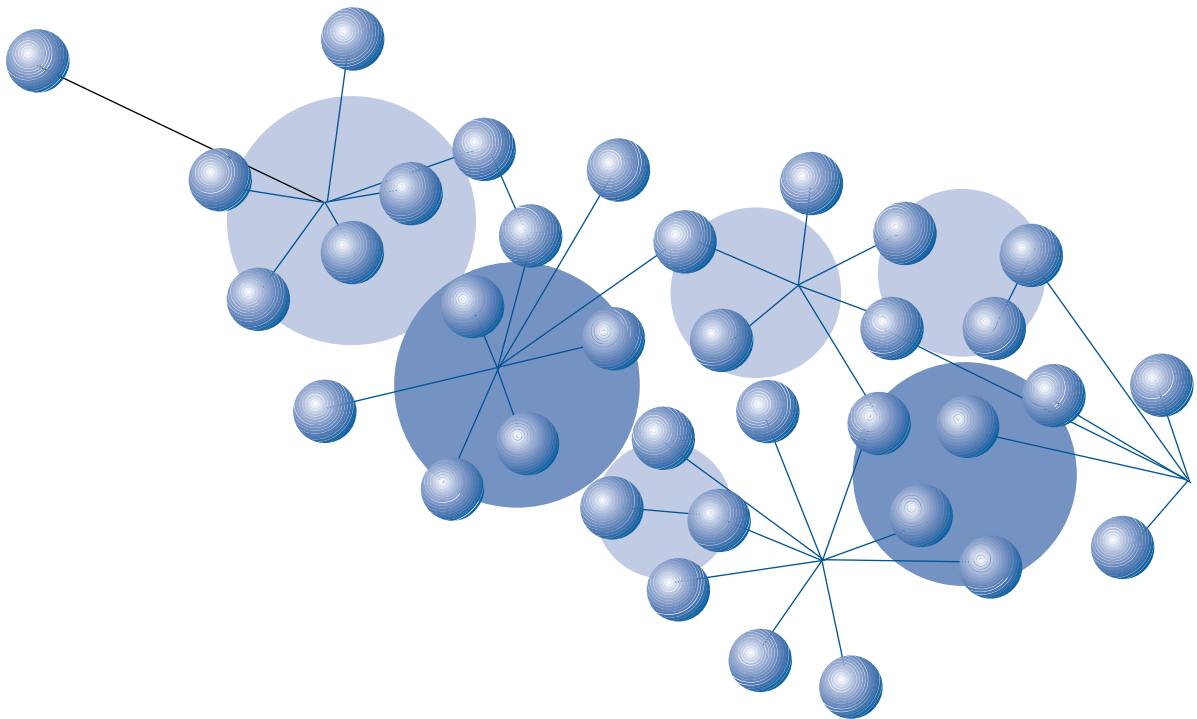


Counting the New Mobile Workforce



**U.S. Department of Transportation
Bureau of Transportation Statistics**

Counting the New Mobile Workforce

This report was prepared for the
U.S. Department of Transportation,
Bureau of Transportation Statistics
by Joanne H. Pratt

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- compile, analyze, and make accessible information about the nation's transportation systems;
- collect information on intermodal transportation and other areas as needed;
- enhance the quality and effectiveness of the Department's programs through research and the development of guidelines;
- promote improvements in data acquisition and use.



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Contents

Executive Summary	1
Introduction.....	3
Uses of Work-at-Home Data	3
Criteria for Survey Selection	4
Organization of Report.....	4
Table	
1. Summary of Surveys in Study	5
Part I. Surveying Home-Based Work	
Defining “Work at Home”	7
Classifying the Worker	7
Recommendation.....	8
Classifying the Type and Hours of Work.....	8
Phrasing of Work-at-Home Question	8
Sequencing of Work-at-Home Questions	10
Information Provided by Surveys	10
Comparison of Work-at-Home Counts	10
New Work-at-Home Questions Added to Surveys	12
Summary of Information Available From Tagged Surveys	12
Recommendations for Work-at-Home Questions to be Added to Surveys	12
Counting the Work-at-Home Populations.....	14
Examples of Uses of Federal Survey Data.....	14
Transportation Planning and Entrepreneurial Growth.....	14
Technology Impacts.....	17
Tables	
2. Time Reference of Survey Questions	9
3. Work-at-Home Data.....	11
4. Transportation-Related Work-at-Home Questions Added to Federal Surveys	13
5. Characteristics of Mobile Workers Collected by Surveys.....	14
6. Recommended Work-at-Home Questions	15
7. Counting the Work-at-Home Populations	16

Part II. Analysis of Federal Survey Methods

American Housing Survey	19
Characteristics of Business Owners (CBO) Survey	22
Current Population Survey (CPS).....	24
CPS Multiple Jobholding Supplement.....	27
CPS Computer Ownership and Use Supplement	28
November 1994 Computer Supplement for Commerce Department	30
Decennial Census of Population	31
Health and Retirement Survey (HRS).....	34
National Education Longitudinal Study (NELS)	40
National Household Education Surveys (NHES).....	41
National Longitudinal Surveys of Labor Market Experience	42
National Survey of Families and Households (NSFH)	48
Nationwide Personal Transportation Survey (NPTS).....	53
Panel Survey of Income Dynamics (PSID)	56
Statistics of Income (SOI)	58
Survey of Income and Program Participation (SIPP).....	59
Quick Survey Turnaround and Tabulation System	62
Regional Travel Surveys.....	63
1996 Dallas-Fort Worth Household Activity Survey 24-Hour Diary	63
1994 Activity and Travel Survey Oregon and SW Washington.....	65

Part III. Anticipating the Mobile Global Workforce

Recommendations for Counting the Mobile Workforce	67
Employees Who Work at Home.....	67
Contributions of Existing Surveys.....	68
Recommended Priority Questions	68
Summary	71

Table

8. NLS Survey Schedule	42
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Executive Summary

The existing federal surveys that provide policy makers with the data needed to inform their decision-making were designed to monitor the employment and travel patterns of the Industrial Age. They were not designed to monitor the more fluid patterns of work times and locations that are characteristic of the information age.

The thrust of the study is to examine existing federal surveys in order to identify those to which work-at-home questions have been, or can be added in order to generate more reliable information about an increasingly mobile workforce. By this strategy, at little or no cost, new or revised questions can be added while maintaining the continuity of past years' data sets.

In adapting these surveys, the problem is to define "work," "home," and similar words that are commonly used in our language but which have acquired a plethora of associated meanings. The difficulty has not been resolved by the many new terms coined to describe non-traditional ways to work. The problem with words such as "telecommuting," "hoteling," "homebased business," and "mobile workers," is that they are not defined by objective criteria such as the hours worked and locations. To bypass this situation, we recommend phrasing questions in terms of measurable variables such as the place of work and the time in days and hours spent at each location. That approach leaves researchers the option of applying their own definitions that fit the context of their analyses.

About 20 questionnaires were examined to identify those to which work-at-home questions were relevant. During the period of the study, questions were added to the American Housing Survey, Nationwide Personal Transportation Survey, and to the Survey of Income and Program Participation. We propose new questions or rephrasing for the Current Population Survey, the 2000 Census, the Health and Retirement Survey, National Educational Longitudinal Study, National Household Education Survey, and the Panel Study of Income Dynamics. Further, we recommend continuing the topic of work at home in those surveys to which questions had previously been added such as the Characteristics of Business Owners, the National Longitudinal Surveys, and the National Survey of Families and Households.

In addition, a set of core questions with four levels of priority is recommended for consideration in designing future surveys.

Counting the New Mobile Workforce

INTRODUCTION

How do planners anticipate the transportation needs of a workforce that moves in apparently random patterns between an onsite location, a home office, and offices of clients, suppliers, and customers all over the world? What are the implications of an “office in a car” for travel demand on highways? Airlines have already accommodated the “office in a seat” by adding telephones to every row of airline seats, first for outgoing calls and now incoming calls as well.

By any name ----

telecommuter
teleworker
hoteling
free addressing
home-based business
electronic cottage
virtual office

Attitudes have changed about where “work” takes place. The workforce of the future is an increasingly mobile workforce. But in the '90s, attention has focused on home-based work. Telecommuting and home-based business are common terms for working in an office at one's residence. For the duration of the industrial age working at home was both impractical and out of fashion. As recently as 1983, the Current Population Survey (CPS) implied that home-based businesses were economically marginal activities: “Sometimes people forget about *small amounts of income* or income received for only part of the year. Did anyone in this household receive income from: Hobbies, *home businesses*, farms, or business interests not already owned?....”¹ [Emphasis added.] In the succeeding 12 years, self employment in the home has become recognized as a vital segment of the economy.

According to the census, work at home by wage and salary workers as well as the self-employed has increased 56 percent from 2.2 million in 1980 to 3.4 million in 1990. Proprietary studies report a high of 53.5 million who do at least one hour per week of work at home and the trend has not yet leveled off.² Because this trend has broad implications for public policy, bringing work back into the home requires formal acknowledgment in the collection of federal statistics, not only for transportation planning, but for many other public programs.

Beginning in 1960 with the introduction of the Journey-to-Work questions in the decennial census, work at home has been considered a transportation issue. The initial assumption was that people who work at home do not need transportation. The fact that full-time work at home is too simple a model to capture the mobile work patterns of the information age is discussed throughout this report.

Conceived as a way for the Bureau of Transportation Statistics to contribute to the understanding of changing work patterns, this study focuses primarily on home-based work. Its goal is to generate reliable information as a basis for more rational policy-making. The analysis is timely, not only because of growing interest in work at home but also because revisions of federal surveys to enable computer-aided interviewing have opened the surveys to consideration of new questions.

Uses of Work-at-Home Data

As the 1992 report *Data for Decisions* pointed out, “Increasingly transportation policies are being developed in the context of other national policy objectives, such as meeting national security needs and improving environmental quality.”³ *Telecommuting*, a common name for employees working at home, has been promoted under relatively recent transportation policy. Yet what impacts will there be on land

¹CPS Income Supplement, March 1983.

²These figures are based on 1980 decennial census and 1995 FIND/SVP surveys that used different definitions of work at home.

³Transportation Research Board, National Research Council. *Data for Decisions: Requirements for National Transportation Policy Making*. 1992, p. 57.

use policy when the workforce becomes increasingly mobile and can live anywhere? Clearly, public policy interest in home-based work extends beyond transportation. The following are a few examples of ways that place-of-work and journey-to-work data can be used by various federal agencies:

- Determine rural commuting and home-based work patterns - Department of Agriculture
- Identify impact of work at home on traffic mitigation - Department of Transportation (DOT)
- Monitor the extent of home-based employment of workers under the American Disabilities Act - Department of Health and Human Resources
- Conduct research on Journey-to-Work - DOT
- Aid in development of long-range planning methodology - DOT
- Monitor changes in employment patterns - Department of Labor

Thus, work-at-home data are needed not only to guide transportation policy, but also to provide information needed in economic development, employment, housing, and other policy areas concerned with changing information-age work patterns. *The thrust of the study is to examine existing federal surveys in order to identify those to which work-at-home questions have been, or can be added, to address these needs.*

Criteria for Survey Selection

To identify federal surveys that might offer an appropriate context for including the topic of home-based work, we interviewed representatives from the U.S. Department of Transportation (DOT), Census, the Bureau of Labor Statistics (BLS), the National Center for Education Statistics (NCES) and others. We talked with transportation planners who conduct regional travel behavior surveys. We also consulted resources such as the *Economic Data Programs*,⁴ the *Survey Abstracts of the Demographic Surveys Division of the Bureau of Census*,⁵ and the *Directory of Transportation Data Sources*.⁶ Most of the relevant surveys are household surveys which capture work at home by both employees and people who are self-employed. Surveys of business units do not include the home office as a work place and tend to miss home-based businesses. Table 1 summarizes the characteristics of surveys included in the study.

Organization of Report

The report is organized in three sections. In *Part I - Surveying Home-based Work*, we first discuss definitions of home-based work, examining the ways they are applied to several federal surveys and how they effect reported counts of home-based workers. We provide examples of how work-at-home data already collected can be used in policy making and other applications. Then we discuss the rationale for questions added to surveys that were developed during the period of this study and our recommendations for adding questions, where relevant, to other existing surveys. Finally, we analyze the extent to which related questions from each survey can be used to more fully characterize the home-based work force.

In *Part II - Analysis of Federal Survey Methods* we briefly describe each survey, then discuss the relevance of including work-at-home questions. We evaluate the appropriateness of each instrument as a strategy for collecting information about new work patterns, particularly, work at home. Each survey is annotated in bold face type to indicate where work-at-home questions have been, or could be added.

In the concluding section, *Part III - Anticipating the Mobile Global Workforce*, we discuss criteria for designing work-at-home questions. We explain which surveys afford the possibility of tracking, not only home as one work node, but other locations to which a mobile population travels to work. We conclude by recommending a set of core questions, ranked by priority, that could be used to achieve consistent language across surveys.

⁴Bureau of the Census. *Economic Data Programs*. December 1993.

⁵Demographic Surveys Division, Bureau of the Census. *Survey Abstracts*. June 1944.

⁶U.S. Department of Transportation, Bureau of Transportation Statistics. *Directory of Transportation Data Sources*. December 1993.

Table 1. Summary of Surveys in Study

Survey	Sample size	Type	Survey dates	Data availability ff. survey	Sponsor(s)	Survey years included
American Housing Survey	61,000 housing units	CATI CAPI	1991 1995	15-18 mos.	HUD	1991 1995
Characteristics of Business Owners (CBO)	125,000 persons	mail	2, 7 (every 5 yrs.)	1996	Bureau of Census US SBA MBDA	1992 (Fielded in 1995)
Current Population Survey (CPS)	60,000 households	CATI CAPI	monthly	2-6 weeks	Bureau of Census BLS	1991 1995
CPS Supplement Computer Ownership and Use	60,000 households	CATI CAPI	1984 1989 1993	9-12 mos.	Bureau of Census	1993
CPS Supplement Special Computer Usage	60,000 households	CATI CAPI	Nov. 1994		Dept. of Commerce	1994
CPS Multiple Jobholding Supplement	60,000 households	CATI CAPI	1985 1991 1997	6-12 mos.	BLS	1985 1991
Decennial Census	Journey-to-Work: 1 of every 6 households (long form)	mail & visit	1990 2000	2001-3	Bureau of Census	1990
Health & Retirement Survey (HRS.)	12,600 persons in 7,600 households	visit CAPI CAPI	1994	May 1995 Nov. 1995	NCHS	1992 1994
National Education Longitudinal Study (NELS)	25,000 students	CATI	1988, 1990, 1992, 1994, 1998		NCES	1994
National Household Education Survey (NHES)	60,000-75,000 screened	CATI	1991, 1993, 1995, 1996, 1998		NCES	1991, 1995, 1996
National Longitudinal Survey YW	3,400 women	visit	1993	1997	BLS	1993
National Longitudinal Survey of Women (NLSW)	7,400 women	CAPI	June 1995	1997	BLS	Not available
National Longitudinal Survey MW	3,094 women	visit	1992	Oct. 1995	BLS	1992
National Longitudinal Survey of Youth	8,800 men and women	CAPI	1993, 1994, 1996	Dec. 1996 1998	BLS	1993, 1994,
National Survey of Families & Households (NSFH)	13,008 persons plus spouses/partners	self-admin. CAPI	1987-8 1992-4	1995-6	NICHHD	1992-4
Nationwide Personal Transportation Survey (NPTS)	21,000 households	CATI	1995-6	Data available Spring 1997	BTS FHWA FTA NHTSA	1995-96
Panel Study of Income Dynamics (PSID)	30,000 persons 10,000 families	Telephone CAPI	1986 1995	1996-7	OEO	1986 1995
Statistics of Income	1.6 million persons	Tax filings	Annual		IRS	1991, 1992, 1993, 1994
Survey of Income and Program Participation (SIPP)	Panels of 14,000-20,000 households Interviewed 13,300	visit CAPI	1983-4 1995-6	Mid-1997	Bureau of Census	1995-6

Part I.

Surveying Home-Based Work

DEFINING “WORK AT HOME”

For the past 200 years work has taken place outside the home. Because of that physical separation of work from home life, the word *work* itself has acquired a patina of implied definitions. For example, people may use the word with the negative connotations that the quotation at left from J.M. Barrie suggests. When applied in survey design, the definition chosen for work should depend on why the question is being asked. Transportation planners need to monitor the extent of commute trip reduction which can be attributed to employees working at home during *regularly scheduled* work hours *in lieu of* traveling in a single occupancy vehicle to work. On the other hand, researchers interested in life quality issues might want to count “*extra*” or “*catch-up*” work on the grounds that the ability to work at home after hours may be a better tradeoff for workers and their families than returning to the office.⁷

It's not real work unless you would rather be doing something else.

J.M. Barrie
1922

Complicating the process of survey design are the coined terms for working outside the traditional office such as *telecommuting*, *hoteling*, and the *virtual office*. None of these new terms defines the time and location of work. In practice, they are applied inconsistently both in research and in common usage which adds to the problem. *Thus, a key objective of this study has been to recommend phrasing of questions that define work patterns by measurable criteria.*

The decennial census, Current Population Survey (CPS), National Longitudinal Surveys (NLS) and other federal surveys do not define individuals by the popular terms “telecommuter” or “home-based business owner.” The two groups can be related to surveys that are based on census definitions as follows:⁸

Employees who do office work at home are usually differentiated by whether they work at home during normal business hours or bring work home after hours. The former group are most commonly called “telecommuters,” a word coined to describe the “total or partial substitution of the daily commute” by telecommunications (but not necessarily via a computer terminal.) However, they also are referred to as “virtual office” or remote workers, or not even distinguished by a special name. *Formal* telecommuting is limited to programs authorized by an employer. In contrast, *informal* telecommuting requires only casual permission from a supervisor to work at home. Workers may take home personal computers from the office, supply their own, or work at home without special equipment. There is no commonly recognized definition of how much time a telecommuter works at home.

