



Antecedents and predecessors of NLSY79: paving the course

A historical view of the NLSY79 development stages highlights lessons learned during an era filled with new concepts and innovations in sociology, economics, and computer science

James R. Walker

In 1965, at the prompting of the Assistant Secretary of Labor, Daniel Patrick Moynihan, individuals from the Department of Labor (DOL) and Ohio State University designed the National Longitudinal Surveys of Labor Market Experience. At the time, the participants did not realize that they were creating one of the premier, large scale national longitudinal surveys in the United States. Initially funded for 5 years by the Department of Labor, the “Parnes” data, as the Original Cohorts were called, continued for 37 years, with the last scheduled fielding of the women samples in 2003.¹ The success of the Original Cohorts led to the creation of the National Longitudinal Survey of Youth (NLSY79).

This article explores antecedents and predecessors of the National Longitudinal Survey of Youth, 1979.² Longitudinal data are now so plentiful that it is difficult to imagine the world in which they did not exist. Yet, in the mid-1960s, the large scale longitudinal household surveys that came to dominate areas of sociology, demography, and labor economics did not exist. Analyses that are now commonplace were either not possible or inference was restricted to small or specialized samples.

Yet to suggest that there were no longitudinal data sources prior to 1965 is wrong; several longitudinal surveys predate the NLS. Two well-

known studies reflect the nature of longitudinal data available before the start of the NLS. The Glueck study of juvenile delinquents from the Boston area followed 1,000 adolescents (500 juvenile delinquents and 500 non-delinquents) into adulthood to examine criminal behavior and contact with the justice system.³ Sheldon and Eleanor Glueck started interviewing at the end of 1938, completing the first wave of interviews in 1948. Two more waves of interviews followed as the youth were interviewed at ages 25 and 32. Interviews continued until 1965.

The other study available before the NLS, and perhaps more visible to economists, is the National Bureau of Economic Research (NBER)-Thorndike sample, collected from Air Force volunteers during WWII. In 1955, R. Thorndike and E. Hagen randomly selected 17,000 of the 75,000 Air Force volunteers who took the Aviation Cadet Qualifying Test in the second half of 1943 (a test similar in function to the Armed Services Vocational Aptitude Battery (ASVAB) tests that NLSY79 respondents took to set a norm in recruiting standards for the Department of Defense). In 1969, with funding from the NBER, Paul Taubman and his colleagues reinterviewed about 5,000 of the original 17,000 members of the Thorndike sample, obtaining information on current and retrospective earnings, education, and occupation. These data have been widely used to study the determinants of earnings,

James R. Walker is professor of economics in the Department of Economics, University of Wisconsin-Madison. E-mail: walker@ssc.wisc.edu.

ability bias, and the return to schooling (that is, benefits associated with higher levels of schooling).⁴

A number of other specialized longitudinal studies were launched in the decade prior to the NLS. These efforts surveyed teen mothers, drug users, gifted children, and children from privileged and underprivileged backgrounds.⁵ These studies shared features like the Gluecks' study and the NBER-Thorndike study in that they were local in character with limited or irregular longitudinal followups. However, several studies are impressive and cover a long arc of their respondents' lives.⁶

Antecedents

Scientific frontiers. Two critical elements came together in the 1960s supporting the development of large, household surveys. First, the social science field had developed the conceptual foundation supporting the use of longitudinal data. Within the fields of psychology and sociology, researchers and scientists fostered the life course perspective, viewing human development as following a sequence of stages.⁷ And second, in the economics field, human capital became the organizing conceptual framework. In his 1960 Presidential Address to the American Economics Association, T.W. Schultz presented his influential thoughts on human capital.⁸ The human capital theory quickly became a central concept for understanding the determinants of wages, the structure of earnings, and more generally, the distribution of economic opportunities. Labor economists sought to measure the return to schooling, labor market experience, and tenure with an employer. Social scientists sought to understand schooling decisions, both in terms of quantity (the amount of schooling obtained) and in terms of quality (types of post secondary schooling).

