THE QUALITY OF RETROSPECTIVE DATA ON COHABITATION*

SARAH R. HAYFORD AND S. PHILIP MORGAN

We assess the quality of retrospective data on cohabitation by comparing data collected in four major U.S. family surveys: the National Survey of Families and Households and three rounds of the National Survey of Family Growth. We use event-history analysis to analyze rates of entry into cohabitation in age-period-cohort segments captured by multiple surveys. We find consistent discrepancies among the four surveys. The pattern of differences suggests that cohabitation histories underestimate cohabitation rates in distant periods relative to rates estimated closer to the date of survey. We conclude with cautions regarding the use of retrospective data on cohabitation.

One of the defining characteristics of the field of demography is its attention to data and data quality. Demographers have used both checks of internal consistency and comparisons between different data sources to assess the accuracy of demographic measurement (e.g., Cherlin, Griffith, and McCarthy 1983; Raley, Harris, and Rindfuss 2000; Rendall et al. 1999; Swicegood, Morgan, and Rindfuss 1984; Wu, Martin, and Long 2001). When large-scale surveys first began collecting retrospective demographic information, such as marriage and birth histories, many demographers expressed doubt about the quality of these data. However, studies showed that in many contexts women reported births and marriages with a high level of accuracy. Thus, researchers embraced these life histories and came to rely on retrospective data for studies of family formation. As cohabitation has become more common, cohabiting relationships have been added to the event-history portions of major family surveys. In this paper, we compare data from four of these surveys—the National Survey of Families and Households and three rounds of the National Survey of Family Growth—in order to assess the quality of these cohabitation data. We find discrepancies among the four surveys consistent with the suggestion that cohabitation histories underestimate cohabitation rates in distant periods relative to rates estimated closer to the date of survey.

MEASURING COHABITATION

Over the last half-century in the United States, cohabiting relationships between unmarried couples have become more and more common. Cohabitation was rare and stigmatized in the 1950s; by the turn of the twenty-first century, it had become accepted both as a precursor to marriage and as a stand-alone relationship. This rapid growth spurred scientific interest in the characteristics of cohabiters and the role of cohabitation in contemporary family systems. However, the collection of data on cohabitation lagged behind this interest (Casper and Cohen 2000; Smock 2000).

In the absence of direct measurement of cohabitation, researchers constructed the first national estimates of cohabitation using indirect measures based on household composition data from the U.S. census and from the Current Population Survey (CPS). Definitions

*Sarah Hayford, School of Social and Family Dynamics, Arizona State University, P.O. Box 87301, Tempe, AZ 85287-3701; E-mail: sarah.hayford@asu.edu. S. Philip Morgan, Department of Sociology, Duke University. This research was supported by Duke University and by the National Institute of Child Health and Human Development, Grants F32 HD050032-01 (Kirschstein Postdoctoral Fellowship, Hayford) and R01 HD41042 (Morgan). An earlier version of this article was presented at the 2006 annual meetings of the American Sociological Association in Montreal, Quebec. We thank session participants and attendants, Larry Wu, the editors of *Demography*, and three anonymous reviewers for helpful comments on previous versions.

based on the identification of "partners of the opposite sex sharing living quarters," or POSSLQ, allowed researchers to put together consistent time series that accurately reflect overall trends in cohabitation levels. However, indirect measures produce imprecise counts of cohabiters. Proposed adjustments to the measures improve their performance, but not enough to match direct estimates of cohabitation (Casper and Cohen 2000).

Direct questions about current cohabitation were introduced in the U.S. census in 1990 and in the CPS and the Survey on Income and Program Participation (SIPP) in 1995 and 1996, respectively. Several family surveys conducted in the late 1980s also included direct measures of cohabitation, collecting retrospective cohabitation histories as well as current cohabitation status. The National Survey of Families and Households (NSFH), conducted in 1987 and 1988, was specifically designed to study nontraditional family forms, including stepfamilies, single-parent families, and cohabiting partners (among other purposes). Cohabitation status and histories were included in the 1988 wave of the National Survey of Family Growth (NSFG) and expanded in the 1995 and 2002 NSFG. More recently, surveys (notably the Fragile Families and Child Wellbeing Study) have begun to incorporate more detailed questions on cohabiting relationships in order to capture some of the variations in the meaning of cohabitation.

Because of the lack of direct historical data and the inaccuracy of indirect measures of cohabitation, researchers have relied on retrospective reports of cohabitation histories to describe the past prevalence of cohabitation (e.g., Bumpass and Lu 2000; Smock 2000). However, the validity and reliability of retrospective data on cohabitation are in question. Bumpass and Lu (2000) reported that the NSFH and the 1995 NSFG produce similar estimates of the proportion of women ever cohabiting and of exit rates from cohabiting relationships for the period 1980–1984. In contrast, the CPS and the SIPP, whose primary focus is labor market behavior rather than family structure, produce substantially lower estimates of cohabitation than the 1987 NSFH and the 1995 NSFG (Casper and Cohen 2000). In this article, we extend previous methodological research on cohabitation by comparing data from four major U.S. family surveys and by exploring three possible mechanisms for distortions in the reporting of cohabitation.

