INTRODUCTION

The National Survey of Family Growth (NSFG) is a periodic survey designed to provide estimates of factors affecting the U.S. birth rate and the reproductive health of U.S. women 15-44 years of age. The Pretest for Cycle 5 of the NSFG was more than a pretest. It contained a number of new features and experiments: (1) Computer-Assisted Personal Interviewing (CAPI) with laptop computers; (2) event histories and the use of a life history calendar to record all episodes of living arrangements, school attendance, work, and cohabitation, which increase the length and complexity of the interview; (3) use of Audio Computer-Assisted Self-Interviewing (Audio CASI) to ask questions over headphones and have the respondent enter the answers into the computer herself; (4) a pre-planned Telephone Reinterview, which allows us to collect data at much lower cost and with a much shorter interview than the initial interview, but makes high response rates critical; (5) a test of interviewing in the home vs. at non-home sites; and (6) use of incentives for respondents. In order to meet the data needs of our co-sponsors and users, we made a series of design decisions that made it necessary to experiment with incentives.

DESIGN FEATURES

1. CAPI.--When planning for Cycle 5 began, an initial decision was made to use Computer-Assisted Personal Interviewing (CAPI) on laptop computers, in order to improve the quality and timeliness of the data. CAPI relieves interviewers of their largest burdens in past cycles of the survey, and thus prevents interviewer errors (what Baker (1992) calls "illegal skips"). These burdens include:
   (a) deciding which question to ask next,
   (b) deciding how to word the question to fit the respondent,
   (c) checking to see whether the month and year of one event (like a pregnancy) is consistent with the month and year of another event (such as first intercourse); and
   (d) deciding whether and how many times to ask a series of questions that can be repeated several times (such as a series that is asked for each pregnancy, each marriage, or each partner). (Weeks, 1992).

The planning described here will result in Cycle 5 of the survey, which will be conducted in 1995. The scope of the NSFG includes the full range of the intermediate fertility variables (Davis and Blake, 1956), or proximate determinants of fertility (Bongaarts, 1978): (a) variables that affect exposure to intercourse, including sexual activity, cohabitation, marriage, and divorce; (b) variables that affect the probability that intercourse will result in pregnancy, including contraception, sterilization, infertility and breastfeeding; and (c) variables that affect the probability that conception will result in live birth, including induced abortion, spontaneous miscarriage, and stillbirth. The survey's subject matter also includes aspects of the social and economic environment, including family background, education, labor force participation, and use of health care, that affect the intermediate variables. These surveys have typically had one-time, cross-sectional interviews lasting about 60 minutes, and achieved response rates of around 80 percent without the use of incentives. In Cycle 5, however, we made a series of design decisions that made it necessary to experiment with incentives.
60 minutes in 1982, and 70 minutes in 1988. The questionnaire was programmed in Version 2.38 of BLAISE, a program developed in the Netherlands, and contained 27,000 lines of BLAISE code. It requires at least a 386 processor and a 40 megabyte hard drive. The program was so long and complex that it had to be split into 10 successive sections, with selected data passed from one section to the next. (O'Reilly, 1993)

2. Event histories.--An event history is simply a list of all the instances of some event, with the dates they occurred. A work history, for example, is a list of all periods of time when a woman worked for pay. A schooling history is a list of all periods of time when she attended school. Researchers studying fertility and family planning wish to apply event history analytical techniques to fertility survey data to sort out the causal processes that produce fertility trends and differentials. (Allison, 1984). To supply that kind of data to the agencies that co-sponsor the NSFG, we needed to collect event histories of all of our major independent variables, such as living arrangements, education, work, and cohabitation, in addition to the other event histories we have always collected--marriage, pregnancy, and contraception. The need for the data was clear, but converting these histories to CAPI was a challenge.

As one observer said, "It isn't just a long interview; it's a hard interview," because the respondent has to recall and keep consistent the dates (months and years) when marriages, pregnancies, cohabitations, sexual partners, contraceptive use, and other events occurred. In addition, the histories made the interview more variable in length. In sum, the questionnaire was long on average, variable in length, and the event histories were often hard for respondents to answer, and hard for us to program.