Intervention and experiments. The intellectual primacy of measuring education and training fueled and was fueled by the era of big social science and policy interventionism of the mid-1960s. In 1964, the Johnson Administration announced the War on Poverty. Education and training programs were among the most important anti-poverty programs proposed. Thus, measuring and understanding the determinants and consequences of poverty required the collection of new, longitudinal household level data. The Department of Labor, Office of Economic Opportunity initiated a survey of the same name in 1967, followed by the Panel Study of Income Dynamics (PSID), conducted by the Census Bureau in 1968.

The mid-1960s also witnessed the negative income tax experiments in Gary, New Jersey; Seattle, Washington; and Denver, Colorado. These experiments varied in size and focus, but each was large with sizable treatment and control groups. And, unlike the NLS and PSID surveys, which "only" collected

information on the respondents, the experiments were more ambitious, comprising both an important experimental design component and an extensive data collection component. Also, the experiments generated another source of longitudinal data and provided additional demands for their analysis and interpretation.

Yet, conducting the social experiments reflected certain optimism (as it only makes sense to investigate the source of the disease if remedies are available). Indeed, demand for these new forms of data were perhaps driven by the belief in the effectiveness of interventionist economic policies, and particularly labor market policies to enhance human capital. In 1962, Congress passed the Manpower Development and Training Act, which generated an array of training programs targeted to the low-skilled, unemployed, and underemployed population. The Comprehensive Training Act of 1973 attempted to unify the existing Federal programs, and initiated programs to additional groups (for example, welfare recipients). The quasi-experimental designs of the 1960s and 1970s called for longitudinal data that could be used to compare labor market outcomes for treatment groups and control groups. These outcomes were matched with observable personal characteristics for at least two points in time (for the treatment group, before and after training). The need for individual longitudinal data is transparent. Indeed, a primary motivation for the NLSY79 cohort was "to permit a replication of the analysis of the 1960s Young Men and Young Women cohorts and to assist in the evaluation of the expanded employment and training programs for youth legislated in the 1977 amendments to the Comprehensive Training Act of 1973."⁹

The analysis gap. Analyses of longitudinal data started appearing in the major journals about 10 years after data collection. To prove this, Frank Stafford assessed empirical practices within labor economics according to the content and practices of labor papers published in the top economics journals.¹⁰

For example, Stafford reports that more than half of the papers published in the six major journals in the first half of the 1960s on labor market topics were theoretical, with no empirical analyses. Of those reporting empirical analyses, (national) time series data or aggregate (say, to the State or metropolitan area) cross section data comprised the vast majority of published work. Nearly one-fifth of the empirical papers of the time period reported on tabulations and data summaries published elsewhere (Stafford's term for secondary analyses). Not surprisingly, given the (virtual) absence of panel data, no papers during this period were published using panel data. And, only one paper using panel data appeared in the top economics journals in the second half of the 1960s. The top journals witnessed a small but

steady stream of papers using longitudinal data in the early 1970s;¹¹ a stream that turned into a river in the second half of the 1970s and early 1980s.

Joshua Angrist and Alan Krueger update Stafford's tabulations into the late 1990s.¹² By this time, microdata, cross sectional, and longitudinal analyses have increased their dominance—now fully 85 percent of empirical papers in the top economics journals on labor market topics use microdata. The micro-files of the Current Population Survey (especially the March Income Supplement) was the most popular cross sectional source of data; and the Panel Survey of Income Dynamics and the NLS cohorts dominate the longitudinal-based studies.¹³ However, the dominance of the PSID and NLS as longitudinal data sources weakened as economists increasingly (if not frequently) frame and collect their own longitudinal data sources. The value of longitudinal data used to address particular questions is evident from the variety of longitudinal data collected.

The computer revolution. Implicit in Stafford's and Angrist and Krueger's tabulations is that there is a 10-year lag between the start of a panel and widespread use of the data. This lag is surprisingly constant, though the reasons behind it vary with each cohort. For the original cohorts of the NLS and the PSID, longitudinal data were new and analytically and physically cumbersome to use. Computing power in the mid-1960s was a fraction of what it is today. Computing was done in centralized locations, using mainframe computers maintained by specialized staff. Commonly used equipment, such as keypunch machines, card readers, magnetic tape drives, and impact line printers can now be found only in museums. The personal computer revolution was a solid 15 years in the future. Disk drives and other convenient large scale storage devices did not exist. Tabulations easily produced in a matter of seconds on a desktop computer today required "spinning tapes" on the mainframe, assistance from the tape machine operator, and literally hours of computer time. Empirical researchers acquired nocturnal habits, as all significant computing was done at night. Notions of the solitary scholar are almost always wrong, but certainly did not apply to the early pioneers analyzing microdata.