Thus, when tabulating or comparing counts of people who work at home, it is critical to note the amount of time that is spent working in the home. Are the counts based on individuals who do *any* work at home, i.e. one hour or more per week; on only those who spend the equivalent of *one day a week* at home, i.e. 8 hours? Or have the tabulations been based on other criteria?

Classifying the Worker

Transportation planners have been most interested in employees, that is, wage and salary workers, because every day a telecommuter works at home, his or her weekly commute trips are decreased by 20 percent. But policy makers also need to monitor the growth of a larger group of people who work at home, the self-employed home-based business owners.

⁷Use of the word *overtime* itself can be misleading. In some contexts, for example, for workers paid by the hour, it implies additional *paid* work.

⁸The following discussion is based on the research study: Joanne H. Pratt. *Myths and Realities of Working at Home: Characteristics of Home-based Business Owners and Telecommuters*. U.S. Small Business Administration. (Contract SBA-6647-OA-91) 1993.

Telecommuting is linked to small business in several ways: most importantly, it has given the home office credibility by documenting in many pilot demonstrations the success of working at home. Second, corporation downsizing has created new business opportunities. For example, work formerly done in-house is contracted-out to home-based businesses. Also, transitions to self-employed status may be stimulated by employees having experienced working at home. Having set up a home office, telecommuters are equipped to more easily start a side business or become a full-time entrepreneur. Given those factors, it is important that surveys capture home-based business owners, the self-employed who work in or from their homes, as well as employees.

Home-based business owners are self-employed individuals who operate a business or profession primarily *in* or *from* a home office. For example, individuals may operate a desktop publishing business which confines them largely to the home or they may own a construction business which requires them to be away from their home office except for bookkeeping tasks.

The definition includes self-employed individuals who refer to themselves variously as professionals, freelance, or contract workers, rather than as home-based business owners.

Commuting to office work is obsolete...It is now infinitely easier, cheaper and faster to ...move information to where the people are.

Peter Drucker

Recommendation

Confounding attempts to survey and analyze home-based work is the fact that many people consider working at home so natural that it does not require a name. Given these problems of definition, we recommend that survey instruments adhere to the two primary decennial census classifications: “wage and salary,” and “self-employed.” Let users of the collected data assign the more popular terms, such as home-based business owner, telecommuter, teleworker, virtual office worker, and mobile worker within the context of their applications. That approach will provide a common, accepted basis for comparing data from different surveys.

Classifying the Type and Hours of Work

Even with the workers sorted by the established classifications of “wage and salary” and “self-employed,” there remain two major problems of definition. The first, is how to distinguish “normal” or “regular” work from “overtime” or “catch-up” work. The second is how to measure the number of hours, the time of day (in industrial terms, the “shift”) and the calendar days of the week that are spent at the home location.

The difficulty is that federal surveys were designed for an industrial age workforce that left home to go to their same work location, worked specified shifts and returned home at the same times, week after week. We have changed from a “9 to 5” Monday through Friday work week at fixed locations to a 24-hour, seven-day pattern in which work and non-work are mixed. We now have highly mobile lifestyles.

In the industrial age people didn't have “lifestyles.”

The blurring of work with non-work and of the home with the office presents a formidable challenge to survey designers. Rather than discuss solutions to these dilemmas in the abstract, we will illustrate the implication of various question phrasings by referring to surveys to which work-at-home questions have already been added.

Phrasing of Work-at-Home Questions

Table 2 compares the work-at-home definitions used in federal surveys, including those to which work-at-home questions have already provided data. They include the decennial census, the Current Population Survey, and the National Longitudinal Surveys. The Journey-to-Work section of the decennial census has acknowledged home-based work since the questions were first added in 1960 to aid transportation planning. The purpose is to monitor mode choices for the commute to and from the workplace. In order to account for all possibilities — thinking at that time primarily of farmers — the list of car, bus, subway and other choices includes “worked at home.”

Because the question is phrased “**How did this person usually get to work LAST WEEK?**” respondents working at home less than 3 days are missed. Since telecommuters work, on the average, only 1-2 days per week at home and frequently skip weeks, they are undercounted in the census. This undercount is more fully addressed below.

Table 2. Time Reference of Survey Questions

Survey	Time period	Work definition
AHS	“ever” “last week”	“regularly scheduled work for” ...employer
CBO	“any of these time periods”	“to telecommute (outside employment doing office work at home)”
CPS May 1985	“usually” “last week”	“regularly scheduled work ...for” employer
CPS May 1991	“usually” “last week”	“part of this job ...any of... work”
Decennial Census	“last week”	“usually” plus “worked at home”
NSFH	“last week”	“...work at home (on your main) job...”
NLS YW 1988	“ever”	“regularly scheduled work ...for” employer
NLS YW 1993 and NLS MW 1992	“usually”	“any of your work”
NLSY 1993	“usually”	“work at this job”
NPTS	“past 2 months” “last week”	“work from home <u>instead</u> of traveling to ...usual work place”
SIPP	“typical week”	“as part of the work schedule”
SOI	“during the year”	“each home used for business”

The 1985 CPS phrases the key question as follows:

“As part of _____ (the workers)’s regularly scheduled work, does _____ (he/she) do any of his/her work for _____ (the principal employer) at home?”

The NLS YW 1988 in similar, but not identical language, asked:

“(Do/Did) you ever do any of your regularly scheduled work for _____ (employer) at home?”

Interviewer instructions for the NLS question spelled out the intended caveats for respondents:

Mark box 1 (Yes) for individuals who do, by design, complete some or all of their regularly scheduled work for their primary job (the job for the employer listed in Item 6a) at home. Such individuals may have a small office set up within their home. A home office, however, is not a requirement for work at home.

Mark box 2 (No) for individuals who do not, by design, complete some or all of their regularly scheduled work for their primary job (the job for the employer listed in Item 6a) at home. This includes individuals who occasionally take work home during periods of heightened office/workplace activity. Unless such work is done at home on a regular recurring basis, “No” is to be marked.

The instructions clarified that the question was looking for habitual patterns of work at home, not for rare occurrences. Without this clarification, the word “ever” in the phrasing would have implied that both usual and occasional, in fact, any work at home any time, past or present was being requested. Addressing this problem, the wording was changed in later survey years. NLS YW 1993 asks:

Do/Did you usually do any of your work for (Employer in 6a, page__) at home?

Taking a different approach, the NLSY asks without a preliminary screening question:

How many hours per week (do/did) you usually work at this job at home?

In 1991 the CPS screening question was changed:

As part of this job, does...do any of ...’s work at home?

This wording suggests that overtime and catch-up work are being requested as well as work during the normal work day hours. The CPS and the NLS Young Women (YW) and Mature Women (MW) instruments, but not the census, continue with follow-up questions to respondents who say “yes” to

work at home. Those questions pin down the number of hours worked at home but, not in each case, the time of day that the worker is at home. The NLS YW and MW surveys ask:

How many hours per week (do/did) you usually work for (Employer in 6a, page __) at home?

The surveys meticulously check whether the respondent has already included work-at-home hours in his or her total hours. And double check that the tally of hours at both locations is accurate:

“..altogether how many hours per week (do/did) you USUALLY work at this job.”

The CPS follows up with the following phrasings:

1985 **LAST WEEK approximately how many hours of work did he/she do at home?**

1991 **LAST WEEK, approximately how many hours of ...’s work did ... do at home as part of this job?**

Seemingly minor rephrasing of questions can help pin down the time, location, and nature of work being done. But the implications of rewording questions must be weighed so that any changes will not preclude comparison of data across survey years.

Sequencing of Work-at-Home Questions

Some jobs afford no possibility of working at home. Waitresses, pilots, and parking attendants, for example, must be present at their job sites. However, other occupations, such as teaching school, have paper work, telephoning, or other tasks that may be done at home. Thus, it is important to sequence questions so that respondents are not asked about work after they have already stated their occupation as one that would exclude *any* work at home. Another way to handle this problem is to state the question as conditional on having a job for which work at home might be possible. The NPTS asks:

“Some people do some or all of their paid work out of their homes or bring work home with them to finish. Last week did you do any of your work (on your main job) at home?”

*What do you mean
“work at home”?
I just told you I’m
an air traffic
controller!
NPTS Pretest*

INFORMATION PROVIDED BY SURVEYS

Comparison of Work-at-Home Counts

With so much variation in work definition and time period references, what work-at-home counts do these surveys provide? Table 3 illustrates why we hear such varying reports of this population.

The numbers shown in the column labeled “Work-at-Home Count” range from 1.4 to 20 million. There are several reasons for such a discrepancy: 1) the surveys address different populations, 2) they use different definitions of home-based work and the time and regularity with which it is carried out, 3) the data were collected in different survey years, and 4) some of the difference results from definitions and selection criteria applied during analysis of the data. For example, the *Decennial Census* captures the universe of American workers but the phrasing of the journey-to-work question eliminates employees who typically work at home only 1-2 days per week, those usually called telecommuters. Thus the *Census* undercounts home-based work.

At the other extreme, the 1991 CPS reports 20 million home-based workers. The figure represents an undercount of the workforce because it includes only nonfarm employees in the analysis. But it also overcounts to the extent that the amount of work reported can be as little as one hour a week (“any”) and the survey design does not exclude overtime or intermittent work.

The NLS uses a series of questions to screen out people who only do overtime work or hold more than one job. But the surveys are longitudinal studies of narrow cohorts of the population so that the NSL figures report undercounts of the total U.S. population of home-based workers. As final examples, both the CPS Computer Ownership and Use Supplement and the Statistics of Income analyses of tax returns are based on sub-population samples of the work-at-home labor force.

Although work-at-home counts have varied widely, there has been much valuable information gained from adding questions to surveys as we discuss in the next section.

Table 3. **Work-at-Home Data**

Survey	Question	Date	Work-at-home count	Caveat
Characteristics of Business Owners	Was this business operated primarily from or in a home?	1987	7 million	No wage or salary
Current Population Survey May Supplement	As part of...’s regularly scheduled work, does...(he/she) do any of his/her work for...(the principle employer) at home?	1985	18 million	No minimum hours
	As part of this job, does...do any part of ...’s work at home?	1991	20 million	No minimum hours; may include overtime or intermittent work; inconsistent wording means that 1985 and 1991 data cannot be directly compared
Current Population Survey Computer Ownership and Use Supplement	Does ...directly use a computer at home?	1993		Includes only work at home on computers
	At home, what does...use the computer for?			
	MARK ALL THAT APPLY “Connect to computer at work” “Home-based business” “Work at home”		2.6 million 1.6 million 8.6 million	May be overlapping populations since multiple responses allowed
Decennial Census	How did...usually get to work?	1980 1990	2.2 million 3.4 million	Implies 3 or more days/wk. work at home
National Longitudinal Survey of Youth	Cross-tabulation: Work at home and do not work overtime or hold more than one job	1988	4.94 million	Men and Women ages 23-30 only Self-employed + wage & salary
National Longitudinal Survey Young Women	Cross-tabulation: work at home and do not work overtime or hold more than one job	1988	4.74 million	Women ages 34-44 only Self-employed + wage & salary
National Longitudinal Survey Mature Women	Cross-tabulation: work at home and do not work overtime or hold more than one job	1989	1.4 million	Self-employed + wage & salary
National Survey of Families & Households, 1992-4		1994	15.77% of U.S. population	
Statistics of Income	Business address, Schedule C= Home address	1981	5.1 million	Sole proprietors only
Statistics of Income	Form 8829 Expenses for Business Use of Your Home tax returns	1991 1992 1993 1994	1.6 million 1.6 million 1.6 million 1.6 million	Sole Proprietors who take <i>Business Use of Home</i> deduction only
Survey of Income and Program Participation (SIPP)	“Was this business primarily located in ...’s own home or somewhere else?”	1984		Home-based business owners only

New Work-at-Home Questions Added to Surveys

During the period of this study, work-at-home questions were added to several federal surveys. They include the American Housing Survey, the Nationwide Personal Transportation Survey, and the Survey of Income and Program Participation. Table 4 displays the phrasing of questions that relate work at home to travel behavior. (The entire sections of these surveys, which provide the context for the new questions, are reproduced in Part II.)

Ideally, one standard set of work-at-home questions should be used in order to be consistent across surveys. However, in practice it is not feasible to insert such a module into surveys, each of which has been designed with its own different context. Instead, we have designed questions to follow the logical sequence of the established survey concentrating on minimizing the problems of definition.

Thus, the 1995 American Housing Survey asked a question which measures trip reduction due to telecommuting directly:

“How many separate days last week did...work at home as a substitute for traveling to the usual location of work?”

“Zero” days is a possible answer.

In contrast to most surveys, the *Survey of Income and Program Participation* (SIPP) makes possible gathering sufficient detail about patterns of work at home to enable calculations of trip reduction: “As part of the work schedule for that week, which days, if any, did ... work only at home?” The days of the week—Monday through Sunday—will be checked separately, making it possible for the first time to document the calendar patterns of telecommuting. (Meaning that people will be shown to work at home on, say, Tuesday and Thursday, but work at the office Monday, Wednesday, and Friday.)

In another approach, the 1995 NPTS, with its transportation focus, asks two questions which emphasize the frequency rather than the calendar days of working at home:

“On any day last week, did (you/PERSON) work from home instead of traveling to (your/his/her) usual workplace?”

“In the past two months, about how often did (have you/has PERSON) worked from home instead of traveling to (your/his/her) usual workplace?”

Some rounds of the NLS obtain data related to transportation issues. As shown in table 4, the NLSY Round 15 (1993) includes 1) minutes to get from home to work, 2) minutes for the return trip, 3) transportation mode, 4) cost, and 5) round-trip distance in miles. Also, the 1993 NLSY asked directly about the use of computers for home-based work.

Summary of Information Available From Tagged Surveys

Table 5 summarizes the key characteristics of mobile workers. This recommended approach to monitoring home-based work by tagging existing surveys does not produce the “ideal” instrument with answers to every question. Thus, the AHS provides glimpses of the physical set up for home offices but does not report occupations of the people who use them. The NHES asks only about transportation related to attending classes.

Recommendations for Work-at-Home Questions to be Added to Surveys

Table 6 suggests where additional information pertaining to home-based work can be obtained. Although the focus of these surveys may not allow extensive questioning to obtain the detailed information that would most help transportation planning, they do allow inserting one or two follow-up questions or, at the least, an addition of “work at home” to lists of possible responses. The Health and Retirement Survey and the Panel Study of Income Dynamics (PSID) are examples of studies that realistically cannot be more directly related to travel behavior but could be used to broaden our understanding of work at home. Taken all together, the surveys, already tagged or that we have recommended be tagged for home-based work, provide a fairly comprehensive characterization of people who do some of their job-related work at home.

Table 4. **Transportation-Related Work-at-Home Questions Added to Federal Surveys**

Survey	Work-at-home questions
American Housing Survey	_____How many separate days last week did ... work at home instead of traveling to work?
Characteristics of Business Owners	During any of these time periods, which best describes the primary business use of this home? _____ To telecommute (outside employment doing office work at home) <i>[One of 3 choices offered]</i>
Current Population Survey	At home, what does...use the computer for?
Computer Ownership and Use Supplement	_____ Connect to computer at work _____ Home-based business _____ Work at home <i>[3 of 15 choices offered]</i>
1990 Census	How did this person usually get to work LAST WEEK? <i>If this person usually used more than one method of transportation during the trip, fill the circle of the one used for most of the distance. [“Worked at home” is one of choices.]</i>
National Longitudinal Survey of Youth	How long (does/did) it USUALLY take you to get FROM your home TO work? _____ minutes
Round 15 (1993)	How long (does/did) it USUALLY take you to get FROM work TO home? _____ minutes What means of transportation (do/did) you USUALLY use to get from your home to work? Altogether, how much (does/did) it cost you for gas, oil, tolls, fares, and parking costs, to get to and from work, round trip? How many miles (do/did) you go round trip? When you (use/used) a computer at home to do work for this job, (do/did) you ever use a modem or telephone link to connect you to a different computer system at any other location(s)?
National Longitudinal Survey of Work Experience of Young Women 1993	How long (does/did) it usually take to get to work from home? How many hours per week (do/did) you usually work for this job at home? _____Works at home all the time
Nationwide Personal Transportation Survey, 1995	What is the one-way distance from (your/PERSON’S) home to (your/his/her) workplace? _____ Works at or out of home <i>[1 of 5 choices]</i> How (do you/does PERSON) usually get to work? Please tell me <u>all</u> the kinds of transportation (you/he/she) usually (use/uses). _____ Worked from home/telecommuted <i>[1 of 19 choices]</i> What is the main means of transportation (you/PERSON) usually get to work—that is, the one used for most of the distance? _____ Worked from home/telecommuted <i>[1 of 19 choices]</i> On any day last week, did (you/PERSON) work from home <u>instead</u> of traveling to (your/his/her) usual workplace? In the past <u>two months</u> , about how often did (have you/has PERSON) worked from home instead of traveling to (your/his/her) usual workplace?
National Survey of Families & Households 1992-4	How many hours did you work at home (on your main job) last week? About how many minutes does it usually take you to get to work (on your main job)? _____ Works at home <i>[1 of possible responses]</i>
Survey of Income and Program Participation (SIPP)	As part of the work schedule for that week, which days, if any, did..... work only at home? Did not work at home Wednesday Monday through Friday Thursday Sunday Friday Monday Saturday Tuesday All seven days
1996 Dallas-Fort Worth Household Activity Survey	Including today, how many days in the past seven days did you work at home for your main job <u>instead</u> of going to your main job place?
Oregon and Southwest Washington 1994 Activity and Travel Survey	Possible activities at home include “work at home (related to main or second job).”
Oregon and Southwest Washington 1994 Activity and Travel Survey	Of the [#HRS FROM Q35] hours (NAME OF OTHER PERSON) works in a typical week, how many hours are worked at home?