Recent research on cohabitation suggests that cohabiting relationships may be inherently difficult to measure. Some cohabiting unions are long-term, stable, "marriage-like" relationships, while others are temporary or on and off and may be entered into for the sake of reduced housing costs or convenience rather than as a long-term commitment (Brown and Booth 1996; Bumpass and Lu 2000; Sassler 2004). Qualitative research has shown that couples often move in together gradually, without a clear start date, and may not have definite plans about the future of the relationship (e.g., Manning and Smock 2005). The status of a relationship at any given time may be ambiguous, leading to reports of relationship start dates that differ between partners or over time (Knab and McLanahan 2006; Teitler, Reichman, and Koball 2006).

Based on this research, we would expect surveys to yield "noisy" or error-laden estimates of cohabitation prevalence. Respondents may differ in which relationships they consider cohabitations, and they may have difficulty remembering the exact start and end dates of past relationships. However, these problems do not necessarily imply that different surveys produce inconsistent estimated levels of cohabitation. If differences and inaccuracies in reporting cohabitations are random—or if biases are consistent over time and across surveys—comparable surveys should produce consistent reports of cohabitation.

Other possible sources of reporting error, which have not been fully investigated previously, could lead to differential estimates of cohabitation prevalence in different surveys. For example, the increasing social acceptance of cohabitation may increase the completeness of respondents' reporting in later surveys. Goldscheider and Goldscheider (1994) argued that attitudes toward home-leaving at the time of the survey influence adults' reports of the age at which they left their parents' home in the past. If this mechanism applies to

cohabitation as well, later surveys would generate higher estimates of cohabitation than earlier surveys, even for the same periods. The increased social acceptance of cohabitation in 2002 relative to 1988, for instance, may mean that cohabiting relationships that took place in the 1980s are more likely to be reported by respondents in the 2002 NSFG than in the 1988 survey.

On the other hand, respondents may misreport or underreport events in the distant past relative to more recent events. Human memories are fallible; as time passes, people omit dates and events. Previous research has found that events in the distant past are underreported relative to recent events, with the degree of underreporting increasing as the time elapsed since the event increases (for a review of this literature, see Belli 1998; Wu et al. 2001). Unique or highly emotional events, such as the death of a parent or a national disaster, and events whose dates are frequently referenced, such as marriages or birthdays, seem to be less susceptible to this decay in reporting levels over time (Brewer 1994; Thompson et al. 1996). Because entry into cohabitation is often not clearly defined, and because cohabiting relationships vary in duration and importance, cohabiting relationships may not share this same resistance to omission over time.

OUTLINE OF THE ARTICLE

In this article, we pool data from four widely used national surveys that include cohabitation histories (the NSFH and Waves 4–6 of the NSFG) in order to determine whether data from these four sources are consistent. Our analytic approach is straightforward. We model the likelihood of starting cohabitation for unmarried women who were not cohabiting, controlling for the survey from which the observation was taken, and study the coefficients for the survey dummy variables. In order to make these comparisons, we select age-period-cohort groups that are observed by more than one survey. We take retrospective reports of cohabitation from the same birth cohorts of women interviewed by different surveys and compare the relationship histories generated by these retrospective reports.

We evaluate three possible sources of discrepancies: survey-specific bias, increasing social acceptability of cohabitation over time, and decreased reporting of relationships in the distant past. These mechanisms are hypothesized to produce different patterns of error. Survey-specific biases should produce stable discrepancies between surveys. Bias related to the social climate at the time the survey was administered should produce discrepancies between surveys that vary by the year of the interview. Bias related to recall error should produce discrepancies that vary by the time elapsed since the interview. In order to distinguish between these mechanisms, we choose comparison groups to vary the combination of the time elapsed since the survey and the time the survey was administered.

We explain our choice of analytic sample in more detail in the next section, which also includes a description of the four surveys and of our modeling strategy. We then present our results, followed by a brief discussion and conclusion.

DATA AND METHODS

Overview of the Surveys

The context of the cohabitation questions in the four surveys, as well as details about sample size and characteristics, are presented in Table 1. All four surveys measured cohabitation directly (as opposed to using indirect measurement via household rosters) and recorded both current cohabitation status and past relationships.

The NSFG series was designed to provide nationally representative estimates of pregnancy, birth rates, and contraceptive usage. In addition to fertility data, some elements of marriage and relationship history were collected in all six surveys. The first wave of the NSFG was fielded in 1973; subsequent surveys of independent samples of women took place in 1976, 1982, 1988, 1995, and 2002. Although there are variations in sample

