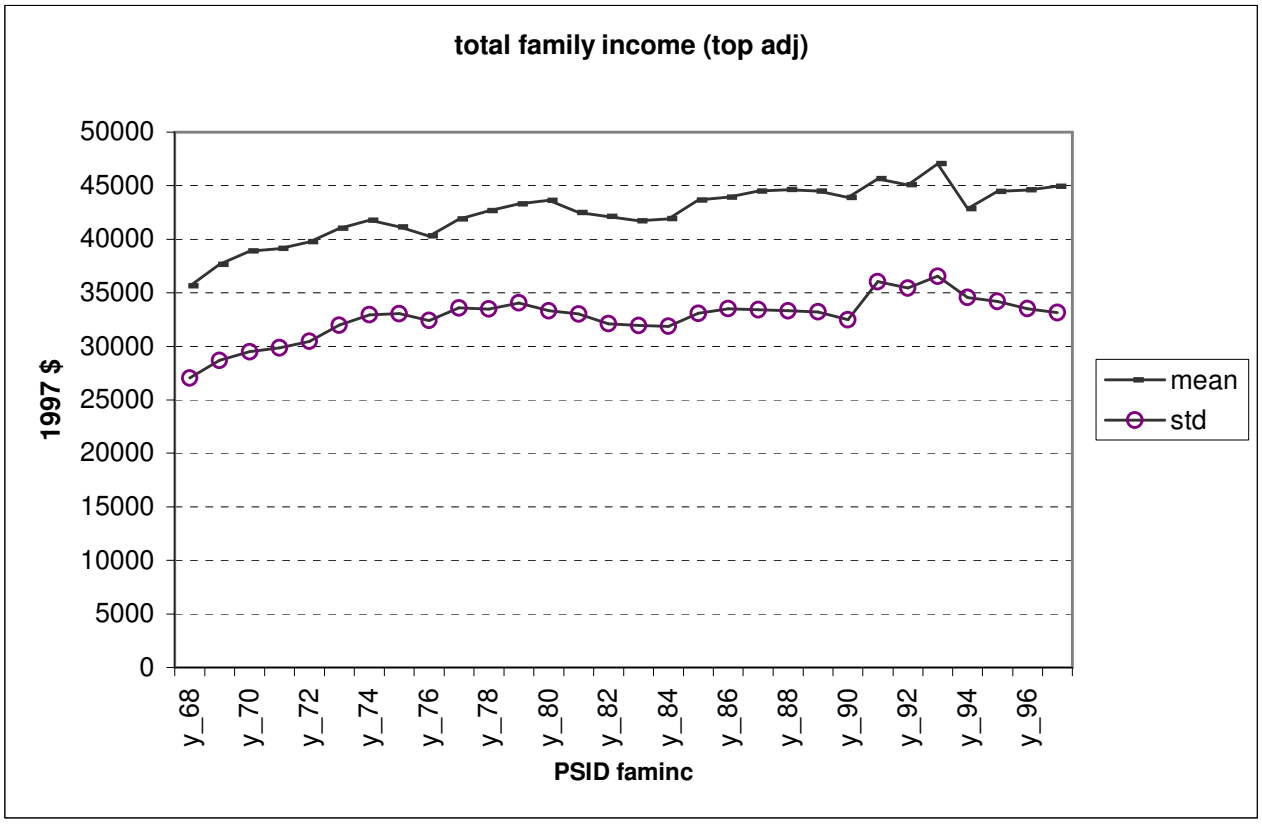
From Figure 1 there are two data 'eras': one 1968 to 1979 and then post 1980. Throughout there is a steady upward rise in (family weighted) total family income in 1997 CPI-U dollars, from $35,628 in 1967 (1968 survey year) to $48,394 in 1996 (1997 survey year). The standard deviation of family income appears smooth through time up to 1979 and then from 1980 forward is higher and more variable per year. The explanation for this change is that prior to 1979 the topcode value of income was $99,999. In 1980 it was increased to $999,999 and in 1981 it was increased to $9,999,999. The reasons for topcoding at $99,999 prior to 1980 appear to have been limits on logical record length in the early file structures of the PSID and a concern that top values may be dominated by reporting error. The current philosophy is to provide as many digits as needed to portray the full range of income, to check to be sure that insofar as possible these high values are valid and not keystroke errors, and allow the analyst to deal with issues of robust estimation.

For the period 1968 to 1993, income was also bottom coded at $1. This means that a few families with negative total family income, arising typically from a business or farm loss were set to $1. For 1994-1997 the Income Plus files allow a negative total family income. For the purpose of constructing Figure 1, the negative and 0 values for 1994 to 1997 were set to $1 to maintain comparability with pre-1994 bottom coding. One purpose for bottom coding appears to be simplicity in calculation income-to-needs ratios, a key goal in the study, particularly in its early years when the central focus was the study of poverty and income needs of the U.S. population.