Table 5. Characteristics of Mobile Workers Collected by Surveys

Survey variable	AHS	CBO-1	CENSUS	CPS	CPS COM. SUP.	HRS	NLS	NELS	NHES	NPTS	NSFH	PSID	SIPP
Commuting													
Distance	X	-	-	-	-	-	X	-	X	X	X	²	-
Time	X	-	X	-	-	-	X	-	X	X	X	²	-
Mode	X	-	X	-	-	-	X	-	-	X	-	²	-
Trips													
Local	-	-	-	-	-	-	-	-	X	X	X	-	-
75+ miles	-	-	-	-	-	-	-	-	-	X	-	-	-
Purpose	-	-	-	-	-	-	-	-	X	X	-	-	-
Family													
Home address ¹ ..	X	-	X	X	X	X	X	X	X	X	X	X	X
Income	X	X	X	X	X	X	X	X	X	X	X	X	X
Unit	X	-	X	X	X	X	X	X	X	X	X	X	X
Work													
Activities	-	X	X	X	X	X	X	X	X	-	-	X	X
Address	-	X	X	-	-	-	X	-	-	X	-	-	-
Computer use ..	-	-	-	-	X	X	X	-	X	-	-	-	-
Days of week ..	-	-	-	-	-	-	-	-	-	-	X	-	X
Home hrs/days..	X	-	-	-	X	-	X	-	-	X	X	-	X
Multiple jobs...	-	-	-	X	X	X	X	X	X	X	X	X	X
Schedule	-	-	-	-	X	-	-	-	-	-	X	-	X
Worker													
Classification ..	X	X	X	X	X	X	X	X	X	-	X	X	X
Education	-	X	X	X	X	X	X	X	X	X	X	X	X
Occupation	-	-	X	X	X	X	X	X	X	³	X	X	X
Industry	-	-	X	X	X	X	X	X	X	-	X	X	X

¹Addresses collected are not available due to confidentiality issue.

² Collected in some years but not all.

³Asked only of persons whose work required driving a licensed motor vehicle as part of the job.

Counting the Work-at-Home Populations

If questions can be phrased so as to accurately capture the time and place of work, then will survey data agree on a total count of home-based workers? Table 7 illustrates the problem. Because the various federal surveys address different populations (and the number of questions that can be feasibly added may not be sufficient to completely characterize the new patterns of work), the counts will still differ. Several of the surveys should give accurate total counts. But even those use different age thresholds—ranging from 15 to 19 years—for treating individuals as “workers,” meaning, for example, that the SIPP count should be higher than the NPTS.

EXAMPLES OF USES OF FEDERAL SURVEY DATA

Transportation Planning and Entrepreneurial Growth

The National Longitudinal Surveys, the Current Population Survey, and the Characteristics of Business Owners, illustrate the efficiency of tagging existing surveys for work. When surveys are tagged for work at home, the data become valuable not only for transportation planning but also to provide information to aid policy-making in many other areas as well. For example, home-based business owners do not commute to work. But NLS YW data show that the self-employed average only 22 to 27 hours per week working in their homes, implying that many travel during the day.⁹ That information may be pertinent for transportation demand forecasting of non-peak hour travel.

The U. S. Small Business Administration (SBA) has a different interest in NSL data. When the first work-at-home data became available, the SBA sponsored research as part of its mission, knowing that “to develop strategies to maximize the growth potential of women-owned businesses, policy makers

⁹Op. cit. Pratt 1993.

Table 6. Recommended Work-at-Home Questions

Survey	Work-at-home questions																								
Current Population Survey	<p>How many of those hours (# Hrs. from Q20E-A) do you USUALLY work at home? <i>[Main job]</i></p> <p>How many of those hours (# Hrs. from Q20E-B) do you USUALLY work at home? <i>[Second job]</i></p> <p>How many of those ADDITIONAL hours (# Hrs. From Q20H-1) did you work at home? <i>[Overtime or extra hours, main job]</i></p> <p>LAST WEEK, on how many separate days did you work at home as a SUBSTITUTE for traveling to the usual location of work? <i>[Main job; Second job]</i></p> <p>How many of those hours (# Hrs. from Q20I-2) did you work at home? <i>[Refers to total jobs and/or businesses]</i></p>																								
Decennial census	<p style="text-align: center;">1990 CENSUS QUESTIONS</p> <p>Is there a business (such as a store or barber shop) or a medical office on this property? <i>At what location did this person work LAST WEEK?</i></p> <p>If this person worked at more than one location, print where he or she worked most last week. <i>[Street address given.]</i></p> <p><i>How did this person usually get to work LAST WEEK?</i></p> <p>If this person usually used more than one method of transportation during the trip, fill the circle of the one used for most of the distance. “Worked at home” is one of choices.</p>																								
	<p style="text-align: center;">2000 CENSUS RECOMMENDED QUESTIONS:</p> <p>How do you usually get to work? (Check all that apply.)</p> <table border="0" style="width: 100%;"> <tr> <td style="text-align: left;">Travel mode</td> <td style="text-align: center;">Mon. Tues. Wed. Thurs. Fri. Sat. Sun.</td> </tr> <tr> <td>Car, truck or van</td> <td></td> </tr> <tr> <td>Motorcycle</td> <td></td> </tr> <tr> <td>Bus or trolley bus</td> <td></td> </tr> <tr> <td>Streetcar or trolley car</td> <td></td> </tr> <tr> <td>Subway or elevated</td> <td></td> </tr> <tr> <td>Railroad</td> <td></td> </tr> <tr> <td>Ferryboat</td> <td></td> </tr> <tr> <td>Taxicab</td> <td></td> </tr> <tr> <td>Bicycle</td> <td></td> </tr> <tr> <td>Walked</td> <td></td> </tr> <tr> <td>Worked at home</td> <td></td> </tr> </table>	Travel mode	Mon. Tues. Wed. Thurs. Fri. Sat. Sun.	Car, truck or van		Motorcycle		Bus or trolley bus		Streetcar or trolley car		Subway or elevated		Railroad		Ferryboat		Taxicab		Bicycle		Walked		Worked at home	
Travel mode	Mon. Tues. Wed. Thurs. Fri. Sat. Sun.																								
Car, truck or van																									
Motorcycle																									
Bus or trolley bus																									
Streetcar or trolley car																									
Subway or elevated																									
Railroad																									
Ferryboat																									
Taxicab																									
Bicycle																									
Walked																									
Worked at home																									
Health & Retirement Survey Wave 1 Questionnaire	<p>How many <u>total</u> hours a week do you usually work on this job? <i>[Revised wording]</i></p> <p>How many of those total hours a week do you usually work at home?</p> <p><i>[Questions are repeated for “a week with relatively long hours” and for a “relatively short week.”]</i></p> <p><i>[For various states of impairment, questions are asked whether their employer does/did “anything special to help you out so that you can continue working?]</i> Add to list of possibilities:</p> <p>(Does/did your employer) give you the option of working at home?</p> <p>How long did they continue to do that?</p>																								
Health & Retirement Survey Wave 2 Questionnaire	<p>In addition to the questions listed above, Wave 2 affords the opportunity to ask:</p> <p>If your employer offered you a choice of working at home with the same pay and responsibility or being laid off, which would you probably do?</p> <p style="padding-left: 20px;">1. Work at home <i>[1 of 4 choices]</i></p>																								
National Educational Longitudinal Study	<p>On average, how many hours per week did you work at this job? On average how many hours, if any, did you work at home for this job?</p>																								
National Household Education Survey	<p>About how many total hours per week do you usually work for pay, counting all jobs?</p> <p>About how many hours, if any, do you usually work at home?</p>																								
Panel Study of Income Dynamics	<p>And, on the average, how many hours a week did you work on your main job(s) in 1994?</p> <p>How many of those hours, if any, did you work at home?</p> <p>How many hours did that overtime amount to in 1994?</p> <p>How many of those overtime hours, if any, did you work at home?</p>																								

Note: Questions recommended for addition to surveys are bold faced.

Table 7. Counting the Work-at-Home Populations

Survey	Population surveyed	Population excluded	Implications for total count
American Housing Survey	Household members 16 years old or older		Accurate estimate of “wage or salary” workers and “self-employed or contract worker or business owner”
Characteristics of Business Owners	Business owners, self employed, independent contractors Sole proprietors, partnerships and S corporations	Incorporated home-based businesses; Employees who work at home	Underestimates home-based businesses Does not estimate employees
Current Population Survey May Supplement	Household members 15 years old or older		May include overtime or intermittent work Work at home asked only in occasional supplements
Current Population Survey Computer Ownership and Use Supp.	People who use computers for a home-based business People who use computers for job-related tasks performed at home	Self-employed people and employees who work at home but do not use computers	Estimates only people who work at home on computers May be overlapping populations since multiple responses allowed
Decennial census	“All” U.S. household members 16 years old or older. Identifies people who “usually” work “most” of the time at home.	People who work less than “most” of the time at home	Underestimates people who work fewer than 3 days/week at home
National Longitudinal Survey of Youth	Self-employed plus wage & salary men and women who work at home	Men and women outside cohort age range (29-36 in 1994)	Underestimates older and younger home workers
National Longitudinal Survey Young Women	Self-employed plus wage & salary women who work at home	Women outside cohort age range (41-51 in 1995) Men of all ages	Underestimates women Omits men
National Longitudinal Survey Mature Women	Self-employed plus wage & salary women who work at home	Men	Underestimates women Omits men
Nationwide Personal Transportation Survey	Household members 16 years or older		Accurate estimate of people who work at home
National Survey of Families & Households, 1992-94	Household members 19 years or older		Accurate estimate of people who work at home
Statistics of Income	Sole-proprietors who deduct use of a home office	Other home-based business owners All wage & salary workers	Underestimates home-based business owners Does not estimate employees who work at home
Survey of Income and Program Participation (SIPP)	Household members 15 years old or older		Accurately estimates self-employed or wage & salary workers with details of calendar days and start and stop times worked on all jobs

need to know where they are located and how they fit into an overall strategy for entrepreneurial growth and development”¹⁰ Of particular interest to the SBA, the NLS data capture the overlapping small businesses with sales under \$100,000, home businesses, and the “fast growing woman-owned firms, which tend to be clustered at the lower end of the business size spectrum.”

Prior to the release of the first work-at-home data from the NLSY in 1988, data from the 1985 CPS May Supplement had already shown that 75 percent of all persons working full time and almost 40 percent who worked eight hours or more per week at home were self-employed.¹¹ Further, the 1987 CBO found that over seven million businesses and the majority of women-owned businesses (54.6 percent) and nearly half of all non-minority male-owned businesses (49.8 percent) were home based.

¹⁰U.S. Small Business Administration. *A Status Report to Congress: Statistical Information on Women in Business*. Washington, D.C., December 1990.

¹¹Horvath, Francis W. “Work at Home: New Findings from the Current Population Survey.” *Monthly Labor Review*, November 1986.

Technology Impacts

A critical need to guide policy decisions today are data showing the impact of technology on work and the family. The computer, which is the primary tool of the information age, has become smaller, more powerful and affordable. Its use has enabled work to be more portable. Many tasks can be carried out anywhere, including the home.

The *Computer Ownership and Use Supplement* of the CPS exemplifies a survey which, although designed for another purpose, gives valuable insights into this trend of working at home which are not available elsewhere. The findings quoted below from the 1989 report highlight our premise that work-at-home questions added to existing surveys yield detailed information that helps characterize the changing U.S. workforce.

“In October 1989, 13,683,000, or 15.0 percent, of all U.S. households reported that they had a computer,” up 8.2 percent from 6,980,000 in 1984. Computer ownership correlated with higher annual incomes. Also, “Households with school-age children were more than twice as likely as those without to have a computer (25.7 vs. 11.4 percent).”¹² Higher computer use also was associated with higher degrees of education and with persons having managerial or professional occupations. So far as work at home:

“Among persons using a home computer 12.5 percent said they used it to work at home or connect to their computer at work, while 11.4 percent said they used it to run a home-based business. Of the 9.3 million people who said they used a computer at work and also had a computer at home, one-fifth said they used the home computer to do their job. Relatively high levels of use of home computers for work purposes were also reported by persons with 4 or more years of college (17.7 percent), persons in managerial and professional occupations (18.2), and persons employed in manufacturing (18.4) or real estate (18.2). With regard to the use of a home computer for a home-based business, 31.8 percent of persons in agricultural industries gave this response, as did 25.6 percent of those persons who said their occupation was in farming, forestry or fishing, indicating that many of today’s family farms have implemented computer technology at some level.”

Also of significance is the rise in computer use in the traditional workplace. “...of all adults with a job, over 40 million, or 36.8 percent, said they used a computer at work. This represents a 50-percent increase in the proportion who responded this way in 1984 (24.6 percent).”

Of what interest is this to transportation planning? If the availability of the computer is the underlying driving force that makes work at home possible, planners need to know the rate and extent to which a shift in work locations is happening. If this trend of greater use of computers continues, it suggests that an increasing proportion of the workforce will be able to telecommute, thereby reducing trips.

Although this particular survey was designed to monitor the impact of PCs on education, it also informs us that computer use is clustered in certain occupations and industries and is associated with the gender of individuals employed in those occupations. For example, the “industry with the overall highest level of usage is that of finance, insurance and real estate, where 67.2 percent of all workers say they use a computer.” High rates of use are also associated with the real estate industry and with persons working as managers and professionals.

¹²Kominski, Robert. *Computer Use in the United States: 1989*. Current Population Reports, Special Studies Series P-23, No. 171, February 1991.

Part II.

Analysis of Federal Survey Methods

AMERICAN HOUSING SURVEY

Purpose

Sponsored by the Department of Housing and Urban Development (HUD), the American Housing Survey provides a “current and continuous series of data on selected housing and demographic characteristics. Various survey supplements collect data on topics such as energy conservation and neighborhood quality.”¹³

Sample Size and Methodology

The National Survey of approximately 61,000 housing units is conducted biennially over a three-month period by CATI, telephone, and personal visit interviews. In addition, a Metropolitan Survey (MS), formerly called the SMSA, is conducted in 44 metropolitan areas which are interviewed on a rotating basis. CATI and CAPI are now being used to conduct surveys.

Availability of Data

The Census telephone survey, using CATI and local and field visits (CAPI) were conducted in 1995. The first public use data tapes will be available in early 1997. Data will be issued on CD-ROM in late spring 1997.

AHS data for both the National and Metropolitan Survey are published as joint HUD-Census Bureau reports about 15-18 months following collection.

Relevance of Including Work at Home

Keeping pace with changes in housing characteristics, surveys such as the AHS are recognizing a new use of the home. In the 1980’s and 1990’s computers have invaded homes as televisions did in the 1950’s. Just as the TV was partly responsible for creating an area in the home that came to be called the family room or den, the computer has established its own space. Computers used for education or games may find their place in children’s rooms. But home-based business owners, telecommuters, and others who do part of their work at home, carve out a space to work within their dwellings. This increasingly common *home office* needs to be captured in an inventory of rooms. Adding questions to identify this new use requires considering how space is currently used and described in homes, for example:

- Some people have rooms they use exclusively as a home office or studio. Others have rooms used both as an office and for other functions, such as an office in their living room, dining room, or bedroom.
- Working out of a briefcase does not make a room into an office. To constitute an “office,” the space should provide a permanent workplace and housing for materials, supplies, and equipment.
- Several household members may work at home, each having separate offices or businesses or they may share an office.
- People do not always name or recognize their work space as an “office.” For example, they may refer to their study, library, or studio. Or they may not use a special term.

¹³Op. cit. *Survey Abstracts*

At the recommendation of the Transportation Research Board (TRB) Committee on Telecommunications and Travel Behavior, the U.S. Department of Housing and Urban Development has added work-at-home questions to the American Housing Survey.

Question 26 of the 1995 survey, begins with an inventory of rooms—bedrooms, baths, kitchens, living rooms, dining room, and “rooms used only for business space.” Those rooms with and without direct access to the outside are identified. Part 26b asks if there are any other rooms. If the response is “yes,” questions 26d-h ask about rooms that are used both as business space and for something else such as a guest room. (Throughout the report, questions pertaining to work at home are boldfaced.)

Question 120l(1) identifies employees who do any of their “regularly scheduled work...at home.” Question 120l (4) obtains the number of days worked at home which allows for calculation of the resulting commute trip reduction in miles. The data can then be compared with the length of the commute to the usual workplace asked by question 120k.

1995 AMERICAN HOUSING SURVEY

Q.26a.

How many of each of the following rooms does the (house/apartment) have?

(For a one room efficiency or studio apartment, enter “1” for living room, enter the correct number of bathrooms, and mark “None” for all other rooms.)