It is also true that the profession had to develop the statistical procedures and analytical skills for working with the longitudinal data. With a few notable exceptions, most of the initial statistical procedures for panel data were developed after 1965. The increased computational capacity of the computer revolution was also necessary to support the new statistical procedures.¹⁴

Longitudinal versus household data. Besides acquiring statistical techniques, researchers had to appreciate the advantages and disadvantages of longitudinal data.

Arguably, we continue to relearn these lessons. The chapters by Stafford and Angrist and Krueger are informative on this dimension and on the contemporary research frontier. Stafford's chapter enumerates the advantages and disadvantages of longitudinal data, and compares data collected by household surveys versus those collected by program or social experiments. In Angrist and Krueger, the comparative advantage of panel data is presumed, and the discussion focuses on empirical and modeling strategies for recovering causal effects.

The original cohorts

From this intellectual and policy context, the original four cohorts of the National Longitudinal Surveys of Labor Market Experience were designed to represent the U.S. civilian noninstitutional population at the time of the initial survey. The surveys were funded by the Office of Manpower, Automation, and Training (now, the Employment and Training Administration) of the Department of Labor, and conducted by the Center for Human Resource Research of Ohio State University. Specifically, the original cohorts are: Older Men Ages 45–59 in 1966; Mature Women ages 30–44 in 1966, and two cohorts of youth, Young Men ages 14–24 in 1966; and Young Women 14–24 in 1968. Initially, each cohort was to be interviewed annually for 5 years for a total of six interviews), with about 5,000 individuals per cohort. However, cost considerations after the first wave of interviews changed these plans. As a result, the older cohorts were interviewed biennially, with the Mature Women interviewed in both 1971 and 1972 to place an interview year at the end of the 5-year period. Because of high retention rates and widespread use by the research community, the surveys secured another 5 years of funding in 1972, and again in 1977 when the decision was made to start a new youth cohort, the NLSY79.¹⁵

As previously noted, a fundamental purpose of the NLS has been to provide relevant information on a variety of issues to assist the research of economists, sociologists, and other analysts. This mission motivated the selection of the original cohorts. For example, the first cohort of Older Men (45–59 in 1966) was selected to study factors associated with declining labor force participation, such as skill obsolescence, health problems, and age discrimination. The Young Men's Cohort (14–24 in 1966) and Young Women's Cohorts (14–24 in 1968) were selected because of the problems associated with the preparation for, initial entry into, and adjustment to the labor force.¹⁶ Problems of the youth labor market generated concern and added to contemporary debate on topics such as teen unemployment, family effects on youth employment, the effect of minimum wages, and barriers impeding the transition from school to work.¹⁷

Increased labor force participation by married women and

women with children is one of the great social changes of the second half of the twentieth century.¹⁸ The Mature Women's Cohort (age 30–44, in 1967) was intended to enable researchers to study women who were reentering the workforce and balancing the roles of homemaker, mother, and labor force participant.¹⁹

Wealth of information. The initial survey instruments focused on labor market activity. Instruments included the Current Population Survey (CPS) questionnaire to summarize current labor force status and a longer set of questions on work experiences and attitudes to work. Attention was given to collecting information on the respondent's current job (at the interview date) and if not working, on the longest job held since the prior interview. In addition, information on the number of weeks worked in the last calendar year and the reasons for not working are now collected. Information on education is also concentrated on the status at the time of the interview. Information on the current high school or college is collected, if the respondent has dropped out of school, why, or if the respondent returned to school, and reasons for the return.