The data in Figure 1 show a higher standard deviation after the top coding change in 1979-1980. This is not surprising, and Figure 2 shows the total family income series 1968-1997 if the

topcoding at $99,999 had been extended throughout. In that case the standard deviation is always below the mean and exhibits relatively little year-to-year variation throughout. The standard deviation in total family income in the Income Plus files for 1994-1997 seems quite in line with the long term pattern.

Figure 2



A concern is that even with careful data processing with IPS and individual case editing, the CATI based income could be dramatically different from paper and pencil and individual editing prior to 1993. One simple check is suggested by referring back to Figure 1. Throughout the period when topcoding was extended to $9,999,999 there are much larger year-to-year variations in the cross section standard deviation of total family income. Further there are three post-1979 'episodes' of notably higher standard deviation values: the early 1980's recession and recovery of 1981-1983, the late 1980's expansion of 1987-1989, and the post-Gulf War expansion of 1994-1996. There does not appear to be a pure CATI effect, since 1993 differs from 1994-1996 and 1997 is about in the same range as 1993. Within the CATI years, then 1993 and 1997 are 'low' in terms of post-1980 values for the standard deviation, and 1994-1996 are 'high' in these same terms.

Despite the apparent similarity in the overall cross sectional income measures (after an enormous effort to maintain comparability in the face of extensive technical changes) the output from each year since the 1992 survey has had its own set of special input problems, owing to successive changes and improvements in the CATI software. In 1993 there was a migration from the

traditional paper questionnaire to an initial CATI application. This has the potential to have created a seam problem in the income data, given the complex structure of the PSID question sequences designed to measure income at the detailed component level by person within the family. In processing the 1993 family income there was a need to create an initial version of our software system which paralleled the pre-1993 system of software and editing of paper questionnaires. This is necessarily different in numerous details from the prior system, again creating a potential seam in the income data. For 1994 there were additional changes to CATI and the 1994 data in these files, as noted above, have been processed by the CATIINC 3.0 software. From 1995-1997 the CATI system had been stabilized and we are applying the same software for these files, so these 1994/5-1997 family income data should be quite consistent with one another.

The issue for researchers to consider then is a potential double seam created by a shift to CATI and a concomitant change in the processing software in 1993 and 1994. It is our judgment that the seam problem created by CATI collection itself was quite minor. To illustrate, a 1994 study of recording errors in 200 cases assigned to CATI and 200 cases in paper and pencil shows similar rates of recording errors. The potentially far more important source of non-comparability is in the processing system – the system which takes partial and otherwise anomalous cases and reaches an estimate or imputation for a 'final value'.

Taking the processed 1994-1997 output from CATINC 3.0, cases were reviewed and adjusted, if that was deemed best. For example, by misreporting the `per' variable, a respondent could have $75,000 `per year' miscoded as $75,000 `per week'. A file of these corrections was kept, by year, so that those wishing to apply alternative editing judgments can do so. In the paragraphs below we provide the user with a selection of the extreme cases which we `hand edited' after having employed our program to compute family income and its components.

We have recently (September - December of 2000) reviewed the labor income of head and wife and have `hand edited' an additional set of the cases with high values of transfer income. The components of transfer income are very diverse. This has made it difficult to carefully evaluate outliers without a case by case review of the interview and interviewer thumbnail comments—plus information on the family from prior and subsequent years. Analysts are urged to exclude or otherwise allow for cases in which the value of transfer income is above the top 99.5 percentile point. Also, analysts may want to either exclude or allow for these cases n the analysis of income totals which have such extreme values in them (i.e. total family income, taxable income of the head and wife) or to assign the transfer income part of these family aggregates to zero or the median of transfer income.

ILLUSTRATIVE POST SOFTWARE CASE `HAND' OR JUDGMENTAL EDITING:

1997 ID=02314 had Social Security income of $1,214,952. The head reported $15,000 a year, and the wife reported $99,996 per month! Checking the marginal notes, we read that the COMBINED head and wife Social Security income was $15,000 for the year; the interviewer entered this amount for the wife intending to alert us to the fact that head and wife couldn't separate their respective amounts. (It worked, but this is not what she would have been advised

to do—yet she made this judgment on the spot to continue the interview.) We recoded the amount to $15,000.