- | | | |
|--|-----------------------------------|--|
| (1) Bedrooms? | <input type="text" value="1240"/> | _____ Number |
| | <input type="checkbox"/> | None |
| (2) How many full bathrooms with hot and cold piped water, AND a sink, AND a flush toilet, AND a bathtub or shower? | <input type="text" value="1250"/> | _____ Number |
| | <input type="checkbox"/> | None |
| (3) How many half bathrooms?
(Toilet, OR bathtub OR shower) | <input type="text" value="1260"/> | _____ Number |
| | <input type="checkbox"/> | None |
| (4) Kitchens? | <input type="text" value="1270"/> | _____ Number |
| | <input type="checkbox"/> | None |
| (5) Living rooms? | <input type="text" value="1280"/> | _____ Number |
| | <input type="checkbox"/> | None |
| (6) Separate dining rooms? | <input type="text" value="1290"/> | _____ Number |
| | <input type="checkbox"/> | None |
| (7) Rooms used only for business space? | <input type="text" value="1320"/> | _____ Number with direct access to the outside |
| | <input type="checkbox"/> | None |
| | <input type="text" value="1321"/> | _____ Number without direct access to the outside |
| | <input type="checkbox"/> | None |
| Q26d.
Are any of your rooms used both as business space and for something else, such as a guest room? | <input type="text" value="1331"/> | _____ Yes |
| | | _____ No - Skip to item 26i |
| Q26e.
How many are used for both?
<i>(Ask if necessary)</i> | <input type="text" value="1351"/> | _____ Number of rooms |
| Q26f.
Which rooms are used both as business space and for something else? | <input type="text" value="1352"/> | _____ Bedrooms |
| | <input type="text" value="1353"/> | _____ Kitchens |
| | <input type="text" value="1354"/> | _____ Living rooms |
| | <input type="text" value="1355"/> | _____ Dining rooms |
| | <input type="text" value="1356"/> | _____ Others |

- Q26g.
Have we already counted (this room/all those rooms?) **1357** **Yes - Skip to item 26I**
 No
- Q26h.**
How many did we not count? **1358** _____ **Number of rooms**
- Q.120g.
How did...usually get to work last week? **4500** Car, truck, van
Did...drive alone or
go with others?
- PROBES: (If a person uses different means of
transportation on different days...)
Which did...use most often?*
- (If a person uses more than one means of
transportation on the same day...)
Which covered the longest distance?*
- 4510** Alone
- 4500** Go with others
 Bus or streetcar
 Subway or elevated
 Railroad Skip to
item
120i
 Taxicab
 Motorcycle
 Bicycle
 Other vehicle
 Walked only
 Works at home - Skip to item 120I
- Q.120i.
How many minutes did it usually take...to get to work? **4530** _____ Minutes
 Work place varies
- Q120j.
What time did...usually leave for work? **4540** _____ Hours
4550 _____ Minutes
- Q120k.
How many miles was...’s trip to work? **4560** _____ Miles
 Less than 1 mile
- Q120I(1)**
**Last week, did...do any of his/her regularly
scheduled work for his/her employer at home?** **Yes**
 No - Skip to (3)
- Q120I(2)**
**Last week, how many hours did ...
work at home on a wage or salary job?** **4562** _____ **Hours**
- Q120I(3)**
**Last week, how many hours did ...
work at home as a self-employed person or
contract worker or business owner** **4563** _____ **Hours**
- Q120I(4)**
**How many separate days last week did ...
work at home instead of traveling to work?** **4564** _____ **Days**
- Q120m. Go to next worker
-

Note: Questions recommended for addition are in boldface.

CHARACTERISTICS OF BUSINESS OWNERS (CBO) SURVEY

Purpose

The Characteristics of Business Owners is sponsored by the Census Bureau, the Minority Business Development Agency and the U. S. Small Business Administration. The survey “presents data about the demographic, sociological and financial characteristics of minority- and women-owned business owners and their businesses as well as a comparable nonminority male business universe. The data from this sample survey were collected as part of the economic censuses and are intended to expand and augment the data published in two 1982 Economic Censuses reports—the Survey of Women-Owned Businesses (WOB) and the Survey of Minority-Owned Enterprises (SMOBE).”¹⁴ Further, the CBO asks about the number of employees and their characteristics. It also inquires about benefits provided under the Family and Medical Leave Act of 1993.

Sample Size and Methodology

Conducted at five-year intervals in years ending in __ 2 and __ 7, the most recent survey, 1992 Economic Census Characteristics of Business Owners Survey, collected data on both 1992 and 1994. It also confirmed that the business existed in 1995. The total sample size was 125,000 businesses drawn as a random sample from businesses that reported any business activity in 1992 to the Internal Revenue Service.

There are three versions of the CBO. CBO-1 applies to filers of a Schedule C, “Profit or Loss from Business” (Sole Proprietorship) or a Schedule C-EZ, “Net Profit From a Business” (Sole Proprietorship). CBO-2 and CBO-3 are directed to business owners who file Form 1065, “U.S. Partnership Return of Income” and Form 1120S, “U.S. Income Tax Return for an S Corporation.” Forms used for the SMOBE survey do not ask about home-based businesses. However, the CBO sample includes minority- and women-owned businesses.

Availability of Data

Collected in August 1995, data became available in 1996.

Relevance of Including Work at Home

Designed to “benefit business owners, self-employed persons, and their businesses,” the CBO is part of the economic census required by law to take place every five years.¹⁵ The survey collects profiles of business owners and self-employed persons, “including their education, capital requirements, owner’s work experience, workforce characteristics, and business characteristics.” The CBO-1 and CBO-2 identify home-based businesses; the CBO-3 survey of S Corporations does not.

The CBO provides critical data on home-based businesses needed for policy making by a number of federal agencies such as the Small Business Administration and Department of Health and Human Services. For example, the CBO captures short-lived businesses (operated three years or less) if they were started and discontinued between 1992 and 1995. Although data include weeks/year and hours/week worked in business they do not include time-of-day schedules. Thus no information about travel patterns by home-based business owners can be generated from the CBO.

However, of some interest to transportation forecasting, details provided on international trade can be cross-tabulated to reveal the relative importance of home-based businesses in the emerging global workforce. For example, this information could be used to monitor international shipping generated by the work-at-home segment to 10 major destinations.

¹⁴Bureau of the Census. *Looking Back to Look Forward, 1995-6*. The Census Bureau Research Fellow Program and the ASA/NSF/Census Research Program.

¹⁵Martha Farnsworth Riche, Director, Bureau of the Census, October 1994.

Work-at-Home Questions on the 1992 CBO**CBO-1 (question numbers italicized) and CBO-2**

**10a. Was this business operated primarily
21a. from or in a home—**

When first established?

- Yes
- No
- Don't know

During 1992?

- Yes
- No

During 1993?

- Yes
- No

**10b. During any of these time periods,
21b. which best describes the primary business
use of this home?**

Mark one box only

- To produce goods/services on the premises
- To do clerical work (goods/services produced off the premises)
- To telecommute (outside employment doing office work at home)

10c. Does the ZIP code, referred to in the
21c. mailing label on page 1, indicate this
business's actual physical location in 1992?

- Yes
 - No
Please supply ZIP Code
-

CURRENT POPULATION SURVEY (CPS)

Co-sponsored by the Bureau of Labor Statistics and the Bureau of Census, the CPS is used to monitor labor force activity. The data provide estimates of employment, unemployment, and other characteristics of the U. S. Population. Supplements to the CPS, consisting of a limited number of additional questions on a specific topic such as multiple jobholding and computer use, are added on a regular schedule. Others are added intermittently, as described below.

Sample Size and Methodology

CPS surveys are now conducted using CATI and CAPI on samples of approximately 60,000 households selected from a pool of 71,000 each month. "Each month's sample is composed of eight panels that rotate on a schedule of 4 months in, 8 months out, 4 months in, so that only 25 percent of the households differ between consecutive months."¹⁶ Interviewing is conducted during one week of each month.

Availability of Data

Although monthly employment data is released about 2 weeks after the survey, the "final report, *Employment and Earnings*, is published by BLS approximately 6 weeks after data collection."

Early reports on data from CPS supplements are available about 3 to 6 months after data collection. Final reports take one year to 18 months. Public use microdata files can be obtained within 6 to 12 months after a survey.

Relevance of Including Work at Home

The CPS was completely revised in 1994. Changes were needed partly because "since the last revision, the U.S. society and economy have undergone major shifts, such as the growth of service jobs...the more prominent role of women, especially mothers, in the work force; and a profusion of alternative work schedules."¹⁷

The new CPS has only one transportation-related question and none inquiring about home-based work. Q23A asks *discouraged workers* "What is the main reason you were not looking for work during the LAST 4 WEEKS?" A possible response is "transportation problems." Because the interviewer does not read the list of possible responses, the number of persons who mention transportation will probably be very low even if transportation is a problem. As their *main* reason for not looking for work, people would be more likely to offer more general reasons such as "Believes no work available in line of work or area" or simply "Couldn't find any work." Since only one response is allowed these answers would conceal lack of transportation as the principal barrier to employment.

In the old CPS, there was "no direct question on the presence of a business in the household. In the revised questionnaire, ...every household is asked about the presence of a family business, and for households where such a business exists, family members who are not otherwise employed are asked if they did any unpaid work in that business." Among agencies that will be interested is the SBA because a business is now clearly identified.

Another major difference is that "information will be available every month on multiple jobholding.... Also, beginning in 1994, estimates on the number of hours usually worked per week will be available monthly for the first time."

Automating the CPS will make it feasible to track people over a 16-month period, enabling a measure of start and stop telecommuting. Although the CPS has not been revised very often, "In the coming years, the agencies will be evaluating a variety of data from the redesigned CPS....recommendations for

¹⁶Op. Cit. *Survey Abstracts*

¹⁷U.S. Department of Labor, Bureau of Labor Statistics. *Questions and Answers on the Redesign of the Current Population Survey*, November 1993.

improvements will be tested and implemented.” The last revision occurred in 1967. Many of the changes in the CPS stem from recommendations of the National Commission on Employment and Unemployment Statistics (Levitan Commission) which reexamined the Nation’s labor force statistics in 1978-79.¹⁸

The fact that the Commission did not propose questions on the topic of work at home is not surprising since the trend towards increasing home-based work began in the early 1980’s, after the Levitan review. Yet some of the topics that the CPS considers “emerging issues of the times, such as the incidence of contingent work, the “glass ceiling...availability of child care...” are closely related to the ability to work at home. More recent analyses of the CPS have recognized changes in work patterns that call for rephrasing of questions posed as Bregger and Dipppo point out in their discussion of revisions in wording to ambiguous questions.¹⁹ For example, they cited the question “Did you do any work at all LAST WEEK, not counting work around the house” as potentially confusing because “home offices and other work arrangements that involve individuals working in their homes have become more prevalent...”

The change in work patterns argues for adding work-at-home questions to the core CPS. Over the history of the CPS, there have been precedents for adding questions: earnings were added in 1979, union membership in 1984, and school enrollment in 1985. As is, the revised questionnaire will make the data more useful to users. The questions below that we recommend be added to the core CPS would provide tracking of the smallest business unit, the home-based business and work at home by employees such as telecommuters.

Recommended Questions

The CPS, redesigned for CATI automated data collection, was first implemented in January 1994. The resequencing of questions in the revised questionnaire has helped make asking about work at home logical to respondents. At the present time, home-based work questions are only considered for addition to supplements. BLS, for example, has added work at home to its May supplement in 1985 and 1991 and plans to do so again in 1997.

If space could be made for adding work at home to the core CPS the questions would fall naturally in the *Usual Hours* and/or *Actual Hours* of work sections and would logically follow question number 20E-A as shown on the next page. The three questions Q20E-A1, Q20E-B1, and Q20E-B2, asking for time “usually” worked at home would provide key data on shifts to home-based work. If space permitted, also obtaining data on “last week’s” work at home would be desirable.

Recommended Work-at-Home Questions For CPS

Usual Hours

Q20E-A

How many hours per week do you USUALLY work at your (main) job?

(By main job we mean the one at which you usually work the most hours.)

_____ Number of hours

ADD Q20E-A1

How many of those hours do you USUALLY work at home?

_____ Number of hours

Q20E-B

How many hours per week do you USUALLY work at your other job(s)?

_____ Number of hours

ADD Q20E-B1

How many of those hours do you USUALLY work at home?

_____ Number of hours

[If Q20E-A1 or Q20E-B1 has **work-at-home hours**, then ask:]

¹⁸Bregger, John E. and Cathryn S. Dipppo. “Overhauling the Current Population Survey: Why Is It Necessary to Change?” *Monthly Labor Review*, September 1993.

¹⁹Ibid., p. 12.

ADD Q20E-B2

On how many separate days do you USUALLY work at home as a SUBSTITUTE for traveling to the usual location(s) of work?

[Answer range: 0 to 7]

Q20H

LAST WEEK, did you work any overtime or EXTRA hours (at your MAIN job) that you do not USUALLY WORK?

_____ Yes

_____ No

Q20H-1

How many ADDITIONAL hours did you work?

_____ Number of hours

ADD Q20H-1A

How many of those ADDITIONAL hours did you work at home?

_____ Number of hours

Q20I-1

(So for) LAST WEEK, how many hours did you ACTUALLY work at your (MAIN) job?

_____ Number of hours

[If Q20E-A1 or Q20E-B1 has **work-at-home hours**, then ask:]

ADD Q20I-1A

How many of those hours did you work at home?

_____ Number of hours

Q20I-2

LAST WEEK, How many hours did you ACTUALLY work at your other (job)?

_____ Number of hours

[Refers to total jobs and/or businesses.]

ADD Q20I-2A

How many of those hours did you work at home?

_____ Number of hours

[If Q20I-1A OR Q20I-2A has **work-at-home hours**, then ask:]

ADD Q20I-2B

LAST WEEK, on how many separate days did you work at home as a SUBSTITUTE for traveling to the usual location of work?

_____ Number of days

Information that could be obtained from the suggested additions

Cross tabulations of responses could distinguish *telecommuters* (wage and salary) from *home-based business owners* (self-employed). From these questions we would get the following information:

- Number of workers who usually work at home
- Usual number of days worked at home
- Number of workers who worked at home last week
- Number of days worked at home last week
- Number of workers who work overtime or extra hours at home
- Number of days worked overtime or extra hours at home last week
- Work at home as a substitute for the journey to work, i.e. actual trip reduction.

Monthly collection of work-at-home data would be difficult to justify at the current level of home-based work. Instead, we recommend trying to obtain the information once a year. It would make sense to include work-at-home questions in months 1 or 5 because those are the months in which interviews are conducted by interviewers in the respondent's home

Although the core CPS questionnaire does not ask about work at home, occasionally work-at-home questions have been included as topics in CPS supplements. Generally commissioned by public agencies, the supplements add approximately 35 questions to the core survey. Certain months are reserved by

BLS. For example, the Annual Demographic Supplement sponsored by Census and BLS is fielded annually in March.²⁰ Two supplements have provided work-at-home data, the Multiple Jobholding Supplement and the Computer Ownership and Use Supplement.

CPS Multiple Jobholding Supplement

Work-at-home questions were added in May 1985 and 1991. Due to slight differences in phrasing, the data are not strictly comparable.

Work-at-Home Questions 1985 CPS May Supplement

Q. 56

As part of’s regularly scheduled work,
..... do any of his/her work for

(Entries in 23A to D) at home?

[Refers to the principal employer]

Yes

No

Q. 57

LAST WEEK, approximately how many hours
of’s work did he/she do at home?

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

1991 CPS May Supplement

First Job or Business

Q. 40

As part of this job, doesdo any of’s work at home?

Yes

No

Q. 41

LAST WEEK approximately how many hours of’s
work did.....do at home as part of this job?

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

Q. 43

Does.....get paid for the additional hours of work...
puts in at home as part of this job?

Yes

No

Second Job or Business

Q. 54

Does.....usually do any of the work as part of this job at home?

Yes

No

Q. 55

Does.....do all of the work as part of this job at home?

Yes

No

Q. 57

Does.....get paid for the work.....does at home as part of this job?

Yes

No

Q. 58

Altogether, how much does.....usually earn per week as part of
this job BEFORE deductions? Include any overtime pay,
commissions, or tips usually received.

\$

²⁰Op. Cit. *Survey Abstracts*.

47. In what year was the (newest) computer purchased?
- | | | | |
|------|-----------------------|-------------|-----------------------|
| 1993 | <input type="radio"/> | 1989 | <input type="radio"/> |
| 1992 | <input type="radio"/> | 1988 | <input type="radio"/> |
| 1991 | <input type="radio"/> | Before 1988 | <input type="radio"/> |
| 1990 | <input type="radio"/> | Don't know | <input type="radio"/> |
48. Which of the following items does the (newest) computer have? (READ LIST - MARK ALL THAT APPLY)
- | | | | |
|--------------------|-----------------------|------------------------|-----------------------|
| Floppy disk drive | <input type="radio"/> | Color monitor | <input type="radio"/> |
| Hard disk drive | <input type="radio"/> | Joystick control | <input type="radio"/> |
| Optical disk drive | <input type="radio"/> | Mouse control | <input type="radio"/> |
| Dot matrix printer | <input type="radio"/> | Fax card | <input type="radio"/> |
| Laser printer | <input type="radio"/> | Telephone modem | <input type="radio"/> |
| Plotter | <input type="radio"/> | Other | <input type="radio"/> |
| Scanner | <input type="radio"/> | Don't know | <input type="radio"/> |
49. Does...directly use a computer at home?
- Yes
- No
50. At home, what does...use the computer for? (SHOW FLASHCARD A. MARK ALL THAT APPLY)
- | | | | |
|------------------------------------|-----------------------|------------------------------|-----------------------|
| Analysis | <input type="radio"/> | Graphics | <input type="radio"/> |
| Bookkeeping | <input type="radio"/> | Home-based | |
| Bulletin boards | <input type="radio"/> | business | <input type="radio"/> |
| Calendar/scheduling | <input type="radio"/> | Household records/finance | <input type="radio"/> |
| Communications | <input type="radio"/> | Learning to use the computer | <input type="radio"/> |
| Connect to computer at work | <input type="radio"/> | Programming | <input type="radio"/> |
| Computer-Assisted Design (CAD) | <input type="radio"/> | Sales | <input type="radio"/> |
| Databases | <input type="radio"/> | School assignments | <input type="radio"/> |
| Desk-top publishing/newsletters | <input type="radio"/> | Spread sheets | <input type="radio"/> |
| Educational programs | <input type="radio"/> | Telemarketing | <input type="radio"/> |
| Electronic mail | <input type="radio"/> | Word processing | <input type="radio"/> |
| Games | <input type="radio"/> | Work at home | <input type="radio"/> |
| | | Other | <input type="radio"/> |
| | | Don't Know | <input type="radio"/> |
51. During the last month, on average how many days per week did...use the computer at home?
- | | | | |
|--------|-----------------------|------------------------|-----------------------|
| 7 days | <input type="radio"/> | 1 day | <input type="radio"/> |
| 6 days | <input type="radio"/> | Less than once a week | <input type="radio"/> |
| 5 days | <input type="radio"/> | Not used in last month | <input type="radio"/> |
| 4 days | <input type="radio"/> | Don't know | <input type="radio"/> |
| 3 days | <input type="radio"/> | | |
| 2 days | <input type="radio"/> | | |
-

Discussion

The 1984 survey offered the choice of seven categories of uses of the computer at home, including “job or business related activities.” In the 1989 survey the list was expanded to 16 categories including “home-based business.” “Job-related activities” was not offered as a choice but many of the activities listed were those performed by telecommuters or other employees who do some of their work at home. As shown, the 1993 survey lists 23 activities including “home-based business,” “work at home” and specific job-related activities.