Even in the focused instruments of the early rounds, the surveys exhibited an eclectic mix of questions on employment and (for the youth) education. Yet, the instrument also obtained information on health, training, assets and income, and family background. It did not take many years for the content of the instrument to broaden significantly and attain the breadth of coverage now associated with the NLS. As James Sweet, noted, this breadth is natural because of the diverse and competent set of scholars consulted about the instrument's content, and more importantly, that virtually every phase of life is and will be associated with some aspect of work.²⁰

The original cohorts had a tremendous impact on policy and on research. In October, 1977 the Social Science Research Council held a 3-day conference to review the NLS. The council's review was so extensive that it required five volumes of papers to summarize and evaluate the research contribution of the Original Cohorts. To give a flavor of the topics, exhibit 1 lists the table of contents to the report on the behaviors studied using the NLS Original Cohorts. Exhibit 2 lists some of the policy findings from individual assessments done in the early 1980s.

The NLS Youth cohorts could be used, like the NBER-Thorndike sample, to study the return to schooling while controlling for ability bias. One of the early uses of the NLS was to estimate returns to schooling. Microdata are needed to obtain information on the many background and contextual variables that would confound the analysis. The primary problem in estimating the return to schooling is controlling for ability bias—are there person-specific unobserved

variables (for example, motivation, parental support, intelligence) that affects both the amount of education and labor market earnings. Gary Chamberlain and Zvi Griliches wrote an influential set of papers using the Young Men's Cohort to articulate the issues involved and to provide initial estimates of the return education controlling for ability bias.²¹ Now, instead of using the NBER-Thorndike convenience sample, researchers could estimate the return to schooling using a nationally representative sample. Research on the return to schooling uncovered the weaknesses of the point-in-time measurement of the educational attainment. The NLSY79 schooling section was substantially extended and provided researchers with a wealth of in-formation.²²

More issues from the panel. In the late 1970s, as economists focused on life cycle events, they recognized the value of panel data to distinguish between outcomes generated by "state dependence;" that is, the true effects of the dynamic path experienced or of "unobserved" heterogeneity—fixed, but unobserved personal characteristics that may contribute to a set of outcomes. State dependence/unobserved heterogeneity debates arose in many literatures. A critical example at the time was whether unemployment "scarred" workers: did a long spell of unemployment damage the worker to make them less employable in the future? Or were workers with the longest spells of unemployment those with the lowest level

Exhibit 1 Table of contents from Social Science Research Council report, 1977

Labor supply

Female labor supply and fertility expectations; Child care and welfare; Marital instability; Male labor supply

Labor demand

Dual and segmented labor markets; Racial discrimination in the labor market; Sex discrimination in the labor market; Unionization and labor market differentials; Labor demand and structural factors – further considerations

Human capital and status attainment models

Human capital; Sociology of education status attainment

Unemployment

Job separation; Job search

Social psychological factors

Aging

Methodological research using the NLS

SOURCE: William Bielby, Clifford Hawley, and David Bills "Research Uses of the National Longitudinal Surveys," A Research Agenda for the National Longitudinal Surveys of Labor Market Experience, part V (Washington, DC, Social Science Research Council, Center for Coordination of Research on Social Indicators, 1978).

<p>Exhibit 2. Topics of the NLS Cohorts before 1979</p> <hr/> <p>Young Men and Young Women</p> <p>School to work transitions; Effects of minimum wage; Returns to schooling and ability bias; Impact of early employment on later success; Consequences of early childbearing among teenagers; Effects of unemployment insurance benefits</p> <p>Mature Women</p> <p>Effect of discontinuous work experience on earnings and labor supply; Balancing family and work demands; Market availability of child care and women’s employment; Effect of income tax on labor supply of married women</p> <p>Older Men</p> <p>Retirement decisions of older men; Effects of unemployment insurance benefits; General issues relating to the aging of the population; Relationship between health and employment; Broad range of socio-economic considerations of the elderly; Analysis of age discrimination in employment</p> <hr/> <p><small>SOURCE: Center for Human Resource Research, “The National Longitudinal Surveys and Public Policy” (Columbus, Ohio. The Ohio State University, no date); Duane Leigh, “The National Longitudinal Surveys: A Selective Survey of Recent Evidence,” paper presented at the American Economic Association Meetings (Washington, DC, Dec. 28, 1981); and June O’Neill, “Review of the National Longitudinal Surveys,” unpublished paper (Washington, DC, The Urban Institute, 1982). Review prepared for the Office of Research and Evaluation, Employment and Training Administration, Department of Labor.</small></p>