Table 1. Cohabitation Data in Four Surveys

Survey	Sample Size	Sample Construction	Context of Cohabitation Question
1988 NSFG	8,450 women	Nationally representative of noninstitutionalized population; black women oversampled	Both formal and informal marriages recorded Data collected on up to three marriages (first, second, current/most recent) For each marriage, respondent was asked if cohabited with husband before marriage Dates of cohabitation recorded for up to one additional cohabitation
1995 NSFG	10,847 women	Nationally representative of noninstitutionalized population; black and Hispanic women oversampled	Only formal marriages recorded Data collected on up to five marriages (no respondent married more than five times) For each marriage, respondent was asked if cohabited with husband before marriage Dates of cohabitation recorded for current cohabiting partner (if any) and up to three additional cohabitations
2002 NSFG	7,643 women (data from 4,928 men not used in this analysis)	Nationally representative of noninstitutionalized population; blacks oversampled	Only formal marriages recorded Data collected on up to six marriages (no respondent married more than six times) For each marriage, respondent was asked if cohabited with husband before marriage Dates of cohabitation recorded for current cohabiting partner (if any) and up to eight additional cohabitations
NSFH	7,790 women (data from 5,227 men not used in this analysis)	Nationally representative of population in households; blacks, Puerto Ricans, Mexican Americans, single-parent families, families with stepchildren, cohabiting couples, and recently married persons oversampled	Only formal marriages recorded Data collected on all marriages For first, second, and most recent marriages, respondent was asked if cohabited with spouse before marriage Ever-married respondents were asked about first premarital cohabitation, most recent cohabitation, and up to two cohabitations between marriages Never-married respondents were asked about first cohabitation and most recent cohabitation All marriages and cohabitations between waves were recorded

construction and questionnaire structure over time, efforts were made to maximize comparability of data. Cohabitation questions were first asked in 1982, but these questions were limited in their usefulness. Rather than asking about cohabitation as a separate relationship status, the 1982 NSFG labeled cohabitation as "informal marriage." Respondents reported their marriage history and then were asked whether each marriage was formal or informal. Initial comparisons made it clear that this approach leads to vast underestimates of cohabitation. We therefore begin our analysis with the 1988 NSFG. In this survey, ever-married women were explicitly asked if they had lived with their husband before getting married. These questions were repeated for each marriage. In addition, all respondents were asked if they had ever lived with someone whom they did not later marry, but relationship start and end dates were collected for only one such cohabitation. The 1995 and 2002 surveys collected cohabitation histories for both premarital cohabitation and relationships that did not end in marriage. In 2002, men were included in the sample for the first time; here we limit our analysis to female respondents in order to make comparisons across surveys.

The NSFH was first conducted in 1987–1988, with follow-up surveys of the original respondents in 1992–1994 and 2001–2002. Again, we limit our analysis to female respondents, although both men and women were interviewed. The survey oversampled currently cohabiting couples, families with stepchildren, and single-parent families. Cohabitation histories were collected from all respondents.

In the first wave of the NSFH, data on cohabiting relationships were collected separately from marriage data. The section on cohabitation began with the interviewer reading the comment, "Nowadays, many unmarried couples live together; sometimes they eventually get married and sometimes they don't." Ever-married individuals were asked, for each marriage, whether they lived with their spouse before getting married. They were also asked about their first cohabiting relationship and about cohabiting relationships that did not lead to marriage. Never-married individuals were asked for the beginning and end dates of their first cohabiting partnership and their current partnership (if any), and were asked how many other partners they had lived with. Subsequent waves of the NSFH asked about all cohabiting relationships that took place between survey waves; respondents were also asked to correct information that they may have forgotten or misreported in earlier waves. Where applicable, we use this information to update information from the first round. However, we do not analyze reports of cohabiting relationships that took place after the first data collection in 1987. We therefore treat the NSFH as one survey carried out in 1987–1988.

In general, data collection methods in the four surveys were very similar. All interviews were conducted in person. There were no major differences in the phrasing of questions about cohabitation across surveys, and all four of the surveys used the terminology "living together" to ask about cohabiting relationships. The three NSFG defined a cohabiting relationship as one in which the couple shares "the same usual address"; the NSFH provided no definition of cohabitation. None of the four surveys specified a length of time that a cohabiting relationship must last in order to be reported. The data collected in the 1988 wave of the NSFG were more limited than those collected in other surveys. Start and end dates were collected for only one relationship that did not end in marriage in the 1988 wave, whereas up to four and eight relationships were recorded in 1995 and 2002, respectively, and up to two relationships were recorded in the NSFH. The 1988 NSFG may therefore underestimate cohabitation relative to the other surveys.

Analytic Approach and Construction of the Samples

Following Swicegood et al. (1984), we compare reports across different surveys by first selecting an age-period group that was observed in all four surveys. Secondary analyses treat age-period groups observed in at least two surveys. Based on the age range of the samples, some birth cohorts of women were eligible to be included in all four of the surveys. For example, women born in 1965 were 22 in 1987, 23 in 1988, 30 in 1995, and 37 in 2002,