Of particular interest are the cross-tabulations that can be made to relate computer use “at work” and “at home” by occupational and industrial classifications.

November 1994 Computer Supplement for Commerce Department

In November 1994 a Supplemental Computer Usage Questionnaire was fielded for the Commerce Department. The thrust of the questions is to understand ownership of personal computers and the extent of current use and future interest in using on-line services for a list of household functions. The study reports that disparities in ownership are determined by individuals’ ethnicity, urban/rural location, age, and income.²¹

Proprietary surveys report that more than 55 million persons are doing some business or job-related work at home.²² Thus, if this survey were to be repeated, we recommend that use of the computer for home-based work be added to the response list. (For information about this survey, contact the National Telecommunication and Information Administration.)

Recommended Work-at-Home Questions

SQ5. I’m going to ask you about using your computer and modem at home to get certain kinds of information or services.

Do you use your computer:

- a. to search classified ads
- b. to take educational courses for work or recreation
- c. to find out about transportation schedules or fares, make reservations, or buy tickets
- d. to stay in touch with friends, relatives, or others with similar interests
- e. to pay bills, order merchandise or shop with a credit card
- f. to access government services, reports or data
- g. to file income tax returns

Recommended additional choice:

i. to do anything related to your job or business

SQ7. I’m going to ask you about using (a) (your) home computer to get certain kinds of information or services. Answer yes or no to your interest in each one.

Would you be interested in using (a) (your) computer:

[Same list as above SQ5 is presented.]

Recommended additional choice:

i. to do anything related to your job or business

²¹U.S. Department of Commerce. *Falling Through the Net: A Survey of the “Have Nots” in Rural and Urban America*, Washington, D.C. 1995.

²²FIND/SVP 1994.

DECENNIAL CENSUS OF POPULATION

Purpose

The decennial census is important because it counts the entire U.S. population, in contrast to surveys which are based on small samples of that universe. Thus, “the value of census data is that it can be used by local governments and others who need information on small statistical areas or numerically small population groups.”²³ New trends such as telecommuting can be detected in their early stages during which the numbers of participants are too small to measure on other surveys. Thus the earliest signs of increased telecommuting and home-based business activity were identified when the non-farm work-at-home was broken out from the farm segment in the 1980’s.²⁴ In 1985 this finding helped justify adding work at home for the first time to the CPS Multiple Jobholding Supplement.

The content of each census is determined partly by items mandated by the Congress and partly by topics required by law and traditionally assigned to the census. Additionally, programmatic topics are included for program planning, implementation and evaluation or to provide legal evidence. To this group are added questions designed to meet other information needs of federal and non-federal data users.

Scope of Work-at-Home Information

The so-called “journey to work” question, Q23a in the 1990 census, was added in 1960 by legislative mandate to provide data for transportation planning. In addition, a housing question collects information about some types of home-based businesses such as owner-occupied retail stores.

The journey-to-work question has several problems in its present form because it was written in the 1960s, before work at home began increasing:

- The phrasing of the question assumes that people routinely travel to work in the same way each day with minor exceptions. Because of changing work patterns, the question now seriously undercounts the population known as “telecommuters.” Telecommuters are employees who work at home, but most split their weeks between their home and the employer’s work site.
- The National Content Test (NCT) for the 1990 census found that respondents reported “illogical combinations of [travel] modes” such as “Car, truck or van” and “Worked at home.” The explanation given was that respondents did not understand the question and “reported how they got to work on different days of the previous week.” That may be true of telecommuters. It is likely that self-employed respondents answered the question as worded. But they were the contractors, consultants and other home-based business owners who do indeed both work at home *and* travel to customers or clients.

Between 1980 and 1990, ridership on all commute trip modes decreased, with two exceptions. Commuters driving alone increased over 35 percent.²⁵ Nationally, the numbers of people working at home increased from 2.2 million in 1980 to 3.4 million in 1990, an increase of 56 percent. The actual increase in telecommuting was probably considerably higher. Proprietary surveys consistently report higher figures for home-based work than does the census. At least part of the discrepancy can be accounted for by the constraints of the journey-to-work phrasing. The 1990 census used the following question sequence:

Q21a. Did this person work at any time LAST WEEK?

Q23a. How did this person usually get to work LAST WEEK?

“Work at home” is one of the travel mode choices offered to respondents. If different modes are used, the respondent is instructed to report the one used on *most* days. The first question eliminates everyone who did not work during the prior week. (The reference week is not a *single* calendar week for the entire U.S. population but depends on the actual survey week.)

²³1990 Census of Population and Housing. *Content Determination Reports: Place of Work and Journey to Work*. 1990 CDR-4.

²⁴Salopek, Philip. Letter to Joanne H. Pratt.

²⁵U.S. Department of Transportation, Federal Highway Administration. *Journey-to-Work Trends in the United States and its Major Metropolitan Areas 1960-1990*, November 1993.

The second question eliminates the majority of telecommuters. The various telecommuting pilots all found that telecommuters, on the average, work 1-2 days a week at home. Therefore, most telecommuters are not counted by the journey-to-work question. This implies that approximately 3.2 million, or 3 percent of the work force reported to be working at home by the decennial census represent the minimum of people who work at home three or more days a week.

1990 Work-at-Home (Journey-to-Work) Questions

H5b.

Is there a business (such as a store or barber shop) or a medical office on this property?

Yes No

Q23a.

How did this person usually get to work LAST WEEK? If this person usually used more than one method of transportation during the trip, fill the circle of the one used for most of the distance.

Car, truck, or van
Bus or trolley bus
Streetcar or trolley car
Subway or elevated
Railroad
Ferryboat
Taxicab

Motorcycle
Bicycle
Walked
Worked at Home
Other method

Q28a.

For whom did this person work? _____

Recommended Changes

Planners for the 1990 census suggested new questions to determine the “characteristics of persons working at home.”²⁶ However, because the topic was given low priority by the “Interagency Working Groups (IWG),”²⁷ the Census Bureau did not implement the recommendation.

The Orlando conference that formulated transportation questions for the 1990 census discussed work at home at length, concluding:

*Given the wording and structure of current questions, workers commuting at odd hours, workers with more than one job, and workers who work at home some of the time cannot be identified...It is expected that these atypical patterns will be increasingly typical in the 1990's. The lack of ability to identify these cases now impedes transportation planning and employment analyses. It was the conference consensus that the problem will increase with time.*²⁸

The fact that nationwide, since the 1980s, home-based work indeed has steadily increased argues for new consideration of the topic for the year 2000. Further, “the percentage of workers who work at home are small, but growing in every metropolitan area.”²⁹

We recommend testing a rewording of the journey-to-work question in the 2000 census National Content Test scheduled for 1996. We could obtain commute patterns by writing the journey-to-work question with responses listed in a matrix. The question could be referenced to “last week” as it is now, or to a typical week as shown below:

²⁶Op. Cit. 1990 Census of Population and Housing.

²⁷Ibid.

²⁸Transportation Research Board. *Proceedings of the National Conference on Decennial Census Data for Transportation Planning*, Orlando, Florida, 1984.

²⁹Ibid.

Q23a. How do you usually get to work? (Check all that apply)

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Car, truck or van							
Bus or trolley bus							
Streetcar or trolley car							
Subway or elevated							
Railroad							
Ferryboat							
Taxicab							
Motorcycle							
Bicycle							
Walked							
Worked at home							
Other method							

With data from the recommended rephrased question, work at home could be cross-tabulated by class of worker to achieve an accurate count of telecommuters and home-based business owners. Recognizing that the proposed matrix does not reveal multiple mode travel days, even so the information would be useful for monitoring transportation demand management efforts and for other long-range planning. Other data could then be cross-tabulated with work at home to serve the needs of various federal and non-federal entities. For example, in addition to demographic items, the following variables will permit tracking key employment issues:

- hours worked last week
- address of location worked last week (if home address same as work address, then person works at home)
- self-employment income
- occupation
- industry
- “kind of work”
- “most important activities or duties”

If the continuous measurement alternative is adopted for the year 2000 census “this alternative would result in a decrease in the ability to process small geographic units.”³⁰ However, “at a national and state level, [it] could offer real advantages in examining travel demand management, commute trip reduction, telecommuting, spreading peak travel.” [sic]

³⁰U.S. Department of Transportation. *Federal Agency Requirements for 2000 Census Data.*

HEALTH AND RETIREMENT SURVEY (HRS)

Purpose

The *Health and Retirement Survey* (HRS) is the “largest and most extensive survey of the determinants of retirement and the correlates of successful aging ever undertaken.”³¹ It was “designed for use by both policy makers and the scientific community.”

Sample Size and Methodology

The HRS is conducted in waves scheduled at two-year intervals. The Wave I sample of 12,650 observations in about 7,600 households was fielded from April 1992 through March 1993. Interviews for the 11,600 households in Wave II were conducted between April 1994 and January 1995. Waves III and IV have received funding. Plans are to replace panel members who are now in older age groups with younger cohorts.

Availability of Data

Contact the Survey Research Center, Institute for Social Research at the University of Michigan.

Relevance of Including Work at Home

In its present form, the HRS does not include work at home as a topic. Although “transportation problems” are an anticipated “main reason you were not looking for work during the last four weeks” the categories are not read to the respondents. Respondents with disabilities or health problems are asked if their employers help out by providing transportation but there is no further probe for details.

Because labor force participation is one of the major policy issues that the HRS is designed to examine, work-at-home questions logically could be added. To bring the survey up to date as a *Health and Retirement Survey*, we recommend that work at home be added to the list of options for persons planning phased retirement or having disabilities. The details of work arrangements between employers and individuals with health or impairment problems provided by this survey would make it particularly valuable for tracking the extent of work at home under the American Disabilities Act. Also, if work at home were added to the sections on self-employment, the relation between retirement and starting a home-based business could be determined.

HEALTH AND RETIREMENT SURVEY - WAVE 1

SECTION B: HEALTH STATUS

This section probes “how much difficulty people have with various activities because of a health or physical problem.”

B5d.

How difficult is it for you to...
use a computer or word processor?

- _____ Not at all difficult
- _____ A little difficult
- _____ Somewhat difficult
- _____ Very difficult/can't do
- _____ Don't do

³¹Survey Research Center, Institute for Social Research. *Health and Retirement Study: An Overview*, University of Michigan.

SECTION F: EMPLOYMENT OF RESPONDENT

Instructions given are: [IF R. SAYS, "I RUN MY OWN BUSINESS" CHECK "SELF-EMPLOYED". Go to F26. Persons who work for "someone else" are asked:

F4.

What kind of business or industry do you work in—that is, what do they make or do at the place where you work?

F6.

What sort of work do you do? (Tell me a little more about what you do) _____

Recommendation: add "total" to F8:

Revised F8.

How many *total* hours a week do you usually work on this job? _____ # Hours

NEW F8a.

How many of those total hours a week do you usually work at home? _____ # Hours

F9.

Do you work this number of hours nearly every week, or do the hours you work vary a lot from week to week?

1. SAME EACH WEEK

Go to F10.

2. VARY A LOT

If response is "vary a lot," then ask F9a:

F9a. How many hours would you work in a week with relatively long hours? _____ # Hours

NEW: [If response to F8a is greater than 0, ask F9a1 and F9b1.]

NEW F9a1

How many of those total hours a week do you usually work at home? _____ # Hours

F9b. How many hours in a relatively short week? _____ # Hours

NEW F9b1

How many of those total hours in a short week do you usually work at home? _____ # Hours

R SELF-EMPLOYED

F26.

What industry do you work in? That is, what does your company do or make? (What industry do you typically work in?) _____

F27.

What sort of work do you do? (Tell me a little more about what you do.) _____

Revised F28.

How many *total* hours a week do you usually work in this business? _____ # Hours

Proposed new questions:

NEW F28a.

Is your business located in your home? _____ **Yes**

_____ **No**

[If response to F28a is "Yes," ask F28b, otherwise skip to F29.]

NEW F28b.

How many of those total hours a week do you usually work at home? _____ # Hours

SECTION FA: EMPLOYMENT/WAVE II EMPLOYEES
May 19, 1994

Instructions given are: [If R. SAYS, "I RUN MY OWN BUSINESS" CHECK "SELF-EMPLOYED".] GO TO SECTION FB.

Persons who work for "someone else" are asked:

FA41a.

What kind of business or industry do you work in—that is, what do they make or do at the place where you work?

FA41c

What sort of work do you do? (Tell me a little more about what you do.) _____

Recommendation: add "total" to FA44:

REVISED FA44.

How many total hours a week do you usually work on this job? _____ # Hours

NEW FA44a

How many of those total hours a week do you usually work at home? _____ # Hours

FA45.

Do you work this number of hours nearly every week, or do the hours you work vary a lot from week to week?

1. SAME EACH WEEK

GO TO F46.

2. VARY A LOT

If response is "vary a lot," then ask FA45a

FA45a.

How many hours would you work in a week with relatively long hours? _____ # Hours

NEW: [If response to FA44a is greater than 0, ask FA45a1 and FA45b1.]

NEW FA45a1

How many of those total hours a week do you usually work at home? _____ # Hours

FA45b.

How many hours in a relatively short week? _____ # Hours

NEW FA45b1

How many of those total hours in a short week do you usually work at home? _____ # Hours

We recommend adding the following question to the stated preference series:

NEW FA107a.

If your employer offered you a choice of working at home with the same pay and responsibility or being laid off, which would you probably do?

1. Work at home
2. Accept layoff
3. Start own business
4. Retire

FA117.

Are you doing any other work for pay now, such as (another) business of your own, or a second job, or the military reserves?

FA118.

How many hours a week do you usually work on (this other job/these other jobs)? _____ # Hours

NEW FA118a.

How many of those hours do you work at home? _____ # Hours

SECTION FB: EMPLOYMENT/WAVE II SELF-EMPLOYED
May 23, 1994

FB15.

What industry do you work in? That is, what does your company do or make? (What industry do you typically work in?) _____

FB16.

What sort of work do you do? (Tell me a little more about what you do.)

Revised FB 17

How many *total* hours a week do you usually work in this business? _____ # Hours

Proposed new questions:**NEW FB17a.**

Is your business located in your home? _____ Yes
 _____ No

[If response to F17a is "Yes," ask F17b, otherwise GO TO F18.]

NEW F17b.

How many of those total hours a week do you usually work at home? _____ # Hours

WAVE II SECTION J: DISABILITY
October 7, 1994

This section of the HRS examines the relation between "impairment or health problem" and the ability to work.

J13.

At the time your health started to limit your ability to work, did your employer do anything special to help you out so that you could stay at work? _____ Yes
 _____ No

*Recommended addition to list of choices:***NEWJ13e1**

(Did your employer) give you the option of working at home? _____ Yes
 _____ No

J15

Does your employer currently do anything special to make it easier for you to stay at work?

*Recommended addition to list of possible responses:***NEWJ15e1**

(Did your employer) give you the option of working at home? _____ Yes
 _____ No

SECTION H: JOB HISTORY
February 25, 1994

Referring to "most recent employer":

H8.

During your last full year at that job, how many hours a week did you usually work? _____ Hours/week

Recommended new question:**NEW H8a.**

How many of those total hours did you usually work at home? _____ Hours/week

NATIONAL EDUCATION LONGITUDINAL STUDY (NELS)

Purpose

Sponsored by the National Center for Education Statistics, the National Education Longitudinal Study of 1988 is designed to track eighth grade students “as they develop, attend school, and embark on their careers.”³²

Sample Size and Methodology

Approximately 25,000 students from about 1,000 public and private schools have been surveyed in 1988, 1990, 1992, and 1994. Their parents, school principal and two teachers make up a sub-sample who were interviewed the first three years. CATI has been used for interviewing beginning in 1994.

Relevance of Work-at-Home Questions

The next survey of this sample is tentatively scheduled for 2002. By that year the cohort will have entered the labor force. One work-at-home question added to each set covering employment would enable cross-tabulations to be made from other variables in the data set. Also, we recommend adding work at home to the list of benefits (asked for the job in the last calendar year) that some employers make available to workers.

NATIONAL EDUCATION LONGITUDINAL STUDY (NELS) 1988

Question numbers refer to Third Follow-up, 1994

33F, 34F and 35F (referring to each job held)

On average, how many hours per week did you work at this job? _____ hours per week

NEW 33Fa, 34Fa and 35Fa

On average, how many hours per week, if any, did you work at home for this job? _____ hours per week

34N

Did your employer make available to you any of the following benefits:

CIRCLE YES OR NO BELOW.

Add to list of possible responses:

The opportunity to work at home or other alternative work site	Yes	No
--	-----	----

³²U.S. Department of Education, Office of Educational Research and Improvement. *Programs and Plans of the National Center for Education Statistics*, 1995 Edition.

NATIONAL HOUSEHOLD EDUCATION SURVEYS (NHES)

Purpose

The National Center for Education Statistics sponsors the *National Household Education Survey* (NHES) to “address a wide range of education-related issues.”³³ Begun in 1991, the survey was also fielded in 1992 and is scheduled for 1995, 1996, and “every 2 years thereafter.” Transportation availability, travel time and cost to classes are probed in NHES:95.