1997 ID=01368 had head and wife transfer income of $347,041. This was due to an `other retirement pension' amount of $308,712. From other evidence, the amount seemed unlikely for this family. We checked back to 1996, where the same item was reported as $3,087. It appears that the 1997 other pension reported amount is missing a decimal and should be $3087.12, or rounded to $3087. In addition, this family reported $38,329 from "anything else" (miscellaneous transfers), with no marginal note explaining the source. Checking the 1996 and 1995 interviews, no similar amount had been reported. We judged that the $38,329 is a lump sum payment of some kind, probably health insurance reimbursements—the head has been ill, in and out of nursing homes and hospitals. So their total transfers were entered as $3087 for 1997.

1997 ID=05135 had other family unit member (OFUM) transfer income of $221,132. Two OFUMs, a son and a girlfriend, were in this family unit (FU). The son reported $511/month of Supplemental Security Income (SSI), received all year, for a total of $6132. The girlfriend reported "anything else" of $10,000/week received in Jan, Mar, June, August, and November. Aside from the fact that it appears she means $10,000 per year, this money is from student loans and should be entirely removed from income. We never consider loans as income, period. So total OFUM transfers for this case=$6,132.

1996 ID=00427 had head and wife transfer income of $238,446. Here are all the non-labor components: the `wife' reported $500/yr dividends—which seems ok, $2000/yr interest—which seems ok, but $18,000 per WEEK help from relatives! This is not ok! Checking back to 1995, she reported $20,000 per year for the same thing. So the `per' time unit was judged to be `per year' rather than `per week'. In addition, head reported $18,000 per year in help from non-relatives. The marginal notes make it clear that this is double-counted with the `wife's'. So their total transfers were judged to be $20,500 per year.

Cases of this sort were quite rare. When it is remembered that the field-based input on the part on interviewers for these files consisted of approximately 1.5 million data entries, the presence of some outlier cases is not surprising. Interviewing is a delicate art of continuing to engage a respondent who is providing a lengthy and complex interview via telephone. Some errors are inevitable, and not all will be caught in our processing and hand editing systems. Users need to keep this in mind and are advised to calculate descriptive statistics and quantiles on the groups and subgroups in their analyses. Users should also realize that in looking at individual cases, changes were made only if there were fairly obvious indications of misreporting (as illustrated above). Our approach is not nor has it ever been to second guess respondent reports or stylize the economic reality of the families in our study.

The tradition in the PSID has been to set income data with negative or zero total family income values to $1. For these files of the 1994-1997 years, those with negative or zero total family income (arising, e.g., from a business loss or from living on liquidated assets) were simply left as negative or zero values. As discussed above users wishing to increase time series consistency may want to allow for this difference.

While we have listed and adjusted obvious outliers, there are two remaining data issues which analysts should recognize.

There are 519 working wives who were skipped past the labor force CATI checkpoint in the income question series in the 1994 Survey. In the process of revising the Income Plus file, the income variable for those respondents was first flagged and was imputed using various methods including cross-year imputation. As a result, the 1994 cases of wife earnings that were treated by the IPS is increased relative to other years (see Section V: Income Editing Procedures).

We have made numerous data checks by looking at time series of descriptive statistics for the years 1968-1997. Nonetheless, this is a new and complex system and income is itself highly dispersed. For analysts, robust estimation and descriptive techniques should be the order of the day.

Finally, we note that the data used in this paper are all in 1997 dollars (CPI-U, 1982-1984 = 100). (The data in the released files are *not* in 1997 dollars, rather they are in actual amounts). The relevant CPI-U values are:

1997: 160.5
1996: 156.9
1995: 152.4
1994: 148.2
1993: 144.5
1992: 140.3
1991: 136.2

The conversion factors which were applied to the data by (calendar) year data were:

1997: 160.5/156.9 = 1.02295
1996: 160.5/152.4 = 1.05315
1995: 160.5/148.2 = 1.08300
1994: 160.5/144.5 = 1.10727

For those working with data from 1991-1993 to study time series patterns the conversion factors would be:

1993: 160.5/140.3 = 1.14398
1992: 160.5/136.2 = 1.17841

There was a study comparing the PSID and CPS, 1969-1991, by Greg Duncan, Timothy Smeeding and Willard Rodgers (Household Income Dynamics in the 1970's and 1980's, working paper, April 24, 1995), based on families headed by a 25-54 year old. The study showed that, particularly for the Gulf War Recession year, 1991, the PSID and CPS do line up relative to their values as of 1969. However, in the mid to late 1980's the PSID (with 1969 as the reference year) was showing substantially lower income at the lower (20 and lower) percentile points. One interpretation is that while the PSID gets a more complete income picture (more components and

detail and therefore less underreporting), in more recent years we also get a better response from people with low income and assets. This has come up in the wealth area where, in contrast to evidence from some other studies, we show that African Americans are less likely to have a bank account in the 1990's compared to the 1980's (see Erik Hurst, Ming Ching Luoh and Frank Stafford, "Wealth Dynamics of American Families, 1984-1994," Brookings Papers on Economic Activity," (1998:I), p. 296-301). These low income and low asset ownership respondents, one can hypothesize, actually report how low their income and assets are in the PSID.