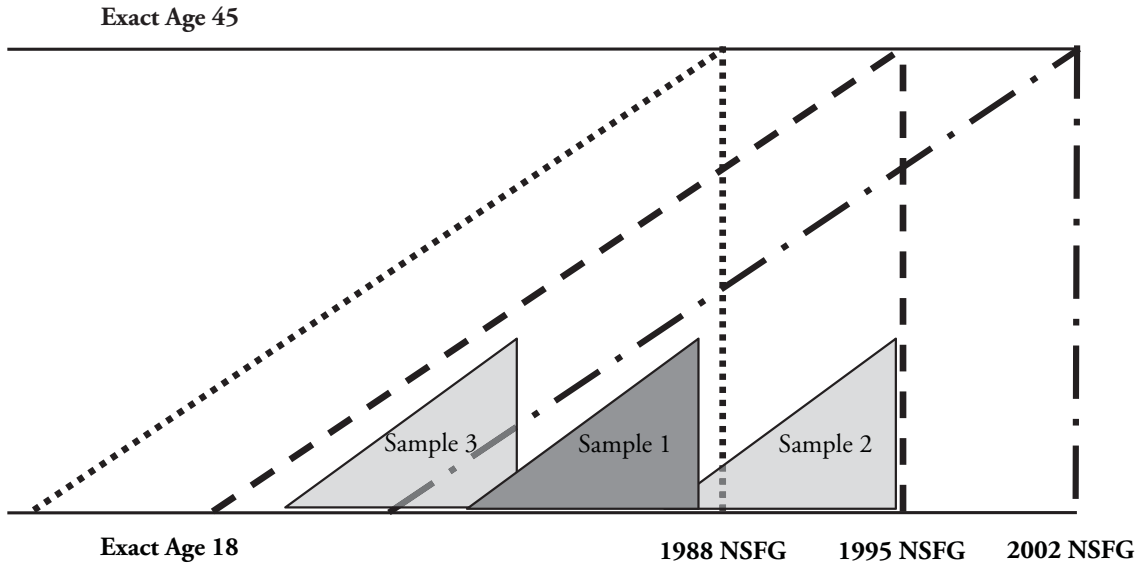
and so fell within the eligible age range for all four surveys. No individual women (that we know of) were interviewed by more than one survey. However, because the surveys are nationally representative, they can all be used to describe, in the aggregate, the behavior of women born in 1965. We judge the reliability of the surveys by comparing their representations of cohorts observed by more than one survey.

Each survey captures a different subset of the life experience of cohorts of women included in the survey. The 1988 NSFG, for instance, observes the 1965 birth cohort only until age 23, whereas the 2002 NSFH collects information up to age 37 for this same birth cohort. Our analytic sample is therefore limited by age and calendar year as well as by birth cohort.

We describe our analytic samples with reference to a Lexis diagram, shown in Figure 1. In this figure, the horizontal axis represents calendar years, while the vertical axis represents age. Diagonal lines shown in the figure represent the life course experience of individuals or birth cohorts who are the specified age during the designated calendar year. (See Preston, Heuveline, and Guillot 2001 for a more general description of Lexis diagrams.) This diagram runs from exact age 18 to exact age 45—the age range eligible to be included in every survey. Each of the large triangles outlined in dashed lines shows age-period-cohort groups observed by one of the three waves of the NSFG. (The NSFH is omitted for the sake of visual clarity.) The right-hand edge of the triangle intersects the horizontal axis at the year of the survey and runs from the youngest to the oldest eligible age. Each survey collects retrospective data from respondents; past events are located in the area to the left of the vertical edge. But only a subset of past events is observed by the survey: those that occurred to women who were in the eligible age range at the time of the survey. The top (diagonal) edge of the triangle represents the experiences of the oldest women in the survey and forms the upper bound of the observable events.

For this analysis, we are interested in experiences that were eligible to be observed by more than one survey. Our basic question is whether eligible events were more or less likely

Figure 1. Analytic Samples



to be reported in different surveys. These eligible events fall in the shaded triangles, which represent areas observed by more than one survey. The shaded triangle labeled Sample 1 is the intersection of all of the dashed survey triangles—that is, the age-period-cohort groups observed by all four surveys. (Note that the shaded triangle lies slightly below the top edge of the dashed triangles because the surveys were administered over a period of 8 to 15 months, rather than instantaneously as implied by this schematic diagram.) Sample 1, our primary analytic sample, consists of women born between January 1960 and December 1968, observed from age 18 until January 1987. The period covers the years 1978 to 1987. The maximum age in the age-period group is 27.

We make no claim that cohabitation rates in this period are representative of rates across the whole time covered by the surveys. This sample is distinctive in several ways. First, the women we study are relatively young, and the sample is constructed such that more of the early experiences of these women are observed than their later experiences. This restriction is acceptable for a study of cohabitation because cohabitation is most prevalent among women in their teens and 20s. The young age of our sample does mean that the previously married women in our sample are likely to be atypical; our findings about cohabitation among previously married women should be interpreted with caution. In addition, our findings may not be generalizable to all women. For instance, if cohabiting relationships among young women are less stable, and therefore more subject to recall error, discrepancies across surveys in our sample may be larger than discrepancies among other age groups. A full consideration of the impact of age at cohabitation on the reporting of cohabiting relationships is outside the scope of this article.

A second distinctive characteristic of the sample described above is the time elapsed between relationship experience and observation by the different surveys. We analyze experiences that take place between 1978 and 1987; women were interviewed in 1987, 1988, 1995, or 2002. We exploit this feature to distinguish between possible sources of measurement error. The acceptability of cohabitation when the survey was administered, the time elapsed since the relationship, and time-invariant survey effects could all influence the reported cohabitation rates. Based on this single sample, it is not possible to distinguish these effects on prevalence estimates. We therefore include two additional analytic samples, one focusing on an earlier time period than the original and one focusing on a later period. Because of the differences in sample structure and survey design between the NSFH and the NSFG surveys, we limit these additional samples to the three NSFG surveys.