Sample Size and Methodology

Households to be interviewed are selected by random digit dialing. About 60,000 to 70,000 households are screened to obtain an interview sample of about 11,000-14,000, depending on the qualifying criteria. In 1991 and 1995, the topics included early childhood program participation and adult education. NHES:96 “will cover parent/family and youth involvement in education and civic activities.”

Relevance of Work-at-Home Questions

Transportation availability, travel time and cost to classes are probed in NHES:95 but travel to place of employment is not.

Because the NHES relates education to employment and to other family, household, and child characteristics, work-at-home questions would add a valuable dimension. For example, questions that have been raised concerning home-based work and child care could be addressed. The NHES:95 Program Participation Interview mentions “mother works at home/cares for child at work or school,” (Question N22), but home-based work is not singled out so that it can be cross-tabulated with other items. Although the NHES does not ask detailed questions about work schedules, we recommend tagging future surveys for work at home as shown below.

National Household Education Survey 1996

R22.

About how many total hours per week do you usually work for pay, counting all jobs?
[IF HOURS VARY, PROBE FOR AVERAGE PER WEEK.] _____ weekly hours

NEW R22A.

About how many of those total hours per week, if any, do you usually work at home?
_____ hours

³³National Center for Education Statistics. *National Household Education Survey: An Overview*. NCES 94-663.

NATIONAL LONGITUDINAL SURVEYS OF LABOR MARKET EXPERIENCE

Purpose

The Bureau of Labor Statistics sponsors the *National Longitudinal Surveys* (NLS) which are “a unique set of national surveys offering researchers the opportunity to study large panels of American men, women, and children over significant segments of their life span.”³⁴ Four of the original six survey groups continue to be interviewed at approximately two-year intervals. The emphasis of the survey is “to study longitudinally the work experience and related characteristics of ...selected age-sex groups.”³⁵

NLS data are used extensively for research, much of which is funded by the the National Institute on Aging (NIA), the National Institute of Child Health & Human Development (NICHD), The National Institute on Drug Abuse (NIDA), the National Science Foundation (NSF), and the U. S. Department of Agriculture (USDOA).

Sample Size and Methodology

The three ongoing NLS cohorts, *Mature Women*, *Young Women*, and *Youth* (men and women), were first interviewed in 1967, 1968, and 1979 respectively. Although only the NLSY interviews men as well as women, together, the three cohorts cover nearly all age ranges: *Youth* - men and women aged 29 to 36 in 1994; *Young Women* aged 41 to 51 in 1994; and *Mature Women* aged 58 to 72 in 1995. With each survey round the sizes of the longitudinal panels shrink. The 1992-3 sample sizes of the three cohorts were 9,011, 3,400, and 3,094, respectively. The *Young Women* and *Mature Women* cohorts were combined as the *National Longitudinal Survey of Women* (NLSW) in 1995 and interviewed by CAPI.

Work-at-home questions were added beginning in 1986 for *Mature Women* and in 1988 for *Young Women* and *Youth*. In the past, since the questions were asked for the current labor force status, but not as part of the retrospective work history, a continuous history of home-based work could not be reconstructed. In the NLSW, work at home is asked both with respect to current employment and also as part of the work history.

In addition to the cohorts just described, the NLS added a new cohort of youth, aged 12 to 17 in 1996. As these individuals enter the workforce, questions on working at home should be considered also for this cohort. It may be premature to add them while most of the individuals in the sample are still in school.

Availability of Data

The 1993 NLSY public use data files, distributed on compact disc and magnetic tape, were released in January 1995. Data sets include: “the 1979-1993 NLSY Main Files, the 1979-1993 Workhistory File, and the 1979-1993 NLSY Geocode Data Files.”³⁶ Table 8 shows the expected availability of the surveys.

Table 8. NLS Survey Schedule

NLS Survey	Schedule
1992 <i>Mature Women</i>	Released 1995
1993 <i>Young Women</i>	Scheduled for release January 1997
1995 NLSW (<i>Mature and Young Women</i> combined survey)	Fielded June 1995
	Data release mid- to late 1997
1994 NLSY	Interviews completed in December 1994
	Data release December 1996
1996 NLSY	Data available January 1998
Children of the NLSY	Files released separately from NLSY main files

³⁴Center for Human Resource Research. *NLS Handbook 1994*, The Ohio State University.

³⁵Demographic Surveys Division, Bureau of the Census. *Survey Abstracts*, Dec. 1994.

³⁶NLS UPDATE No. 81, 1994.

Relevance of Work-at-Home Questions

The NLS continues to provide some of the best data available for comparing home-based with non-home-based work. First, it is a longitudinal survey “designed to analyze the sources of variation” in labor market behavior of people over their entire adult lives. With longitudinal data, we can begin to understand the conditions under which people start and stop or continue to work at home. The second advantage of the NLS is that it provides nearly the full range of variables believed critical to choice of home-based work: labor market experience, socioeconomic variables, and environmental factors.

For the self-employed, the data allow analyses of the determinants of home-based business longevity. Also included are many of the variables collected in small business surveys such as the owner’s gender, race, age, education, work experience, income, and legal business organization. But it does not provide data about the business entity such as sales, receipts, profits, finances, or hours of operation.

Additionally, the NLS gives the owner’s own solutions to day care, in-home elder care, health limitations, etc. which may reflect the policies of the business. It provides limited information on establishment characteristics—industry, occupation, earnings, number of employees supervised, and start and stop dates.

But significantly, the NLS reports by self-identification which an SBA study says may be “the only acceptable way to obtain meaningful data.”³⁷ The NLS captures owners of businesses of all sizes and legal status distinguishing those activity operated from those owned passively through stock holdings.

The NLS data provide information on the groups that we know the least about, women business owners across a nearly complete age range and young men at the early stages of their adult work.

Those interested in the work patterns of employees such as telecommuters can reconstruct a complete work history including number of employers and tenure with specific employers. Of particular importance for transportation planning are the commute mileage and time to and from work that are included as topics in some survey years. The topic of home-based work and commuting patterns follows questions that identify the respondent as an employee or self-employed. The work-at-home series, but not the commuting questions, are also asked in the Employer Supplement which is used with respondents who reported “any employers since last interview.” For example, the 1993, 1994, and 1996 NLSY surveys asked questions regarding home-based work. Only the 1993 NLSY asked about travel patterns:

NATIONAL LONGITUDINAL SURVEY OF YOUTH (NLSY) 1993 Round Fifteen

Q6-59, QES1-53A
How many hours per week (do/did) you USUALLY work at this job? _____ hours

Q6-60, QES1-53B
How many hours per week (do/did) you usually work at this job at home? _____ **hours**

Q6-61, QES1-53C
When you said earlier that you usually (work/worked)(Q6-59) hours per week, had you already included the(Q6-60) hours per week that you usually (work/worked) at home? _____ Yes
_____ No

Q6-62, QES1-53D
Thinking of the number of hours per week that you usually (work/worked) at home and the number of hours per week that you usually (work/worked) at your place of employment, altogether how many hours per week (do/did) you USUALLY work at this job? _____ hours

Q6-62A
How long (does/did) it USUALLY take you to get FROM your home TO work? _____ minutes

³⁷U.S. Small Business Administration. *A Status Report to Congress: Statistical Information on Women in Business*. Washington, DC, December 1990.

Q6-62B

How long (does/did) it USUALLY take you to get FROM work TO your home after work?

_____ minutes

Q6-62C

What means of transportation (do/did) you USUALLY use to get from your home to work?

_____ Own auto

_____ Ride with someone else

_____ Bus or streetcar

_____ Subway or elevated

_____ Railroad

_____ Taxicab

_____ Walk only

_____ Other (SPECIFY)

Q6-62D

Altogether, how much (does/did) it cost you for gas, oil, tolls, fares, and parking costs, to get to and from work, round trip?

_____ \$

Q6-62E

(IF NECESSARY PROBE) (Is/was) that per day, per week, per month or what?

_____ Per day

_____ Per week

_____ Per month

_____ Other (SPECIFY)

Q6-62F

How many miles (do/did) you go round trip?

_____ Miles

Q6-62G

(Do/Did) you ever use a computer at home to do any of the work you (do/did) for this job?

_____ **Yes**

_____ **No**

Q6-62H

When you (use/used) a computer at home to do work for this job, (do/did) you ever use a modem or telephone link to connect you to a different computer system at any other location(s)?

_____ **Yes**

_____ **No**

Q6-65G

(Does/Did) your employer MAKE AVAILABLE to you...Flexible hours or work schedule?

_____ Yes

_____ No

1992 SURVEY OF MATURE WOMEN
Section 1 - CURRENT LABOR FORCE STATUS AND WORK HISTORY

Q12g

How many hours per week (do/did) you USUALLY work at this job?

_____ Hours per weeks

Q14a

Now I'd like to ask you a few questions about working at home. (Do/Did) you usually do any of your work for (Employer in 6a, page 4) at home?

_____ Yes

_____ No

Q14b

How many hours per week (do/did) you usually work for (Employer in 6a, page 4) at home?

_____ Hours per week on average

Q14c

When you said earlier that you usually (work/worked) (Number of hours in 12g, page 7) hours per week, had you already included the (Number of hours in 14b) hours per week that you usually (work/worked) at home?

_____ Yes

_____ No

Q14d

Thinking of the number of hours per week that you usually (work/worked) at home and the number of hours per week that you usually (work/worked) at your place of employment, altogether how many hours per week (do/did) you USUALLY work at this job?

_____ Hours per week

Self-employed respondents are asked a similar series of questions:

Q17c

How many hours per week (do/did) you usually work at this job?

_____ Hours per week

Q17d

(Do/Did) you usually do any of your work for this job at home?

_____ Yes

_____ No

Q17e

How many hours per week (do/did) you usually work for this job at home?

_____ Hours per week on average

_____ Works at home all the time

Q17f

When you said earlier that you usually (work/worked) (Numbers of hours in 17c, page 9) hours per week, had you already included the (Numbers of hours in 17e, page 9) hours per week that you usually (work/worked) at home?

_____ Yes

_____ No

Q17g

Thinking of the number of hours per week that you usually (work/worked) at home and the number of hours per week that you usually (work/worked) for yourself, altogether how many hours per week (do/did) you USUALLY work at this job?

_____ Hours per week

Similarly, respondents who worked for more than one employer "last week" were asked the following questions:

Q20l

How many hours per week (do/did) you USUALLY work at this job?

_____ Hours per week

Q20m

(Do/Did) you usually do any of your work for (this/that) job at home?

_____ Yes

_____ No

Q20n

How many hours per week (do/did) you usually work for (this/that) job at home?

_____ Hours per week on average

Q20o

When you said earlier that you usually (work/worked) (Number of hours in 20l) hours per week, had you already included the (Number of hours in 20n) hours per week that you usually (work/worked) at home?

Yes
 No

Q20p

Thinking of the number of hours per week that you usually (work/worked) at home and the number of hours per week that you usually (work/worked) at your place of employment, altogether how many hours per week (do/did) you USUALLY work at this job?

Hours per week

1993 SURVEY OF WORK EXPERIENCE OF YOUNG WOMEN
Section 1 - CURRENT LABOR FORCE STATUS AND WORK HISTORY

Q11g

How many hours per week (do/did) you USUALLY work at this job?

Hours per week

Q13a

Now I'd like to ask you a few questions about working at home. (Do/Did) you usually do any of your work for (Employer in 6a, page 3) at home?

Yes
 No

Q13b

How many hours per week (do/did) you usually on average work for (Employer in 6a, page 3) at home?

Hours per week on average
 Works at home all the time
 Skip to 13d

Q13c

When you said earlier that you usually (work/worked) (Number of hours in 11g, page 6) hours per week, had you already included the (Number of hours in 13b) hours per week that you usually (work/worked) at home?

Yes
 No

Q13d

Thinking of the number of hours per week that you usually (work/worked) at home and the number of hours per week that you usually (work/worked) at your place of employment, altogether how many hours per week (do/did) you USUALLY work at this job?

Hours per week

Q16d

How long (does/did) it usually take to get to work from home?

Minutes

Self-employed respondents are asked a similar series of questions:

Q17c

How many hours per week (do/did) you usually work at this job?

Hours per week

Q17d

(Do/Did) you usually do any of your work for this job at home?

Yes
 No

Q17e

How many hours per week (do/did) you usually work for this job at home?

Hours per week on average
 Works at home all the time

Q17f

When you said earlier that you usually (work/worked) (Numbers of hours in 17c, page 9) hours per week, had you already included the (Number of hours in 17e, page 9) hours per week that you usually (work/worked) at home?

Yes
 No

Q17g

Thinking of the number of hours per week that you usually (work/worked) at home and the number of hours per week that you usually (work/worked) for yourself, altogether how many hours per week (do/did) you USUALLY work at this job?

Hours per week

Similarly, respondents who worked for more than one employer "last week" were asked the following questions:

Q21g
How many hours per week (do/did) you USUALLY work at this job? _____ Hours per week

Q22a
(Do/Did) you usually do any of your work for (this/that) job at home? _____ **Yes**
_____ **No**

Q22b
How many hours per week (do/did) you usually work for (this/that) job at home? _____ **Hours per week on average**

Q22c
When you said earlier that you usually (work/worked) (Number of hours in 21g) hours per week, had you already included the (Number of hours in 22b) hours per week that you usually (work/worked) at home? _____ **Yes**
_____ **No**

Q22d
Thinking of the number of hours per week that you usually (work/worked) at home and the number of hours per week that you usually (work/worked) at your place of employment, altogether how many hours per week (do/did) you USUALLY work at this job? _____ Hours per week

Note: The combined Young Women and Mature Women 1995 NLSW uses the wording: How many hours per week [(do/did)] you usually work for [your] [name] at home?

NATIONAL SURVEY OF FAMILIES AND HOUSEHOLDS (NSFH)

Purpose

The National Survey of Families and Households is funded by the Center for Population Research of the National Institute of Child Health and Human Development and directed by the Center for Demography and Ecology and the Department of Sociology of the University of Wisconsin-Madison.³⁸ The Institute for Survey Research of Temple University is responsible for field work. The research explores many aspects of family experience as both determinants and consequences of other family and life course events.

Sample Size and Methodology

The NSFH includes interviews with a “probability sample of 13,017 respondents.” The sample of 9,643 households is boosted by “a double sampling of blacks, Puerto Ricans, Mexican Americans, single-parent families and families with stepchildren, cohabiting couples and recently married persons.” The design is cross-sectional, asking about work history but not about past home-based work. The study has collected life-history information “including the respondent’s family living arrangements in childhood, the experience of leaving the parental home, marital and cohabitation experience, as well as education, fertility, and employment histories.”

“The cross-sectional design permits the detailed description of past and current living arrangements and other characteristics and experiences, and the analysis of the consequences of earlier patterns on current status, marital and parenting relationships, kin contact, and economic and psychological well-being.”

Availability of Data

A public data tape is released as quickly as possible after completion of field work, followed by a CD-ROM documentation and data disk.

Relevance of Work at Home

As the survey designers point out: “One of the important reasons for spending a large amount of money and effort in studying American families is because of the rapid and profound changes that have been occurring. In order to be able to directly and convincingly measure change, it is essential to replicate measures that had been made in previous national surveys.”

Questions on work at home were added as part of the five-year follow-up to the original survey. Detailed information was collected on days and hours worked, but not about work at home. Travel time to work was the only directly transportation-related question.

Interviews conducted in 1987-88 asked about work experience in 1986. Topics included:

- Military experience
- Highest level of education
- Degrees
- Postsecondary education history (since 1970)
- Work history
- Work experience in 1986
- Current occupation, hours, earnings
- Current second job
- Current work schedule
- Child care arrangements while at work

³⁸NSFH Notes.

The most recent follow-up survey, Wave Two, was conducted in 1992-94. It is uncertain whether or not there will be additional waves.

WORK-AT-HOME QUESTIONS 1992-94 FIVE-YEAR REINTERVIEW

CURRENT EMPLOYMENT - MAIN JOB

- MP1 How many hours did you work last week at your main job?
(Main job is the one at which he/she normally works the most hours per week)
_____ hours (RANGE:0-94)
- MP5 Is this the number of hours that you usually work at your main job?
1 Yes GO TO MP8
2 No GO TO MP8
6 No usual week; hours vary widely GO TO MP8
- MP6 How many hours a week do you usually work at your main job?
_____ hours (RANGE:0-80) GO TO MP8
- MP7 Is it mostly part-time or mostly full-time?
1 Mostly part-time
2 Mostly full-time
3 About half full-time and half part-time
<s> Other (specify)
- MP8 In addition to your main job, do you have a second job
or small business for which you get paid?
1 Yes
2 No
- MP10A What kind of work are you doing (on your main job)?
What is your job title?
What are your main activities or duties at this job?
(If R has more than one job, this question refers to the one at which he/she usually
spends the most time.)
- MP11 What kind of business or industry is this? _____
- MP28 **Some people do some or all of their paid work out of their homes or
bring work home with them to finish. Last week did you do any of your work
(on your main job) at home?**
(If R did not work last week, ask about the most recent week worked.)
1 Yes GO TO MP31
2 No
- MP29 How many hours did you work at home (on your main job) last week?
_____ hours (RANGE:0-94)
00 None GO TO MP31
- MP30 Are these hours included in the work hours you mentioned earlier?
1 Yes
2 No
<s> Other (specify)
- MP31 Next I have some questions about the days and hours that you usually work
(on your main job). Do you usually work the same days each week?
1 Yes GO TO MP33
2 No
- MP32 Which days of the week do you normally work?
1 R works five day week - Monday through Friday
with no weekend work GO TO MP35
2 Any other schedule GO TO MP34A
<s> Other (specify) GO TO MP35

MP33 Which days did you work last week?
 1 R worked Monday through Friday GO TO MP35
 2 Any schedule other than Monday through Friday GO TO MP35
 <s> Other (specify)

MP34A Does/did R work on Monday?
 1 Yes
 2 No

MP34B Tuesday
 1 Yes
 2 No

MP34C Wednesday
 1 Yes
 2 No

MP34D Thursday
 1 Yes
 2 No

MP34E Friday
 1 Yes
 2 No

MP34F Saturday
 1 Yes
 2 No

MP34G Sunday
 1 Yes
 2 No

MP35 Is the time you start and stop work (on your main job) about the same each day that you work?
 1 Yes
 2 No GO TO MP38

MP36 What is your usual starting time?
 _____ : _____ am/pm
 <s> Other (specify)

MP37 What time do you usually stop working?
 _____ : _____ am/pm
 <s> Other (specify)
 =====>

ALL GO TO MP40

Repeat questions MP38-MP39 for Monday through Sunday.