In summary, there are several points to bear in mind in CPS/PSID household/family income comparisons. 1. 1991 was a special (vintage) year in terms of CPS/ PSID alignment. 2. Both studies have potentially significant data seam problems in the 1990's. The post 1992 survey year CATI and processing of CATI issues for the PSID have been noted above. 3. At the median there appears to be an approximately a 0-5% PSID/CPS difference in medians between CPS and PSID for 1994(93) through 1997(96).

Table 1
Median Family Income PSID and CPS Comparison

	PSID Median (1997$)		CPS Median (1997$) *
	Release of		
	March 1999	December 2000	
1993 (1994 Survey)	$32,749	$33,321	$34,432
1994	$34,607	$34,654	$34,807
1995	$35,070	$35,173	$35,807
1996 **	$34,985	$34,903	$35,979

* Source: http://www.census.gov/hhes/income/dinctabs.html

** In 1997, we were forced to drop 2,843 of the 3,967 families in the SEO (low income) sample because we were not successful in our efforts to secure funding for the continued data collection for this part of the core sample. The sample suspension as of 1997 and every other year interviewing changes after 1997 are discussed in our April, 1997 PSID Newsletter and our April, 1998 PSID Newsletter (viewable at this website). The 1997 family weights have been designed to apply to either the remaining pre-1997 PSID core (allowing for the 2,843 dropped SEO cases) or the 1997 core, which now includes the new sample of post-1968 immigrant (P68I) families.

II. Data

There are four data files: the 1994, 1995, 1996 and 1997 Family Income and Components Files. Each file contains information about Total Family Income, which is the sum of Taxable Income of the Head and Wife plus Transfer Income of the Head and Wife plus Taxable Income of Other Family Unit Members plus Transfer Income of Other Family Unit Members plus Social Security Income.

Also included are: Farm Income, Business Income, Labor Income of the Head, Labor Income of the Wife, and (for 1994) whether the labor income of the wife was assigned by imputation (as the

product of 1994 Survey Year hours times 1993 Survey Year wage rate). The state of residence, as defined by the PSID and FIPS state codes, is also included for each wave. Occupation and industry codes are added to the 1994-1996 files; these variables were not included as part of those early-release main files because they had not yet been coded when those files were released. In addition, the revised income plus file includes various components of labor income so that it helps users to identify which part of labor income might be imputed. Also variables for number of businesses owned by the family, head, and wife were generated as a by-product of the IPS. Finally, not only the total business income but also the disaggregation of labor and assets parts of the business income for Head and Wife/"Wife" are generated.

Finally, both USDA and Census needs standards have been added for all four years. Note that a very few cases have missing data in these variables (1 case in 1994, 3 in 1995, 6 in 1996, and 1 in 1997). The early release family data files, which match the Income Plus files, included some family records that will not appear on the archive releases of the family files. (Cases can be invalidated for various reasons, e.g., a splitoff interview was found to be invalid because the splitoff had moved back home before the splitoff interview was taken.) The needs variables, however, were calculated using the cross-year individual file, which did not include individuals from those invalidated families.

These 1994-1997 Family Income Files contain one record for each family interviewed in 1994-1997. For each year, the file includes a special sample of recontacted respondents (notably numerous in 1994), as part of a large methodology study. These 1994-1997 files do not include the special Latino sample. The case count of families in the 1994 Family Income File is 8659. For 1994 the case count of families that have a non-zero family panel weight (see the weights files for 1994-1996 released 9/98) was 7747. The difference is the consequence of the recontact families. They can be used for some analysis purposes, but simply have a zero family weight. Parallel differences of this sort exist for 1995 and 1996. Users wishing to apply FAMILY WEIGHTS in their analysis will need to visit the weight section of the data library (PSID Data Files, 1993-1997). (We do not place the Family weights here for the sake of controlling redundancy in our data library and website.)

The 1997 weights are complicated by sample suspension and the addition of a refresher sample of post-1968 immigrants, but they are now available and can be applied to these 1997 family income variables.

These 1994-1997 data may be subject to relatively minor changes once the archive-release versions of the 1994, 1995, 1996 and 1997 family files become available. The data are in raw ASCII form. Refer to the data definition statements—SAS or SPSS—for record format layout information, variable names, variable labels, and missing data codes.