of skills that made them susceptible to more and longer spells in the future? As is well known, answers to these questions determine the type of appropriate policy response. For example, in the unemployment case, if scarring is present, policies targeted at eliminating long employment spells may be effective, but such policies would be ineffective if the long spells are primarily generated by unobserved individual characteristics. After nearly 30 years of professional experience in thinking about these issues (and with many applications supported by the NLS79), some researchers might view the early literature as naïve and simplistic, yet, there is no denying the authors’ intellectual excitement and vigor in these early papers. The authors were aware that they were breaking new ground and were excited about the analytical promises held by longitudinal data.²³

Impact of the original cohorts

The success of the Original Cohorts paved the way for the NLSY79. The promise of longitudinal data and the policy issues of the mid- to late 1970s called for another youth cohort.

Given a chance to field another cohort, the research community had an opportunity to correct some of the deficiencies of the original cohorts and to collect data on new topics. The participants of the Social Science Research Council review panel of 1977 were charged to:

- Provide a comprehensive review of research based on the NLS
- Identify new directions
- Suggest analytical strategies
- Comment on survey content

Conference attendees took their job seriously and provided thoughtful and broad perspectives of the NLS. Indeed, participants developed several critical suggestions that shaped the design of NLSY79. Most notably, the panel advocated collection of more extensive labor market experience data. A methodological paper by Burton Singer illustrated the analytical advantages of collecting event histories (that is, a full enumeration of the start and stop dates of all jobs held since the last interview).²⁴ The state dependence/unobserved heterogeneity analyses of the original cohorts highlighted the need for precise timing information to construct the correct temporal sequence of education, marriage, employment and fertility decisions and outcomes. The event histories collected in the NLSY79 is one of its innovations.²⁵

As noted, the Social Science Research Council review committee also recommended improved information on schooling. Here, the interest was to gain improved information on the type and nature of post secondary schooling, and especially on vocational training. At the time of the recommendation on schooling, the NLS program was housed within the Employment and Training Administration of DOL.

Lessons learned. The Social Science Research Council recommended that the definition of the sampling universe be refined from the noninstitutionalized population. The Census Bureau did the field work and gained expertise in following the noninstitutionalized population. Yet, as the review panel notes, this practice induced bias in the construction of the Original Youth cohorts. For example, for the Young Men’s cohort, men in jail or in the military were defined out of scope and excluded (at the height of the Vietnam War). The definition also reflects the survey’s point-in-time structure and the cross sectional thinking behind it—persons

incarcerated and persons in the military at the time of the interview would have little employment activity to report and presumably could be excluded at little cost. An equally pernicious fielding decision generated by the same cross sectional mindset was to drop follow-up respondents who missed two consecutive interviews. This could be viewed as simply a mistake of adolescence—we did not know better then. Indeed, it took the NLSY79 to teach us about the possibility of retention and the significance of respondent continuity.

Not all of the recommendations from the review committee were accepted. As previously mentioned, one of the primary motivations for the NLSY79 was to assist in the evaluation of youth employment and training programs under the Comprehensive Employment and Training Act of 1973 (CETA). The Employment and Training Administration had front-line responsibility for evaluating the programs. Yet, the Social Science Research Council committee argued against designing the survey for program evaluation:

Significant changes in study designs have been made for the new youth cohorts [i.e., men and women of the NLSY79]. These include adding questions about participation in youth-job training programs, collecting supplemental data by matching to program records on respondents who have

participated in such programs, and excluding from the panel those over age 21 (rather than 24 as in the previous youth panels or 25, which would be required to cover young people not covered in existing [NLS] panels). The conferees were nearly unanimous in perceiving these changes as motivated by an intention to use the NLS as a vehicle for the evaluation of these training programs. They present strong arguments both for the impossibility of evaluating programs under the proposed design, and for the danger of drawing evaluative conclusions from the data produced by this design.²⁶

Conferees questioned whether respondents would be able to provide sufficiently accurate program information to allow researchers to identify their training program and specifically their exact “treatment.” Their concerns were well founded; an encyclopedic review of the evaluation literature shows that the NLS (and other large scale surveys) have been little used for the evaluation of training programs.²⁷