MP38A What time did you start working on (day of week)? (ENTER IN TABLE 44)
 _____ : _____ am/pm
 <s> Other (specify)
 9996 R did not work on (day of week)

MP39A What time did you stop working last (day of week)?
 _____ : _____ am/pm
 <s> Other (specify)

Table 44. Work Schedule

	Start work	Stop work
A. Monday	_____ : _____ am/pm	_____ : _____ am/pm
B. Tuesday	_____ : _____ am/pm	_____ : _____ am/pm
C. Wednesday	_____ : _____ am/pm	_____ : _____ am/pm
D. Thursday	_____ : _____ am/pm	_____ : _____ am/pm
E. Friday	_____ : _____ am/pm	_____ : _____ am/pm

Table 44. **Work Schedule**

	Start work	Stop work
F. Saturday	____ : ____ am/pm	____ : ____ am/pm
G. Sunday	____ : ____ am/pm	____ : ____ am/pm

MP40 Do you work some of your hours (on your main job) in the evening between 6 pm and midnight?
 1 Yes
 2 No

MP41 Do you work some of your hours (on your main job) at night, between midnight and 5 am?
 1 Yes
 2 No

CKPT:MP42 - If R worked at main job at ANY time on Saturday or Sunday, GO TO MP43

MP42 Do you sometimes work (on your main job) on Saturdays or Sundays?
 (This includes work at home)
 1 Yes
 2 No GO TO CKPT:MP46

MP43 On how many Saturdays have you worked (on your main job) in the last four weeks?
 _____ Saturdays (RANGE:0-4)

MP44 On how many Sundays have you worked (on your main job) in the last four weeks?
 _____ Sundays (RANGE:0-4)

MP45 When you work (on your main job) on Saturdays or Sundays, about how many hours per day do you usually work?
 _____ hours (RANGE:1-17)
 <s> Other (specify)

CKPT:MP46 - If R does not work any hours between 6 pm and midnight or between midnight and 5 am, GO TO MP47

MP46 Sometimes work schedules regularly alternate between day shifts and evening or night shifts. Is this true of your schedule (on your main job)?
 1 Yes
 2 No

MP51 About how many minutes does it usually take you to get to work (on your main job)?
 _____ minutes (RANGE:0-180)
995 Works at home
 996 No usual amount of time - time varies e.g., job site varies

MP52 Does your (main) job sometimes require you to travel and be away from home overnight?
 1 Yes
 2 No GO TO CKPT:MP54
 <s> Other (specify)

MP53 Over the last 12 months, about how many NIGHTS PER MONTH, on the average, were you away from home because of work-related travel (on your main job)?
 _____ nights per month (RANGE:0-30)
 <s> No average month or other (specify)

CURRENT EMPLOYMENT - SECOND JOB

CKPT:MP54 - If R does not have a second job, GO TO MP69

MP54 How many hours did you work at your second job or business last week?
 (If R has more than two jobs, include hours on all jobs (or businesses) except the first job)
 _____ hours (RANGE:0-94)

- MP55 Is this the number of hours you usually work at your second job or business?
 1 Yes GO TO MP57
 2 No
 6 No usual week; hours vary widely GO TO MP57
- MP56 How many hours a week do you usually work at this second job or business?
 (Hours that you work in an average week when you are working)
 _____ hours (RANGE:0-94)
- MP57 Do you work at this second job or business all year round, or just for part of the year?
 1 All year
- MP58 About how many weeks a year do you work at this job?
 _____ weeks (RANGE:0-52)
- MP59 Last week did you do any of the work for your second job at home?**
 (If R did not work at second job last week, ask about the most recent week worked)
 1 Yes
 2 No GO TO MP61
- MP60 Last week, how many hours did you work at home on your second job?**
 _____ hours (RANGE:0-94)
- MP61 Do you work a regular schedule on your second job, or does your schedule vary from week to week?
 1 Works a regular schedule
 2 Schedule varies
- MP62 Do you sometimes work on your second job on Saturdays or Sundays?
 1 Yes
 2 No GO TO MP65
- MP63 On how many Saturdays and Sundays have you worked on your second job in the last four weeks?
 _____ Saturdays & Sundays (RANGE:0-8)
- MP64 When you work on your second job on Saturdays or Sundays about how many hours per day do you usually work?
 _____ hours (RANGE:1-20)
 96 Varies widely
- MP65 Do you work some of your hours on your second job in the evening between 6pm and midnight?
 1 Yes
 2 No
- MP66 Do you work some of your hours on your second job at night, between midnight and 5 am?
 1 Yes
 2 No
- MP67 Does your second job sometimes require you to travel and be away from home overnight?
 1 Yes
 2 No GO TO MP69
- MP68 Over the last 12 months, about how many nights per month, on the average, were you away from home because of work-related travel on your second job?
 _____ nights per month (RANGE:0-30)
 96 No average month
-

NATIONWIDE PERSONAL TRANSPORTATION SURVEY (NPTS)

Purpose

The *Nationwide Personal Transportation Survey* is sponsored by the Bureau of Transportation Statistics (BTS), Federal Highway Administration (FHWA), Federal Transit Administration (FTA), and the National Highway Traffic Safety Administration (NHTSA). First developed in 1969, the NPTS has a strong travel demand management emphasis. Many questions ask the use of, availability of, and attitudes towards various modes of travel ranging from SOV to mass transit, walking and working at home. The survey, to the extent that length and cost permit, also examines attitudes towards different transportation modes and explanations for behavior such as reluctance to fasten seat belts.

Sample Size and Methodology

The sample consists of 21,000 completed household interviews. In addition, there is oversampling by 25 percent in the “urbanized portion of the 11 metro areas with more than 1 million population and a subway system.”

The 1995 NPTS used computer-assisted telephone interviews (CATI).³⁹

“With CATI, the survey instrument is entered and stored within the computer. Questions and instructions are displayed for the interviewer on the computer terminal screen, and routing patterns are automatically followed by the CATI system. Programmed range checks, consistency checks, and checks for data completeness are performed on-line as the interviewer enters the respondent’s answers. Corrections resulting from the edits are then entered as necessary during the interviews.”

Respondents are also asked to fill out a detailed one-day travel diary. The information is retrieved from a telephone call-back interview.

Availability of Data

The last survey update was in 1990. Pretested in late 1994, the final survey was fielded in 1995-96. Data will be available in spring 1997. A printed report series is issued for each NPTS.

Relevance of Work-at-Home Questions

In the 1983 NPTS, only 273 of the total sample of 17,379, said they “work at home for their primary occupation.”⁴⁰ The topic was omitted in 1990. In designing the 1995 survey, the NPTS recognized that the extent and types of home-based work have both increased and therefore more probing questions were added. For example, the survey differentiates “usual” from “occasional” work at home. The following questions are part of a series that obtains detailed one-day travel behavior based on the diary mailed to households. Similar questions are asked about trips of 75 miles or more one way.

THE 1995 NATIONWIDE PERSONAL TRANSPORTATION SURVEY (NPTS) MAIN STUDY QUESTIONNAIRE

- F4. What is the street address of (your/PERSON’S) workplace?
 STREET NUMBER _____ STREET NAME _____
 FIRST ROAD _____
 SECOND ROAD _____
 CITY _____ STATE _____
 ZIP CODE _____
 DO NOT ENTER POST OFFICE BOX!
 (IF R WORKS AT OR OUT OF HOME, ENTER “HOME” FOR STREET NUMBER....)

³⁹1995 NPTS Pretest Description, p. 1.

⁴⁰Joanne H. Pratt and John A. *Measurement and Evaluation of the Population of Family-Owned Businesses and Home-Based Businesses*. U.S. Small Business Administration, December 1985.

- F5 What is the one-way distance from (your/PERSON's) home to (your/his/her) workplace?
 _____ BLOCKS OR MILES
 996 + LESS THAN 1 BLOCK
 997 = 1/2 MILE
 -3 NO FIXED WORKPLACE - GO TO NEXT SECTION
-4 WORKS AT OR OUT OF HOME - GO TO NEXT SECTION
- F8 How (do you/does PERSON) usually get to work? Please tell me all the kinds of transportation (you/he/she) usually (use/uses). (CODE ALL THAT APPLY.)
- | | |
|------------------------------------|--|
| 1 AUTOMOBILE | 09 BUS |
| 02 VAN (MINI, CARGO, PASSENGER) | 10 AMTRAK |
| 03 UTILITY VEHICLE (BRONCO, BLAZER | 11 COMMUTER TRAIN |
| 04 RUNNER, PATHFINDER, ETC.) | 12 STREETCAR/TROLLEY |
| 04 PICKUP TRUCK | 13 ELEVATED RAIL/SUBWAY |
| 05 OTHER TRUCK | 14 AIRPLANE |
| 06 RV (RECREATIONAL VEHICLE) | 15 TAXICAB |
| 07 MOTORCYCLE | 16 BICYCLE |
| 08 OTHER P.O.V. - SPECIFY: _____ | 17 WALK |
| | 18 SCHOOL BUS |
| | 19 WORKED FROM HOME/
TELECOMMUTED |
| | 20 OTHER - SPECIFY: _____ |
- F9 What is the main means of transportation (you/PERSON) usually get to work—that is, the one used for most of the distance?
- | | |
|-------------------------------------|----------------------------------|
| 01 AUTOMOBILE | 09 BUS |
| 02 VAN (MINI, CARGO, PASSENGER) | 10 AMTRAK |
| 03 UTILITY VEHICLE (BRONCO, BLAZER, | 11 COMMUTER TRAIN |
| RUNNER, PATHFINDER, ETC.) | 12 STREETCAR/TROLLEY |
| 04 PICKUP TRUCK | 13 ELEVATED RAIL/SUBWAY |
| 05 OTHER TRUCK | 14 AIRPLANE |
| 06 RV (RECREATIONAL VEHICLE) | 15 TAXICAB |
| 07 MOTORCYCLE | 16 BICYCLE |
| 08 OTHER P.O.V. - SPECIFY: _____ | 17 WALK |
| | 18 SCHOOL BUS |
| | 19 WORKED FROM HOME/TELECOMMUTED |
| | 20 OTHER - SPECIFY: _____ |
- F19 **On any day last week, did (you/PERSON) work from home instead of traveling to (your/his/her) usual workplace?**
- 1 YES — GO TO QUESTION 21
 2 NO
 (CODE YES ONLY IF R WORKED AT HOME INSTEAD OF GOING TO THE WORKPLACE. DO NOT INCLUDE WORKING AT HOME IN ADDITION TO WORKING AT THE WORKPLACE.)
- F20 **On any day in the past two months, did (you/PERSON) work from home instead of traveling to (your/his/her) usual workplace?**
- 1 YES—GO TO NEXT SECTION
 2 NO
 (CODE YES ONLY IF R WORKED AT HOME INSTEAD OF GOING TO THE WORKPLACE. DO NOT INCLUDE WORKING AT HOME IN ADDITION TO WORKING AT THE WORKPLACE.)

F21 In the past two months, about how often did (have you/has PERSON) worked from home instead of traveling to (your/his/her) usual workplace?

- 1 TWO OR MORE DAYS A WEEK (11+ TIMES)
- 2 ABOUT ONCE A WEEK (5-10 TIMES)
- 3 ONCE OR TWICE A MONTH (2-4 TIMES)
- 4 LESS THAN ONCE A MONTH (ONE TIME)

(INCLUDE ONLY THE DAYS R WORKED AT HOME INSTEAD OF AT THE WORKPLACE. DO NOT INCLUDE DAYS WORKED AT HOME IN ADDITION TO AT THE WORKPLACE.)

SECTION G - TRAVEL DAY

G18 Now I have a few questions about each trip. [Asked if answer to "IS DESTINATION FOR FIRST TRIP HOME?" was "Yes."]

You told me the first place (you/PERSON) went was home. What was the main reason (you were/PERSON was) away from home?

- | | |
|--------------------------------------|-----------------------------------|
| 01 AT WORK | 09 TAKE SOMEONE SOMEWHERE |
| 02 WORK RELATED BUSINESS | 10 PICK UP SOMEONE |
| 04 SHOPPING | 11 VACATION |
| 05 AT SCHOOL | 12 VISIT FRIENDS OR RELATIVES |
| 06 AT RELIGIOUS ACTIVITY | 13 WENT OUT TO EAT |
| 07 MEDICAL/DENTAL | 14 OTHER SOCIAL/RECREATIONAL |
| 08 OTHER FAMILY OR PERSONAL BUSINESS | 15 CHANGE MEANS OF TRANSPORTATION |
| | 16 OTHER - SPECIFY: _____ |

G19 Now I have a few questions about each trip. Did the trip to (FIRST DESTINATION) begin at home?

- 1 YES
- 2 NO

G20 What was the main purpose of the trip to (DESTINATION)?

- | | |
|--------------------------------------|--|
| 01 AT WORK | 09 TAKE SOMEONE SOMEWHERE |
| 02 WORK RELATED BUSINESS | 10 PICK UP SOMEONE |
| 03 RETURN TO WORK | 11 VACATION |
| 04 SHOPPING | 12 VISIT FRIENDS OR RELATIVES |
| 05 AT SCHOOL | 13 WENT OUT TO EAT |
| 06 AT RELIGIOUS ACTIVITY | 14 OTHER SOCIAL/RECREATIONAL |
| 07 MEDICAL/DENTAL | 15 CHANGE MEANS OF TRANSPORTATION |
| 08 OTHER FAMILY OR PERSONAL BUSINESS | 16 OTHER - SPECIFY: _____ |
| | 17 HOME [NOT DISPLAYED ON CATI SCREEN] |
-

STATISTICS OF INCOME (SOI)

Purpose

The Statistics of Income (SOI) reports provide “the earliest published annual financial statistics obtained from the various types of tax and information returns filed, as well as information from periodic or special analytical studies of particular interest to students of the U.S. tax system, tax policy makers and tax administrators.”⁴³

Self-employed persons filing a Schedule C are required to file an additional form (Form 8829) if they choose to take a deduction for “Expenses for Business Use of Your Home.” Tabulations of these forms provide information on self-employed persons who may deduct the expenses of home office space used for business. Telecommuters whose employers provide an alternate work site are not eligible for deductions even if they work most of their time at home. Even for home-based business owners, eligibility for a home office deduction depends on two factors:

1. The relative importance of the activities performed at each business location; and
2. The amount of time spent at each location.

For businesses that require frequent meetings with clients or deliveries to customers, the “place where that contact occurs must be given a greater weight in determining where the most important activities are performed...” The fact that activities such as planning, accounting or billing are carried out in the home “is not controlling.”

In applying the second criterion, if income-producing activities also occur at another location, expenses for the home office are deductible only if more time is spent there.

Those eligible may deduct part of their mortgage interest, insurance, repairs and maintenance, and utilities. The deduction applies only to the “area used regularly and exclusively for business, regularly for day care, or for inventory storage.” Thus, the expenses of a home office which is occasionally used for other purposes, such as a guest room, may not be deducted.

The significance of these restrictions is that home-based workers are undercounted in SOI reports according to definitions usually applied by those interested in their characteristics. For example, the SOI reports are less helpful for transportation planning than they are for guiding policy decisions of the U.S. Small Business Administration.

The number of Form 8829 filings provides an accurate *minimum* count of home-based businesses. However, the undercount is further magnified because completion of the form is optional. An unknown number of home-based business owners choose not to take the home office deduction. For example:

- Some home-based business owners do not take this deduction because of the fear that it may tag their business for an audit.
- There may be a financial disadvantage if they later sell a home which has appreciated greatly in value.
- Home-based businesses that file partnership tax returns or are incorporated are also excluded because they do not file Form 8829.

Self-employed persons are required to file Schedule C forms but the business is not identified as being conducted at home. Although it is possible to identify home-based businesses indirectly, by comparing business address (Schedule C) with home address (Form 1040), those tabulations are rarely made.⁴⁴

⁴³Internal Revenue Service. *Statistics of Income Bulletin*. Washington, DC, Fall 1994.

⁴⁴See, for example, Grayson, Paul. “Male and Female Operated Nonfarm Proprietorships, Tax Year 1980.” *Statistics of Income Bulletin*, Vol. 2, No. 4, Spring 1983.

SURVEY OF INCOME AND PROGRAM PARTICIPATION (SIPP)

Purpose

The SIPP is sponsored by the Bureau of Census to “collect source and amount of income, labor force information, ... and general demographic characteristics to measure the effectiveness of existing Federal, state, and local programs.”⁴⁵

Started in 1983, it was considered the “only feasible way of obtaining improved measures of cash and noncash income and ... program-related data.” It is a “nationwide survey designed to provide comprehensive information on the economic situation of households and persons in the United States.” The purpose is to provide data for microsimulation models and other studies that will determine the cost and effectiveness of federal programs.

Sample Size and Methodology

SIPP is a series of nationally representative panels ranging in size from 14,000 to 20,000 households. Since 1984, nine panels have been introduced annually so that at any time there may be several panels in the field. A continuing survey, interviews occur monthly.

The SIPP overlapping panel design “allows cross-sectional estimates to be produced from a larger, combined sample” that is double or triple in size when 2 or 3 panels overlap. Interviews take 4 consecutive months to complete the entire sample, a period called a “wave.” Individuals are interviewed 7 or 8 times over the period of 2 years that they remain in the survey. The SIPP recently has been redesigned and tested. Wave 9 was fielded in October 1995 using CAPI.