Table 2
File Attributes and Variables for Data Files

File Name	Records	LRECL	Num of Variables
FAMINC94	8,659	229	48
FAMINC95	8,570	228	48
FAMINC96	8,517	225	48

FAMINC97	6,307	215	44

III. SAS & SPSS Data Definition Statements

These files contain SAS and SPSS data definition statements providing information about the variables in the data files. Two files, one of each type, SAS and SPSS, corresponding to each data file, are provided. The naming conventions are the same as for the data files, e.g., FAMINC94.SAS contains SAS statements for the 1994 Family Income data file, and FAMINC94.SPS contains SPSS statements for the 1994 Family Income data file. Similar files also exist for 1995-1997.

The data definition statements provide variable names, variable labels, locations. These processed files have no `missing' data.

The SAS and SPSS data definition statements are NOT intended to represent completed and full programs for the respective statistical program packages to run extracts, analysis, etc. You must provide all other SAS or SPSS statements needed to complete a program. Users wishing to migrate to other formats may use a commercial software for such purposes, such as STAT/TRANSFER.

IV. Documentation

The following machine-readable documentation files are provided for the designated data files.

Table 3
File Description and Attributes for Documentation Files

Contents	Filename	Approximate Printed pages
Notes on the 'Income Plus' Files	YPlsNote.doc	16

V. Income Editing Procedures

General Editing Rules for Labor Income

In a given year of PSID, the data were first screened to detect potentially problematic values for each component of the head and wife's labor income variables. Programs were written to flag: 1) Don't Know (DK) and Not Applicable (NA) (e.g., 9999998, 9999999) ; 2) 'short' or less than full field width codes (e.g. 9999, 9998); and 3) keystroke errors (e.g. 9996, 88889). The resulting numbers of such instances for the head and wife are reported in Tables 4 and 5.

Table 4
Number of flagged cases in head's labor income

PSID	FRM	WG	BNS	OVT	TIPS	COM	UK	PRA	GAD	RM	XTR	Total
94	30	579	33	81	9	12	0	19	5	0	29	797
95	30	454	20	65	11	11	0	11	1	1	13	617
96	18	381	27	47	5	6	0	8	4	1	16	513
97	20	285	31	33	6	6	6	3	3	1	8	402
Total	98	1699	111	226	31	35	6	41	13	3	66	2329

* FRM = Farm income, WG=Wage and salaries, BNS=Bonus, OVT=Overtime, COM=commissions, UK=Unknown Jobs income, PRA=Professional practice, GAD=Market Gardening, RM=Roomers and Boarders, XTR=Extra job income.

Table 5
Number of flagged cases in wife's wage income

PSID	WG
94	732
95	160
96	156
97	145
Total	1193

Needless to say, these values must be replaced by real values so that any level of aggregation of labor income components yields meaningful amounts. To obtain an informed value, the following data elements were examined: 1) cross-sectional information such as from the employment section; 2) cross-year information for the same family; 3) the cross-sectional distribution from the current year employment section. When all these efforts failed to deliver a candidate value, interviewers' notes were read for a possible explanation.

As indicated in Tables 4 and 5, the two most problematic components are "Wages and Salaries" and "Overtime". The procedures for these two components are discussed below.

1. Wages and Salaries:

Wages and salaries reported in G13 and G52 should not include income from an unincorporated business. For such cases a zero amount was assigned and the amount was relocated to the business income section. There is useful contextual information for wages and salaries (G13 and G52) in the employment sections (B, C, D and E). By definition, wage and salary income must be closely related to hours of work.

In the case where G13 or G52 had a potential problem, the characteristics of all jobs (excluding unincorporated business jobs) reported by the head (wife) were examined. For each job, wage and salary were calculated based on hours of work (= how many weeks work times how many hours per week) and the hourly wage rate. When the number of weeks was not reported, the month strings of the job (weeks = # of months worked times 4.33) were used as a proxy. Then, wage and salary income of each job that head had reported was aggregated. In some cases, hours of work and wage and salaries of other years were compared. In many cases, the wage rate (after CPI adjustment) and hours of work in other years provide useful information in imputing amounts. The variables from the employment sections, month strings for work history, were a central input to editing.

For the remaining cases, reference was made to the cross-sectional distribution of the variable. For sake of continuity, the assignment method documented in previous years of the PSID was generally followed. The basic principle is that cases are grouped jointly by several categories such as occupation, home ownership, and type of housing. In this revision of income processing, geographical characteristics (urban vs. non-urban) were also added in the assignment. Figures 3 and 4 show the assignment groups. For each group, the mean of hourly wage rates was calculated (as reported in Tables 6 and 7). To impute amounts for missing cases, hourly wage rates from corresponding groups were used.