Each of our secondary samples is constructed so that it has the same age structure as the original sample. Thus, we compare reports from the birth cohorts of 1953–1961, from age 18 until 1980, from the 1988 and 1995 NSFG (Sample 3 in Figure 1); and we compare reports from the birth cohorts of 1967–1975, from age 18 until 1994, from the 1995 and 2002 NSFG (Sample 2 in Figure 1). By comparing results from three different periods, we can assess the plausibility of three different hypotheses. If there are no differences across surveys, or if differences are due to survey-specific effects, results should be the same in all samples. If the reporting of cohabiting relationships increases over time due to increased social acceptance of cohabitation, cohabitation prevalence should be higher in the more recent survey for all samples. If the reporting of cohabiting relationships decreases with elapsed time since the event because of recall error, the prevalence of cohabitation should be lower in the more recent survey for all samples.

Methods

We began by converting individual cohabitation and marriage histories from each survey into a file of person-months spent in each marital status (never-married and not cohabiting; previously married and not cohabiting; married; never-married and cohabiting; and previously married and cohabiting). We combined information from all three waves of the NSFH into a single file. In the 1995 NSFG, cohabitation histories included any interruptions of

cohabiting relationships in addition to start and end dates. To increase comparability between the surveys, we did not use this information in our event-history files but recorded only the first date that couples moved in together and the last date they separated. Across all surveys, around 1%–2% of cohabiting relationships reported by respondents had missing start dates. We excluded these relationships from analysis but included other cohabitations and marriages reported by these women and person-months contributed by these women. All analyses were repeated excluding women with any missing data; results were similar to those reported here and are available from the authors on request.

We use discrete-time event-history analysis to predict the likelihood of entering a cohabiting relationship. We analyze all cohabiting relationships here; women who divorce or whose first cohabiting relationship dissolves return to the sample at risk. Fewer than 5% of women in each survey reported multiple cohabiting relationships during the period covered by our analysis. Specifically, we estimate the following equation:

$$\begin{aligned}\log[P_{it}/(1-P_{it})] = {} & \alpha_t + \beta_{Age}age_{it} + \beta_{Age,\,squared}age_{it}^2 + \beta_{African\ American}AfAm_{it} \\ & + \beta_{Hispanic}Hisp_{it} + \beta_{year}Year_{it} + \beta_{1995\,NSFG}1995NSFG_{it} \\ & + \beta_{2002\,NSFG}2002NSFG_{it} + \beta_{NSFH}NSFH_{it}.\end{aligned}$$

Here, P_{it} represents the conditional probability of an individual i entering into a cohabitation at time t, given that she was not cohabiting at that point. The baseline hazard of starting a cohabiting relationship is represented by α, while the β terms represent coefficients for individual characteristics and for the survey that generated the observation. This model is not intended to be a substantive model of entry into cohabitation. The primary independent variable of interest is the dummy variable for survey. If data from the four surveys are consistent, the coefficients for the survey dummy variables should be zero. That is, the likelihood of entry into cohabitation for an individual should not vary according to the survey that collected her information. We also control for age, race, Hispanic origin, and calendar year in order to account for differences in sample composition of the four surveys. Each of the surveys oversampled African American and Hispanic women at different rates, and the age structure of the samples differs slightly across surveys. Because the likelihood of cohabitation varies by age and race, failing to account for differences in sample composition would lead to misleading estimates of the differences between surveys. We tested more complex specifications of calendar time than the simple linear variable, including squared terms, log terms, and dummy variables for individual year; but within the limited period in this analysis, alternate specifications did not affect the results.

In addition to oversampling based on race and ethnic origin, the NSFH also oversampled current cohabiters and recently married individuals. Thus, using the NSFH to calculate cohabitation rates without fully adjusting for sampling design overestimates rates of entry into cohabitation in the years immediately prior to the survey and may overestimate cohabitation rates in earlier periods if current cohabiters have a higher propensity to cohabit. To account for sample design, we use sample weights for the NSFH. All models are estimated using SURVEYLOGISTIC in SAS 9.1.

We estimate the basic model for three different subsamples as described above. We begin with the age-period group covered by all surveys, Sample 1 in Figure 1. We then repeat our analysis in both a later period (Sample 2) and an earlier period (Sample 3).

For each of these three subsamples, we analyze cohabitation among never-married and previously married women separately. As we noted earlier, the 1988 NSFG asked dates for only the first cohabiting relationship that did not end in marriage. Cohabiting relationships among divorced women may therefore be disproportionately underreported in the 1988 NSFG because these relationships are less likely than relationships among never-married women to be first cohabitations. In addition, errors in the administration of the 2002 NSFG

led to the failure to collect marriage end dates for some women. The sample of person-years at risk for previously married women in the 2002 NSFG is therefore unreliable. In addition to these technical issues, there are also substantive reasons to believe that reporting differences may vary by marital status. Cohabiting relationships among divorced women tend to last longer and be more stable than relationships among never-married women (Bumpass, Sweet, and Cherlin 1991). These relationships may therefore be perceived as more important by respondents, and they may be less subject to recall error.