Availability of Data

The Bureau of Census releases data “periodically in cross-sectional, topical module, and longitudinal reports” and in public use files. Collection of Wave 9 data will be completed in January 1996. Release of the public use file is expected in July 1997.

Relevance of Work at Home

“Each SIPP panel provides detailed information (through personal interviews) at 4-month intervals. The information contains intrayear sources of money and nonmoney income, taxes, assets and liabilities.”⁴⁶ Information is also collected on special topics such as personal, education and work history, child care and support, health and disability, fertility, migration, and employer-provided benefits. For example, the 1984 Panel was asked:

“Was this business primarily located in ...’s own home or somewhere else?”

One aspect of work schedules that continues to generate many inquiries is the number of persons who work at home. In the Decennial census we obtain data on persons who work at home from responses to the question on means of transportation to work. However, the census reports an undercount of the incidence of working at home because the question asks the location of where the respondent worked most last week. Persons who work at home regularly, but for less than three days a week, are therefore not reflected in the Decennial estimates. The topical module on work schedules in the SIPP provides a logical place to obtain data on this important and growing phenomenon.

The question below labeled “new” has been added to determine the number and specific days during the week that the respondent worked only at home during these normal work schedule hours. The intent of the questions is the following:

Do not include days on which extra work or catch-up work was done at home in addition to work done at the workplace.

⁴⁵Op. Cit. *Survey Abstracts*.

⁴⁶Bureau of the Census. *Looking Back to Look Forward, 1995-1996*, The Census Bureau Research Fellow Program and the ASA/NSF/Census Research Fellow Program.

Do not include days on which route sales, deliveries, or other work at various locations was done. Do not include days on which the person was away from home attending meetings or visiting customer locations.

1993 Panel Wave 9 Questionnaire

Section 5 - TOPICAL MODULES (Continued)

Part B - WORK SCHEDULE

1a. Did ...work at all last month? Yes
No

STATEMENT C These next few questions ask about...’s work schedule during a typical week last month.

1b. How many employers did... work for during a typical week? (Count self-employed as one employer.)	1 2 3+	
<i>If two or more employers, ask items 1c-1i for the first job, then repeat for the second job.</i>	JOB 1	JOB 2
c. How many hours per day did... work that week?	Hours	Hours
d. How many days did... work during that week?	Days	Days
e. Which days of the week were these? <i>Mark (X) all that apply.</i>	Monday through Friday Sunday Monday Tuesday Wednesday Thursday Friday Saturday All seven days	Monday through Friday Sunday Monday Tuesday Wednesday Thursday Friday Saturday All seven days
f. During that week, at what time of day did... begin work most days	(Time) a.m. p.m.	(Time) a.m. p.m.
g. At what time of day did... end work most days?	(Time) a.m. p.m.	(Time) a.m. p.m.
<i>NEW</i>		
h. As part of the work schedule for that week, which days, if any, did...work only at home? <i>Mark (X) all that apply.</i>	Did not work at home Monday through Friday Sunday Monday Tuesday Wednesday Thursday Friday Saturday All seven days	Did not work at home Monday through Friday Sunday Monday Tuesday Wednesday Thursday Friday Saturday All seven days

<p>i. Which of the following best describes...’s work schedule at this job’s</p>	<p>Job 1</p> <p>Regular daytime schedule Regular evening shift Regular night shift Rotating shift (one that changes regularly from days to evenings or nights) Split shift (one consisting of two distinct period each day) Irregular schedule (one that changes from day to day) Other - <i>Specify</i></p>	<p>Job2</p> <p>Regular daytime schedule Regular evening shift Regular night shift Rotating shift (one that changes regularly from days to evenings or nights) Split shift (one consisting of two distinct period each day) Irregular schedule (one that changes from day to day) Other - <i>Specify</i></p>
<p>j. What is the MAIN reason ... works (<i>Read shift description marked in item 1i</i>)? Mark (X) only one.</p>	<p>VOLUNTARY REASONS</p> <p>Better child care arrangements Better pay Better arrangements for care of other family members Allow time for school Other voluntary reasons</p> <p>INVOLUNTARY REASONS</p> <p>Could not get any other job Requirement of the job Other involuntary reasons</p>	<p>VOLUNTARY REASONS</p> <p>Better child care arrangements Better pay Better arrangements for care of other family members Allows time for school Other voluntary reasons</p> <p>INVOLUNTARY REASONS</p> <p>Could not get any other job Requirement of the job Other involuntary reasons</p>

QUICK SURVEY TURNAROUND AND TABULATION SYSTEM

Purpose

The Demographic Surveys Division of the Bureau of Census is developing a new standardized survey process having the acronym “*Quick STATS*,” that is designed for quick response. The system will provide customers having a limited budget or tight time constraints with the ability to obtain information more quickly than is possible relying on other federal surveys.

Sample Size and Methodology

The system “uses preprogrammed modular computer software components” as the structure for CATI surveys.⁴⁷ Customers can request either a “random-digit-dialing telephone sample design or a designated list of telephone numbers.”

Availability of Data

The goal of the program is to “begin data collection within several weeks of receiving a final approved questionnaire from the sponsor and to deliver data within several weeks of the completion of data collection.”

⁴⁷Demographic Surveys Division, Bureau of the Census. *Demographic Surveys Division*, December 1994.

25. Including today, how many days in the past seven days did you work at home for your main job INSTEAD of going to your main job place? days

none

26. Are your hours at your main job...(check one)
- Variable at my choice
 - Variable depending on the work
 - Allowed to vary within fixed limits
 - Fixed starting time, variable ending time depending on the work
 - Fix, but different hours, different days of the week
 - Fixed and the same for several days or weeks
 - Fixed and the same every day
 - Other (specify): _____

27. Do you have a second job? Yes No (go to diary)

[If yes, questions 12 through 26 are repeated for "second job."]

Dallas-Fort Worth Activity Diary

Activity Codes [Partial list shown]

Activities at Home

- 0 Sleep at home
- 1 Work at home (related to main or second job)**
- 2 All other at home activities

Work

- 7 Work (includes regularly scheduled volunteer work)**
- 8 Work-related (sales calls, meeting, errands, etc.)**

Activities Related to Bus, Trolley, or Taxi

- 3 Wait for/get on vehicle
- 4 Leave/get off vehicle
- Pick up or Drop-off Other People/
- Get Picked-up or Dropped-off
- 5 Pick-up someone or get picked-up
- 6. Drop-off someone or get dropped off

Education/Childcare

- 9 Preschool, school, college, university
- 10 Childcare, day care, after school care

Eat Out

- 11 Eat out (restaurant, drive-thru, etc.)

Medical

- 12 Visit doctor, dentist, health center, hospital

Activity 1

What were you doing at 3 a.m. on your diary day? : am
pm

Anything Other Than Traveling (fill in the section below)

Enter one **Activity Code** from the list above: _____ If code 26 (other), please specify: _____

Where were you?

- At my home**
 - At my school
 - At my main work place
 - At at bus stop
 - At another place
- For these two options, fill in the place name and address below

Exact address or cross streets

Business, store, bus stop, place name, or residence

City

State

1994 Activity and Travel Survey Oregon and SW Washington

Sponsored by Metro of Portland, Oregon, the *1994 Activity and Travel Survey* asks respondents to fill out a 10-day diary on assigned travel days. The household diary does not identify non-travel activities except as implied by destination:

“What was your activity?”

“When did your activity take place?”

Thus, if the activity was working at home, it would be listed as “work” with the home address filled in under “location.”

On the other hand, a CATI questionnaire is used in addition to the household diary. It collects work-at-home and other transportation-related data as shown below. In both the CATI questionnaire and the diary, respondent heads of households are asked for information about all members of the household including themselves.

OREGON CATI QUESTIONNAIRE VERSION #2

-35F In a typical week, how many hours does [NAME OF OTHER PERSON 1]WORK?

Q38A-38F What is the address of (NAME OF OTHER PERSON 1)'s primary job?

STREET #

DIRECTION

STREET NAME

STREET TYPE

QUADRANT

SUITE/APT #

XSTREET

CITY

COUNTY

STATE

ZIP

Q39A-39F Does (NAME OF OTHER PERSON 1) work at home?

Q40A-40F Of the [#HRS FROM Q35]hours (NAME OF OTHER PERSON 1) works in a typical week, how many hours are worked at home?

Q45A-45F In the past five work days, how many days did (NAME OF OTHER PERSON 1) travel to work by:

(READ LIST. MUST SUM TO “5”.)

1___CAR (DROVE ALONE)

2___CARPOOL

3___PUBLIC TRANSIT (SCHOOL BUS/TRAIN)

4___OTHER

5___NOT TRAVEL TO WORK DURING PAST 5 DAYS

Part III.

Anticipating the Mobile Global Workforce

RECOMMENDATIONS FOR COUNTING THE MOBILE WORKFORCE

Whatever the explanation, more people are working in or from their homes. Certainly the ability to work at home has been stimulated by the dropping cost of powerful computers. Increasingly, workers are equipped with notebook computers and wireless technology such as cellular phones and pagers. The ability to be mobile has soared. Transportation planners ask “How does behavior change when new options become available?” The upsurge in worker mobility means that we need to understand what is happening over time instead of just taking a snapshot. How will people arrange themselves in space? Will they choose to work further away? To what extent will people take advantage of these opportunities? And how do you measure their travel?

Federal surveys already gather data about work at the traditional employer’s work site. The premise of this study is that the next step is to add to those surveys the new “fixed” node, that is, the worker’s home. Then we can face the challenge of examining the mobile office which may be a personal vehicle, the customer’s office, or a plane—or anywhere that individuals chose to work from their “office in a bag.”

Travel patterns differ markedly depending on individual occupations and tasks. The following composite descriptions, based on case study research, convey the flavor of the new home-based workforce.

Employees Who Work at Home

Usually referred to as telecommuters, employees at a telecommunication company work at home one to two days a week, although not always on the same days. Most of the workers have offices in their homes equipped with a computer. Their employer pays for a second phone line. Although they are expected to be available by phone during core hours, many work either early or late, integrating their work and personal responsibilities.

Telecommuters save 20 percent of their commuting trips, time, and costs for every day they work at home as a substitute for going to their usual work site. They may “run errands” on their telecommuting days, generating local trips.

Self-employed Home-based Business Owners

Home-based business owners work in or from their homes and have no other fixed place of business. A carpet cleaner advertising that “our business is in your home,” travels locally, usually during non-peak hours. A consultant works most days entirely at home with several days a month travel by plane and some local business travel.

Home-based business owners work, on the average, only 22-27 hours a week actually in their homes.⁴⁸ Their local and long distance travel appears random compared with telecommuters’ commuting patterns.

Field workers

An appliance repairman for a major retailer drives his fully equipped truck from his home in a Texas suburb, traveling to residences listed on a schedule of appointments downloaded from a telephone center in Provo, Utah. Opening his notebook computer on the kitchen counter, he checks the appliance, then

⁴⁸Op. Cit. Pratt 1993.

reads the repair cost from the screen. When he has finished, he updates his parts inventory. The bill is automatically totaled and an internal printer issues a standard three-inch wide credit card invoice. He then radios all this information to headquarters. At night, a parts truck drives to his house and restocks his van.

The field worker, and hundreds like him in his company, is home-based. He has traveled all day, but has not taken any "commuting" trips.

Contributions of Existing Surveys

Where do you look for data that capture the travel behavior of the new mobile workforce? Leaving aside questions of sample size and timeliness, what specific information about work at home and worker mobility do the surveys that we have examined have to offer?

With the new questions added in 1995, the SIPP, as well as the NSFH survey, will collect detailed information on work schedules including hours and days. The advantage of the SIPP is that it identifies each day of the week worked at the employer's site (for all jobs) and repeats the sequence of questions for hours and days worked at home. Thus, the SIPP provides a snapshot of where the workers are each of the seven days of the week, if they are at either of these "fixed" locations. The survey also asks for their starting and ending times of work.

Although it does not elicit the work calendar, nor the worker's occupation, the NPTS captures mobility to a greater degree than most surveys. It records work at home, detailed trip length and purpose, and includes trips of greater than 75 miles. Thus the NPTS could be used to monitor the travel patterns of a salesperson who works at home, travels locally, and also travels by plane on "work-related business."

The AHS includes the Census journey-to-work questions. The new questions added to this series will provide an unambiguous measure of trip reduction due to working at home. The phrasing captures "telecommuting" as it is commonly used while bypassing the problem that the word is neither consistently nor rigorously defined.

All of these surveys offer partial snapshots of home-based work and, to varying degrees, work at other locations. Several longitudinal surveys, for example, the NLS and the NELS, track behavior over time. However, as panel surveys, they do not always include topics such as commuting distance, time, and costs, in every survey round. In sum, none of the existing surveys is ideal for counting the new mobile workforce. But we can draw from them a set of recommended questions for consideration in the design of future surveys.

Recommended Priority Questions

In designing surveys, space is always at a premium to minimize cost and respondent time. Accordingly, in recommending questions designed to characterize work at home, we have assigned four levels of priority, based on transportation data needs. What information is essential to know? What additional data could you collect if you had room? And how much more if you had the luxury of designing a questionnaire exclusively to characterize the mobile workforce? The questions are listed below in priority order ranging from highest (Priority 1) to lowest (Priority 4).

We recommend a set of core questions with the caveat that the context of a survey also constrains the specific questions that can be asked. Phrasing that works well in one survey may need revision to make sense in another. Thus, in some cases below, we suggest alternative wordings. As in any survey, the questions should be pretested to ensure that respondents understand them within the context in which they are asked. Our analysis leads us to the following recommendations:

Priority 1: Identify whether the respondent works at home and, if so, for how much time.

Total Home Hours

On average, how many hours per week, if any, did ... work at home for this job?

___ Hours per week

On average, how many of those hours at home did ___ spend doing “catch-up” work after normal working hours?

___ Hours

___ None

Trip Substitution

How many separate days last week didwork at home *instead* of traveling to work?

___ Days

Priority 2: Determine the number of days worked at each location, the specific days of the calendar week and times of work during the day.

Weekly Calendar

Ask for each job or business:

As part of the work schedule for that week, which days, if any, did ... work only at home?

(Mark (X) all that apply.)

[NOTE: In the SIPP, this phrasing follows a similar question directed at the employer’s work site.]

- Monday through Friday
- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

Daily Schedule

During that week, at what time of day did... begin work most days?

___ a.m.

___ p.m.

At what time of day did... end work most days?

___ a.m.

___ p.m.

Alternatively, if space permits, the NSFH model can be used:

	START WORK	STOP WORK
A. Monday	___:___ am/pm	___:___ am/pm
B. Tuesday	___:___ am/pm	___:___ am/pm
C. Wednesday	___:___ am/pm	___:___ am/pm
D. Thursday	___:___ am/pm	___:___ am/pm
E. Friday	___:___ am/pm	___:___ am/pm
F. Saturday	___:___ am/pm	___:___ am/pm
G. Sunday	___:___ am/pm	___:___ am/pm

Priority 3: Examine the characteristics of work and the work environment including the use of computers and other tools that promote worker mobility.

Use of Technology

Does(Did) .. ever use a computer at home to do any of the work you (do/did) for this job?

- Yes
 No

At home, what does use the computer for?

Include as possible responses

- Connect to computer at work**
- Work at home**
- Home-based business**

Income-producing Activities

What is the main activity involved in your at-home work for your main job?

This is the activity that you spend the most time doing.

- I never work at home for my main job
- Telephone calls
- Using a computer
- Arts/crafts (Painting, sculpting, sewing, ceramics, woodworking, etc.)
- Assembling parts to make things
- Writing/typing (not using a computer)
- Childcare
- Mailing, distributing
- Bookkeeping, invoicing

What is the next important activity involved in your at-home work for your main job?

Repeat list

Priority 4: Explore the mix of business and personal activities and travel.

If space allows expanding the survey to the next level of priority, we can begin to ask about the mix of personal with business travel. To identify those new relationships would require asking about business-related travel including a description of the business. Other information needed would include industry, occupation and the respondent's most important activities or duties.

Such questions would contribute insights into worker mobility. For example, it would identify sales persons who travel frequently by air. It would be necessary to distinguish totally mobile workers such as members of a crew for an airplane, train, bus or ship, or truck drivers from workers who engage in a mix of travel and desk work.

SUMMARY

In this report we have not addressed the intricate problems of overall survey design. We have focused on behaviors that have assumed a new magnitude and importance in recent years; that is, the increasing mobility of the workforce and, particularly, the reported trend in income-producing work that is being carried out in workers' homes. Clearly, any survey is constrained by necessary compromises. Thus, any of the surveys analyzed as part of this study will fall short of expectations. Inevitably, a variable of interest will be missing. For example, the Dallas/Fort Worth Household Activity Survey combines all daily travel of a truck driver or traveling sales person into one "work-related" activity—a pragmatic compromise, but one that limits knowledge of the detailed work patterns of those groups. Similarly, the AHS and NPTS omit occupation, a variable that might be desired for cross-tabulations with work at home.

Even if a future survey is designed from scratch and devoted entirely to this topic, it is unlikely to satisfy every policy and research need. We are living in a time of transition from the industrial age mode of fixed work schedules and locations. We are moving to more flexible patterns that are the result of our tools enabling us to work at any time and place. The intent of this project has been to help bridge this transition by modifying long-standing federal surveys. Coincidentally, it helps meet the goal of the current Travel Model Improvement Program which is to update the travel forecasting process so that it is more responsive to emerging issues and useful for decision makers.

We have recommended adding work-at-home questions to "jump-start" the process at little or no cost while retaining the continuity of past years' data sets. By this strategy, surveys designed to monitor a relatively stable workforce can better monitor information-age work and travel.