Finally, when all the above methods failed, the median of wage and salaries was substituted. The number of cases for median substitution are: 677 in 1994, 202 in 1995, 227 in 1996, and 0 in 1997.

2. Overtime:

In the cases where overtime amounts needed to be replaced, first wage rate and hours of work in Sections B and D were examined. If the head and wife were currently employed, respondents are asked questions about wage rates for any extra hours. For example, in the case where the head's main job is salaried or commissioned, B15 asks "About how much would you make per hour for those extra hours?" (with choices of 1 = time and half, 2 = double time, …). A similar question appears in B17 when the head's main job is not salaried or commissioned. Along with extra work hours and hourly wage rate, this information can be used to impute a value of overtime earnings.

In some cases, the reported hours for overtime work (B81) was an excessively large number. Probably, some respondents were confused between overtime hours and excessive hours. To deal with such cases, a restriction was imposed such that overtime work = min {10% of total work hours, overtime hours reported}. For cross-year comparisons, ratio of overtime earnings to earnings in other years was calculated, and this ratio was used in the imputation.

Figure 3
Assignment Groups: Hourly wage rate for Head:

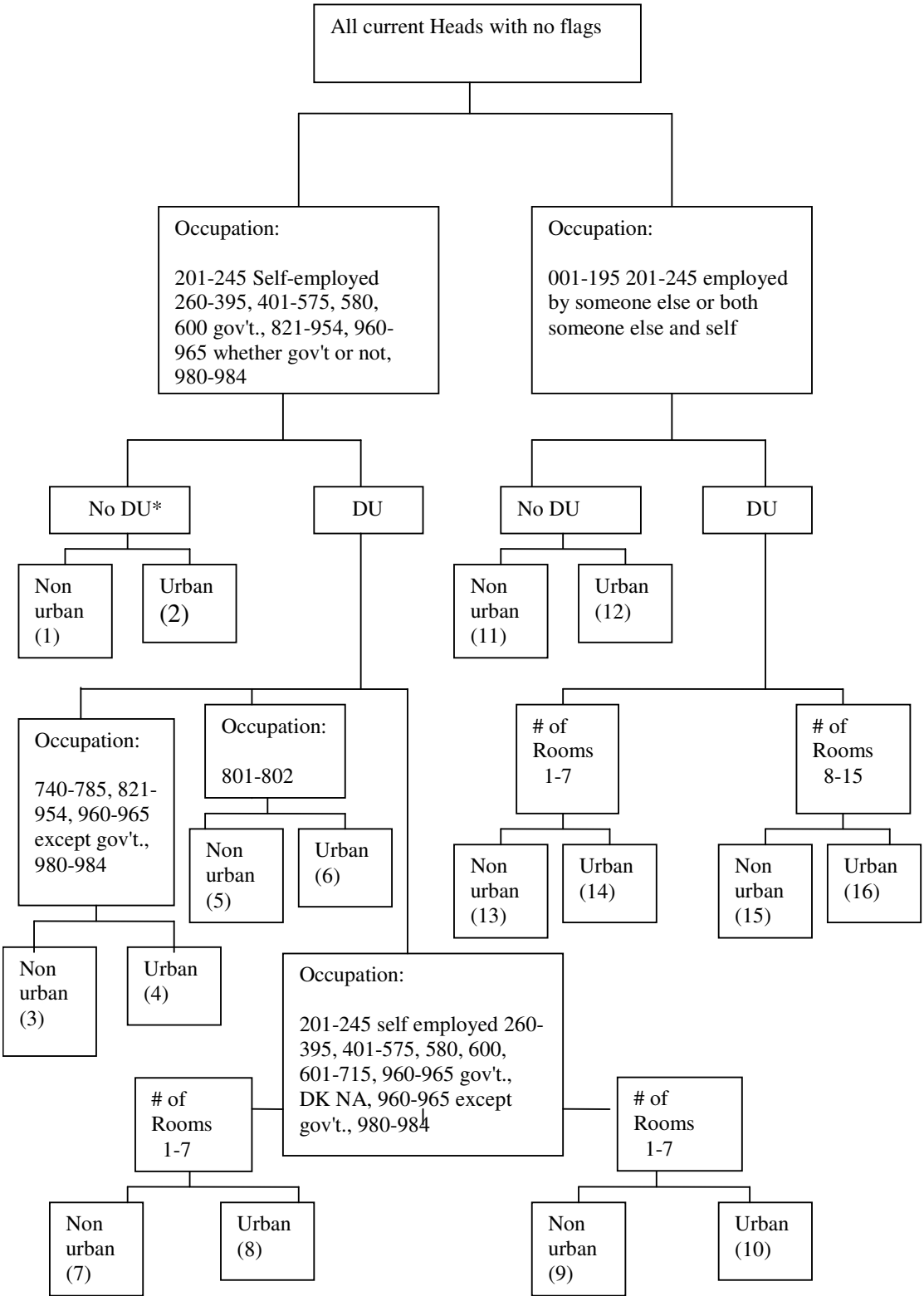

All current Heads with no flags
Occupation:
201-245 Self-employed 260-395, 401-575, 580, 600 gov't., 821-954, 960-965 whether gov't or not, 980-984