RESULTS

Table 2 shows results from the first comparison, which includes data from all four surveys (Sample 1 in Figure 1). As we described earlier, age, race, Hispanic origin, and year are included to control for differences in sampling design across the four surveys but are not of substantive interest. We include dummy variables for the 1995 NSFG, the 2002 NSFG, and the NSFH; observations from the 1988 NSFG are the omitted category.

Among never-married women, only the coefficient for the 2002 NSFG is statistically different from zero. The fact that neither of the two other coefficients is different from zero means that for the period 1978–1987 and for the specified ages and birth cohorts, the 1988 NSFG, the 1995 NSFG, and the NSFH produce estimates of the likelihood of entering a cohabiting relationship that are equal, within the margins of sampling error. The coefficient for the 2002 NSFG, on the other hand, is statistically significant ($p < .001$) and negative. That is, in this sample, the 2002 NSFG produces estimates of cohabitation for never-married women that are lower than those produced by the 1988 NSFG (and, by implication, the other surveys as well). The coefficient for the 2002 survey is –0.26, which implies that

Table 2. Likelihood of Entering Cohabitation as Measured in Four Different Surveys: Discrete-Time Event-History Analysis With Logit Link

	Never-Married Women			Previously Married Women		
	Coefficient	*SE*	*t*	Coefficient	*SE*	*t*
Intercept	–6.18*	2.45	2.5	–15.10*	6.34	2.4
Age (years)	0.11	0.22	0.5	0.63	0.53	1.2
Age, Squared	0.00	0.01	0.4	–0.02	0.01	1.3
African American	–0.22***	0.05	4.4	–0.66***	0.19	3.5
Hispanic Origin	–0.15*	0.07	2.0	–0.49**	0.19	2.6
(omitted: white non-Hispanic)						
Year	0.00	0.01	0.0	0.06	0.04	1.6
(omitted: NSFG 1988)						
NSFG 1995	0.00	0.05	0.1	–0.11	0.14	0.8
NSFG 2002	–0.26***	0.06	4.1	–0.16	0.17	1.0
NSFH	–0.09	0.07	1.2	–0.12	0.16	0.8
Observations (person–months)		323,549			21,525	
Events		2,322			361	
Log-Likelihood		26,214			3,334	

Notes: The sample is composed of selected observations from the NSFH and the 1988, 1995, and 2002 NSFG; see the text for a description of the sample, or see Sample 1 in Figure 1.

*$p < .05$; **$p < .01$; ***$p < .001$

Table 3. Likelihood of Entering Cohabitation as Measured in the 1995 and 2002 NSFG: Discrete-Time Event-History Analysis With Logit Link

	Never-Married Women			Previously Married Women		
	Coefficient	*SE*	*t*	Coefficient	*SE*	*t*
Intercept	–16.22***	2.98	5.4	–18.85	10.09	1.9
Age (years)	0.60*	0.26	2.3	1.28	0.87	1.5
Age, Squared	–0.01*	0.01	2.2	–0.03	0.02	1.4
African American	–0.16**	0.06	2.6	–1.28***	0.31	4.2
Hispanic Origin	0.03	0.08	0.4	–0.57*	0.25	2.3
(omitted: white non-Hispanic)						
Year	0.06***	0.01	4.1	0.01	0.06	0.1
(omitted: NSFG 1995)						
NSFG 2002	–0.14**	0.05	2.6	–0.23	0.17	1.3
Observations (person-months)		173,709			7,040	
Events		1,490			152	
Log-Likelihood		17,099			1,434	

Notes: The sample is composed of selected observations from the 1995 and 2002 NSFG; see the text for a description of the sample, or see Sample 2 in Figure 1.

*$p < .05$; **$p < .01$; ***$p < .001$

rates of entry into cohabitation for never-married women would appear about 23% lower using the 2002 survey than the 1988 survey ($1 – e^{-0.26} = 1 – 0.77 = 0.23$). Informal life-table calculations show that this reduction in the probability of entering cohabitation at all ages would reduce the proportion of women ever cohabiting by age 27 (the upper age limit of our sample) by approximately 15%.[1]

The coefficients for previously married women are in the same direction as for never-married women, but none of the coefficients for the survey variables is statistically significant. It is worth noting, however, that the sample size is much smaller for previously married women than for never-married women, and standard errors are therefore larger; it may be that these surveys do not provide sufficient statistical power to detect differences in the reporting of cohabitation for previously married women for these samples.

The finding that the 2002 NSFG produces lower cohabitation rates than the other surveys in this period is consistent either with a survey effect specific to the 2002 wave of the NSFG or with a pattern of increasing omission of cohabiting relationships as the time between the event and the survey increases. Results from the two additional samples provide additional relevant evidence. These results (shown in Tables 3 and 4) are generally consistent with the hypothesis that women are more likely to omit cohabitations in the more distant past.