This panel of experts earned their honorariums. Many of their recommendations were incorporated into the design of the NLSY79 Cohort. Indeed, the survey’s continuous and detailed recording of events related to the transition from school to work, from adolescence into adulthood, and now into middle age have made it the analytical workhorse within several social science disciplines. The NLSY79 is viewed by many to be the crown jewel of the NLS program. □

Notes

ACKNOWLEDGMENT: This article was presented as a paper for the Twenty-Fifth Anniversary Celebration of the NLSY79, organized by the National Longitudinal Studies Program at the Bureau of Labor Statistics. The author thanks Frank Mott, Randy Olsen, Pat Rhoton, and Ken Wolpin for comments, Amanda McClain, and Leslie Brown Joyner for editorial assistance.

¹ “Parnes” data are named after one of the designers of the NLS, Herb Parnes, from Ohio State University.

² Frank L. Mott, “Looking Backward: Post Hoc Reflections on Longitudinal Surveys,” in Erin Phelps, Frank F. Furstenberg, and Anne Colby, eds., *Looking at Lives: American Longitudinal Studies of the Twentieth Century* (New York, Russell Sage Foundation, 2002). This offers another perspective on the history of the NLS program.

³ The Gluecks initiated a survey design that is difficult to match today. They interviewed the youth, their families, employers, school teachers, neighbors and justice officials. And they supplemented and validated the interview data with administrative data obtained from social welfare agencies. See Robert J. Sampson and John H. Laub, *Crime in the Making: Pathways and Turning Points Through Life* (Cambridge, MA, Harvard University Press, 1995), p. 90.

⁴ See Paul Taubman and Terence Wales, “Higher Education, Mental Ability and Screening,” *Journal of Political Economy*, 81 (Jan. – Feb., 1973) pp. 28–55, for a description of the NBER-Thorndike sample.

⁵ Europe initiated a number of early longitudinal studies as well. Erin Phelps and others, *Looking at Lives: American Longitudinal Studies of the Twentieth Century* (New York, Russell Sage Foundation,

2002), lists a few of the most noteworthy.

⁶ The Terman study of children with high ability followed a group of 672 high-ability children from California for more than 65 years, with an attrition rate of less than 10 percent of the original respondents (excluding those who died or became invalids)! See George E. Vaillant, “The Study of Adult Development,” in Erin Phelps and others, eds., *Looking at Lives: American Longitudinal Studies of the Twentieth Century* (New York, Russell Sage Foundation, 2002), pp. 116–132.

⁷ See Janet Zollinger Giele, “Longitudinal Studies and Life Course Research: Innovation, Investigators, and Policy Ideas,” in Erin Phelps and others, eds., *Looking at Lives: American Longitudinal Studies of the Twentieth Century* (New York, Russell Sage Foundation, 2002). Giele discusses the synthesis in developmental psychology, sociology, and history after World War II that led to a new conceptual framework for understanding the forces and behavioral processes as people age.

⁸ See Theodore W. Schultz, “Investment in Human Capital,” *American Economic Review*, March 1961, pp. 1–17.

⁹ *NLSY79 User’s Guide* (Columbus, OH, Center for Human Resource Research) p. 4.

¹⁰ Frank Stafford, “Forestalling the Demise of Empirical Economics: The Role of Microdata in Labor Economics Research,” in Orley Ashenfelter and Richard Layard, eds., *Handbook of Labor Economics*, vol. 1 (New York, North Holland, 1986).

¹¹ However, about 20 percent of these papers using a longitudinal data source, used the data as a cross section.

¹² Joshua D. Angrist and Alan B. Krueger, "Empirical Strategies in Labor Economics," in Orley C. Ashenfelter and David Card, eds., *Handbook of Labor Economics*, vol. 3A (New York, North Holland, 1986).

¹³ With a small edge in papers to the original cohorts of the NLS! See for example, Stafford, "Forestalling the Demise of Empirical Economics," 1986.