Occupation:
001-195 201-245 employed by someone else or both someone else and self
No DU*
DU
No DU
DU
Non urban (1)
Urban (2)
Non urban (11)
Urban (12)
Occupation:
740-785, 821-954, 960-965 except gov't., 980-984
Occupation:
801-802
# of Rooms 1-7
# of Rooms 8-15
Non urban (5)
Urban (6)
Non urban (13)
Urban (14)
Non urban (15)
Urban (16)
Non urban (3)
Urban (4)
Occupation:
201-245 self employed 260-395, 401-575, 580, 600, 601-715, 960-965 gov't., DK NA, 960-965 except gov't., 980-984
# of Rooms 1-7
# of Rooms 1-7
Non urban (7)
Urban (8)
Non urban (9)
Urban (10)

Table 6
Assignments for Head's Hourly Wage Rate

PSID 94

group	n	Min	max	mean	std
1	371	1.07	147.66	8.47	10.00
2	2081	1.00	162.67	9.60	9.35
3	120	1.35	166.88	9.19	15.38
4	324	1.00	113.75	10.76	10.80
7	411	1.29	100.00	11.60	8.92
8	1261	1.37	161.85	14.48	10.22
9	84	1.09	50.60	14.41	8.58
10	320	2.08	183.33	20.48	18.57
11	65	1.52	63.49	11.64	8.91
12	525	1.32	115.61	14.42	10.31
13	127	2.18	48.25	15.01	8.19
14	644	1.63	176.00	21.08	16.24
15	58	1.16	52.00	17.68	10.43
16	409	3.40	178.57	30.13	23.09

PSID 95

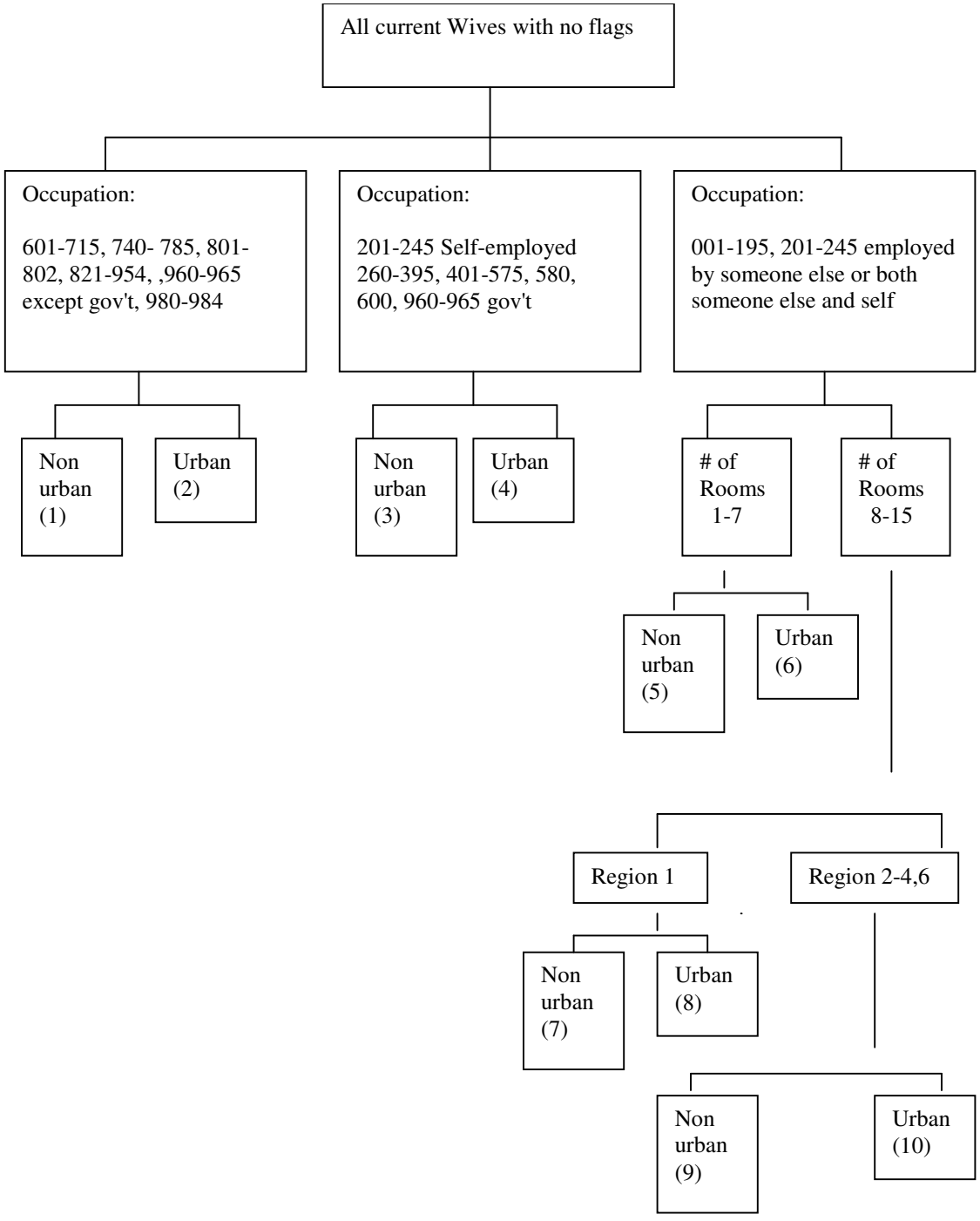
group	n	Min	max	mean	std
1	422	1.07	94.57	9.22	7.73
2	2012	1.02	104.25	9.46	8.20
3	69	1.69	42.64	9.06	6.33
4	377	1.21	91.43	10.38	10.04
7	299	1.65	125.00	13.82	9.90
8	1324	1.03	182.55	14.38	11.80
9	94	1.25	171.22	21.92	19.66
10	338	2.64	146.94	19.29	14.52
11	111	1.69	83.56	14.76	12.28
12	463	1.02	120.45	14.70	11.26
13	165	1.04	90.91	18.97	10.64
15	96	3.85	170.07	29.44	24.35
16	345	2.92	191.49	28.40	19.88