Table 3 compares the 1995 and 2002 NSFG (Sample 2 in Figure 1), using the 1995 survey as the omitted category. For both never-married women and previously married women, the coefficient for the 2002 NSFG is negative: cohabitation rates based on the more recent survey are lower than rates based on the earlier survey, which use observations from

1. Our sample includes both women who have previously cohabited and women who have never cohabited, and our model estimates average probabilities across these two groups. We constructed life tables applying these predicted probabilities to women who had never cohabited to model entry into first cohabitation.

periods closer to the survey date. The difference between the two surveys is smaller than in the previous model for never-married women and larger for previously married women. Again, the coefficient for previously married women is not statistically different from zero. As noted earlier, there were errors in the collection of marriage histories for some previously married women in the 2002 NSFG, rendering the results for these women suspect.

Table 4, comparing the 1988 and 1995 NSFG (Sample 3 in Figure 1), shows mixed results. For this sample—between 1971 and 1980, for a subset of age groups and birth cohorts—the 1995 NSFG produces significantly lower cohabitation rates for never-married women than the 1988 NSFG. The coefficient representing the difference between these two surveys is –0.16, which translates to rates of entry into cohabitation about 15% lower using the later survey. For previously married women, we again find a large difference that is not statistically significant. In this case, cohabitation rates are *higher* in the later survey (1995) than in the earlier survey (1988). This finding may result from sampling error, or it may be that the differences in the number of cohabitations recorded in the 1988 survey are more salient during this period than during the period shown in Table 2.

DISCUSSION

Our results can be summarized as follows: (1) in limited comparisons, we find no statistically significant differences between the 1988 NSFG and the NSFH; (2) differences across surveys for previously married women are never statistically significant but are sometimes large and generally in the direction of lower rates in later surveys; and (3) for never-married women, later surveys produce significantly lower cohabitation rates in three of four comparisons. We concentrate our discussion on this third result. Given the problems with data collection in the 2002 NSFG, our results for never-married women in that survey are more trustworthy than the results for previously married women. In addition, because of the construction of

Table 4. Likelihood of Entering Cohabitation as Measured in the 1988 and 1995 NSFG: Discrete-Time Event-History Analysis With Logit Link

	Never-Married Women			Previously Married Women		
	Coefficient	*SE*	*t*	Coefficient	*SE*	*t*
Intercept	–16.00***	3.41	4.7	–14.55	8.26	1.8
Age (years)	0.56	0.31	1.8	0.91	0.69	1.3
Age, Squared	–0.01	0.01	1.8	–0.02	0.02	1.4
African American	–0.11	0.06	1.7	–0.60***	0.18	3.3
Hispanic Origin	–0.15	0.11	1.3	–0.90**	0.31	2.9
(omitted: white non-Hispanic)						
Year	0.07***	0.02	4.4	0.02	0.05	0.4
(omitted: NSFG 1988)						
NSFG 1995	–0.16**	0.06	2.7	0.17	0.14	1.2
Observations (person-months)		196,947			15,678	
Events		1,186			220	
Log-Likelihood		14,453			2,281	

Notes: The sample is composed of selected observations from the 1988 and 1995 NSFG; see the text for a description of the sample, or see Sample 3 in Figure 1.

*$p < .05$; **$p < .01$; ***$p < .001$

Table 5. Summary of Results for Never-Married Women

NSFG Surveys Compared	Period of Analysis: 1971–1980 (3) Coefficient	1971–1980 (3) *SE*	1978–1987 (1) Coefficient	1978–1987 (1) *SE*	1985–1994 (2) Coefficient	1985–1994 (2) *SE*
1995 and 1988	–0.16**	0.06	0.00	0.05		
2002 and 1995			–0.27***	0.06	–0.14***	0.05

Source: Tables 2, 3, and 4.

**$p < .01$; ***$p < .001$

our sample, our analysis is skewed toward younger women and therefore represents early cohabitation experience better than later postmarital cohabitation experience.

Table 5 summarizes the results for never-married women from Tables 2, 3, and 4. These coefficients represent comparisons between adjacent surveys—the 1995 versus the 1988 NSFG and the 2002 versus the 1995 NSFG—for three separate periods. We find little support for the hypothesis that the reporting of past cohabiting relationships increases as the social acceptability of cohabitation increases: three of the four coefficients are statistically significant and negative. Because we find differences between the 1995 and 1988 NSFG and between the 2002 and 1995 surveys, we do not believe the discrepancies are completely attributable to survey-specific effects, although the variation in the between-survey differences implies possible biases particular to one of the surveys or periods.

The preponderantly negative signs of the coefficients are most consistent with the hypothesis that women underreport relationships they had before the survey. Given the small number of coefficients, we cannot draw firm conclusions about the functional form of underreporting with time. It appears that the difference between surveys increases as the time elapsed since the survey increases. This pattern suggests that not only do women fail to report cohabitations as time passes, but they are more likely to omit relationships that are more distant in time.