¹⁴ One of the first codifications of panel data techniques appeared in a special volume in the *Journal of Econometrics* in 1982. Also see Gary Chamberlain, "Panel Data," in Z. Griliches and M. D. Intriligator, eds., *Handbook of Econometrics*, vol. 2 (Amsterdam, North Holland, 1994). Chamberlain is considered a highly influential chapter on panel data. Also see C. Hsiao, *Analysis of Panel Data* (Cambridge, MA, Cambridge University Press, 1986), a readable gem from the Econometric Society; and Jeffrey Wooldridge, *Econometric Analysis for Cross and Panel Data* (Cambridge, MA, MIT Press, 2002). Wooldridge's elegant text provides a unified treatment of what is now an extensive literature.

¹⁵ Retention rates at the end of the first six interviews: Older Men 83 percent, Mature Women 88 percent, Young Men 76 percent, Young Women 86 percent. Please see the *NLS Handbook* or *NLS User Guide* for each Cohort for additional information.

¹⁶ Social Science Research Council, "A Research Agenda for the National Longitudinal Surveys of Labor Market Experience," Parts i-IV. A Report on the Social Science Research Council's Conference on the National Longitudinal Surveys. Prepared for the Employment and Training Administration of the U.S. Department of Labor, October 1977 NBER volume.

¹⁷ See, for example, Richard B. Freeman and David A. Wise, eds., *The Youth Labor Market Problems: Its Nature, Causes, and Consequences* (Chicago, University of Chicago Press, 1982).

¹⁸ See Richard B. Freeman, "The Evolution of the American Labor Market 1948-1980," in Martin Feldstein, ed., *The American Economy in Transition* (Chicago, University of Chicago Press, 1980). As Freeman notes, "In the early part of the post-wwii period, most of the increase occurred among older women, many of whom were returning to work as their children reached school age. Nearly 80 percent of the growth in the female work force between 1947 and 1965 resulted from increased numbers of women aged 35 and over, whose labor force participation rate rose sharply."

¹⁹ Frank Mott, "Looking Backward: Post Hoc Reflections on Longitudinal Surveys," 2002, p. 67. Mott notes the strong policy motivation supporting the cohorts, but also recognizes the Mature Women's Cohort was "created in part because of internal pressures applied within the Department of Labor by individuals in the department's Women's Bureau."

²⁰ James Sweet, remarks to a review of the NLS program by the Social Service Research Council in 1977. See William Bielby, Clifford Hawley, and David Bills, "Research Uses of the National Longitudinal Surveys," A Research Agenda for the National Longitudinal Surveys of Labor Market Experience, Part V. (Washington, DC, Social Science Reserach Council, Center for Coordination of Research on Social Indicators, 1978).

²¹ See Gary Chamberlain and Zvi Griliches "Unobservables with a Variance-Components Structure: Ability, Schooling, and the Economic Success of Brothers," *International Economic Review*, 1975, vol. 16, pp. 422-50.

²² For a summary of its influence, see Kenneth I. Wolpin, "Educational data in the NLSY79: a premiere research tool," *Monthly Labor Review*, February 2005, pp. 15-20.

²³ See David Ellwood, "Teenage Unemployment: Permanent Scars or Temporary Blemishes," in Richard B. Freeman and David A. Wise, eds., *The Youth Labor Market Problem: Its Nature, Causes and Consequences* (Chicago, University of Chicago Press, 1981); and James J. Heckman, "Heterogeneity and State Dependence," in Sherwin Rosen, ed., *Studies in Labor Markets* (Chicago, University of Chicago Press, 1981).

²⁴ See Bielby and others, "Research Uses of the National Longitudinal Surveys," 1978.

²⁵ For a discussion of event histories and other methodological contributions of the NLSY79, see Randy Olsen, "The problem of respondent attrition: survey methodology is key," *Monthly Labor Review*, February 2005, pp. 63-67.

²⁶ Social Science Research Council, *A Research Agenda for the National Longitudinal Surveys of Labor Market Experience*, 1977, p. 31.

²⁷ James J. Heckman, Robert LaLonde, and Jeffrey Smith, "Something on Evaluation Literature," in David Card and Orley Ashenfelter, eds., *Handbook of Labor Economics*, vol. 3a (New York, North Holland, 1999), p. 1994.