PSID 97

group	n	Min	max	mean	std
1	342	1.12	53.12	8.21	6.10
2	1612	1.00	96.34	9.85	7.95
3	114	1.07	86.09	9.56	8.66
4	229	1.11	44.80	10.94	6.16
7	377	1.01	105.47	12.47	9.27
8	955	1.15	192.46	15.60	12.42
9	85	1.44	37.12	13.95	7.36
10	305	2.50	163.27	22.94	20.12
11	79	1.50	57.33	11.17	8.23
12	471	1.56	175.53	14.47	11.47
13	125	1.46	35.42	14.40	6.10
14	556	2.05	150.00	20.84	13.42
15	46	2.61	64.00	21.55	12.31

16	384	2.25	191.49	30.55	22.18

Figure 4
Assignment Groups: Hourly Wage Rate for Wives:



Region 1 = Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont

Region 2 = Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin
Region 3 = Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Washington, D.C., West Virginia
Region 4 = Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming
Region 5 = Alaska, Hawaii
Region 6 = others

Table 7
Assignments for Wives Hourly Wage Rates

PSID94

group	n	min	max	rate	std
1	173	1.03	5.49	2.45	1.04
2	477	1.00	14.27	2.70	1.64
3	162	1.03	11.90	2.99	1.48
4	856	1.03	40.35	3.55	2.58
5	60	1.03	9.79	3.41	1.87
6	336	1.01	14.59	4.72	2.51
7	60	1.03	9.10	4.39	1.87
8	271	1.03	42.93	5.98	3.79
9	6	5.24	8.93	6.88	1.52
10	80	1.03	13.56	6.36	3.30

PSID95

group	n	min	max	rate	std
1	122	1.03	5.75	2.28	1.01
2	621	1.01	90.23	2.82	3.79
3	233	1.01	12.88	3.45	2.07
4	931	1.03	37.77	3.51	2.37
5	101	1.12	15.43	4.30	2.58
6	370	1.03	30.19	4.67	2.94
7	111	1.03	14.59	5.47	2.78
8	327	1.03	27.47	5.86	3.33
9	8	3.43	9.44	6.86	1.90
10	88	1.16	24.04	5.48	3.11

PSID96

group	n	min	max	rate	std
1	195	1.03	12.02	2.58	1.24
2	361	1.01	9.44	2.94	1.63
3	195	1.03	10.00	2.98	1.53
4	801	1.03	38.63	3.86	2.63
5	87	1.03	9.39	3.81	1.95
6	359	1.03	16.23	4.78	2.47
7	86	1.03	13.05	4.15	2.26
8	328	1.03	24.04	5.92	3.29
9	9	3.92	10.04	7.28	2.12
10	89	1.03	47.22	6.63	5.51