We find differences between surveys on the order of 15%–20% for periods 15–20 years before the survey. Based on these results, we urge caution in the use of retrospective cohabitation histories. The underreporting of early cohabiting relationships within surveys poses problems for the analysis of the relationship between early cohabitation and later life events, such as marital stability or health. Using data from more than one survey to produce time-series estimates of cohabitation also requires care, although it might be possible to correct for cross-survey differences. Alternatively, these cross-survey differences could be exploited for further methodological research.

Our findings are limited to the particular subsamples we use for analysis. For instance, our research overrepresents the experience of young women relative to experience at older ages. If cohabiting relationships among young women are more likely to be short-term and unstable than cohabiting relationships of older women, the former may be especially susceptible to omission or forgetting. In constructing our sample, our primary concern was to facilitate comparison of multiple surveys. It would be possible to carry out a more detailed comparison of two surveys that might shed light on differential omission of cohabiting relationships to women in different age groups.

This research also focuses on the average differences in cohabitation rates across surveys. Differences may be larger or smaller for particular groups of women. For instance, educated women may report relationships more consistently than less educated women; cohabitations that dissolve may be more subject to underreporting than cohabitations that lead

to marriage. Further research focusing on these possibilities could illuminate both problems with data and variations in the salience and importance of cohabitation to individuals.

REFERENCES

Belli, R.F. 1998. "The Structure of Autobiographical Memory and the Event History Calendar: Potential Improvements in the Quality of Retrospective Reports in Surveys." *Memory* 6:383–406.

Brewer, W.F. 1994. "Autobiographical Memory and Survey Research." Pp. 11–20 in *Autobiographical Memory and the Validity of Retrospective Reports,* edited by N. Schwarz and S. Sudman. New York: Springer-Verlag.

Brown, S.L. and A. Booth. 1996. "Cohabitation Versus Marriage: A Comparison of Relationship Quality." *Journal of Marriage and Family* 58:668–78.

Bumpass, L.L. and H.-H. Lu. 2000. "Trends in Cohabitation and Implications for Children's Family Contexts in the United States." *Population Studies* 54(1):29–41.

Bumpass, L.L., J.A. Sweet, and A.J. Cherlin. 1991. "The Role of Cohabitation in Declining Rates of Marriage." *Journal of Marriage and Family* 53:913–27.

Casper, L.M. and P.N. Cohen. 2000. "How Does POSSLQ Measure Up? Historical Estimates of Cohabitation." *Demography* 37:237–45.

Cherlin, A.J., J. Griffith, and J. McCarthy. 1983. "A Note on Maritally-Disrupted Men's Reports of Child Support in the June 1980 Current Population Survey." *Demography* 20:385–89.

Goldscheider, F.K. and C. Goldscheider. 1994. "Leaving and Returning Home in 20th Century America." *Population Bulletin* 48(4):1–35.

Knab, J. Tansey and S. McLanahan. 2006. "Measuring Cohabitation: Does How, When, and Who You Ask Matter?" Pp. 19–33 in *Handbook of Measurement Issues in Family Research,* edited by S.L. Hofferth and L.M. Casper. Mahwah, NJ: Lawrence Erlbaum Associates.

Manning, W.D. and P.J. Smock. 2005. "Measuring and Modeling Cohabitation: New Perspectives From Qualitative Data." *Journal of Marriage and Family* 67:989–1002.

Preston, S.H., P. Heuveline, and M. Guillot. 2001. *Demography: Measuring and Modeling Population Processes*. Oxford, England: Blackwell Publishing.

Raley, R.K., K. Mullan Harris, and R.R. Rindfuss. 2000. "The Quality and Comparability of Child Care Data in U.S. Surveys." *Social Science Research* 29:356–81.

Rendall, M.S., L. Clarke, H.E. Peters, N. Ranjit, and G. Verropoulou. 1999. "Incomplete Reporting of Men's Fertility in the United States and Britain: A Research Note." *Demography* 36:135–44.

Sassler, S. 2004. "The Process of Entering Into Cohabiting Unions." *Journal of Marriage and Family* 66:491–505.

Smock, P.J. 2000. "Cohabitation in the United States: An Appraisal of Research Themes, Findings, and Implications." *Annual Review of Sociology* 26:1–20.

Swicegood, C.G., S.P. Morgan, and R.R. Rindfuss. 1984. "Measurement and Replication: Evaluating the Consistency of Eight U. S. Fertility Surveys." *Demography* 21:19–33.

Teitler, J.O., N.E. Reichman, and H. Koball. 2006. "Contemporaneous Versus Retrospective Reports of Cohabitation in the Fragile Families Survey." *Journal of Marriage and Family* 68:469–77.

Thompson, C.P., J.J. Skowronski, S.F. Larsen, and A. Betz. 1996. "Reconstructing Event Dates: The Effect of Retention Interval, Event Characteristics, and Person Characteristics." Pp. 125–62 in *Autobiographical Memory: Remembering What and Remembering When,* edited by C.P. Thompson, J.J. Skowronski, S.F. Larsen, and A. Betz. Mahway, NJ: Lawrence Erlbaum Associates.

Wu, L.L., S.P. Martin, and D.A. Long. 2001. "Comparing Data Quality of Fertility and First Sexual Intercourse Histories." *Journal of Human Resources* 36:520–55.