3. Audio CASI.--To study unintended pregnancy, the NSFG has always tried to collect data on pregnancy outcomes (miscarriage, stillbirth, abortion, live birth). The data on miscarriage, stillbirth, and live birth are of high quality, but data on abortion have always been under-reported—often by 50% or more—in fertility surveys in the U.S and elsewhere (Jones and Forrest, 1992b). In addition, interest in the Human Immunodeficiency virus, the virus that causes AIDS, has prompted requests for data on the numbers and characteristics of sexual partners. We developed a self-administered questionnaire delivered over headphones to collect data on topics such as abortion and the characteristics of sexual partners. We hoped that the self-administered Audio CASI would increase the reporting of sensitive behaviors, and avoid the problems of missing and inconsistent data that are all too common in paper and pencil self-administered questionnaires.

4. Pre-planned Telephone Reinterviews.--The last 4 cycles of the NSFG have been done about every 6 years—in 1976, 1982, 1988, and 1995. Our co-sponsors and other data users have expressed a desire for data at more frequent intervals. They have also encouraged us to collect longitudinal data on such topics as the accuracy and stability of expectations for future sexual activity, marriage, and future births. The cost and interview length of a telephone reinterview are both about one-third the cost and length of the original in-person interview. Thus, the telephone reinterview is a very efficient way to collect additional data, once the original interview has been done in person.

However, if we are to avoid potentially damaging response bias, the response rates must be kept as high as possible. The following examples will illustrate this point. The NSFG sample is a list sample derived from a large NCHS sample called the National Health Interview Survey, or NHIS. The response rate to the NHIS is about 95 percent. If 75 percent of the 95 percent respond to the NSFG Main Study and 75 percent of those respond to the Telephone Reinterview, we have a compound response rate of 53 percent, raising concerns about bias in the Telephone Reinterview. If, however, response rates could be increased by 10 percentage points in both the 1995 NSFG and the 1997 Telephone Reinterview, we have 95% times 85% times 85%, or 69%. This result has two benefits: a panel about 1,500 respondents larger in the telephone reinterview, and second, much less concern about response bias in the reinterview sample. Thus, our target response rate for the 1995 NSFG is 80-85 percent.

5. Interviews outside the home.--The Cycle 5 Pretest contained a test of interviewing outside the home. This test was done because it appeared that respondents' main concerns about the privacy of the interview were to keep their answers private from the members of their own family or household, not from distant or anonymous governments or organizations. So we wanted to determine whether the reporting of abortion, sexual partners, drug use, and other sensitive topics could be improved by moving the interview outside the home to a designated non-home site, such as a conference room in a library or rented space in an office building. In order to compensate respondents for the added burden of traveling to the non-home site, arranging for child care, or other inconvenience of being away from home, we offered a $40 reimbursement (plus mileage or taxi fare) for respondents who agreed to go to the non-home site. One aim of the Pretest was to study the effect of non-home interviews on response rates and costs, and
has used incentives to maintain its consistently high response rates every year for 14 years with thousands of young adults, the National Longitudinal Survey of Youth, conducted at its home site as well as respond to all interview.

Experiments with the NHANES have found that incentives have consistently increased response rates. The Health and Nutrition Examination Survey (NHANES) and the Medical Care Utilization and Expenditure Survey, the 1977 National Medical Care Expenditure Survey and the 1980 National School and Beyond Survey, the 1977 National Medical Care Expenditure Survey and the 1980 National School and Beyond Survey (Ezzati-Rice et al, 1994). These include the High School and Beyond Survey, the 1977 National Medical Care Expenditure Survey and the 1980 National Medical Care Utilization and Expenditure Survey. These medical care surveys ask the respondent to go to their medical provider and/or hospital, and participate in several interviews. The National Longitudinal Survey of Youth, conducted every year for 14 years with thousands of young adults, has used incentives to maintain its consistently high response rates.

A study by Chromy and Horvitz (1978) showed strong effects of incentives on the response rate in the National Assessment of Educational Progress. In 1992, a field test for the National Adult Literacy Survey was conducted with 1,700 respondents in 16 areas across the country (Berlin et al 1993). This experiment showed that a $20 incentive produced higher response rates and lower costs per completed case than no incentive. The $20 incentive also got higher response rates from adults with less education and marginal literacy, and thereby produced higher estimates of adult illiteracy than the no-incentive design.

The Office of Management and Budget (OMB) has written regulations enforcing the Paperwork Reduction Act of 1980. These regulations (5 CFR 1320.6) generally prohibit the use of payment for survey respondents in surveys done by federal agencies or their contractors. These rules do allow OMB to permit incentives in "exceptional" circumstances. At a recent conference on this topic, a committee of survey experts suggested to OMB that it seriously consider the use of incentives if a survey is long, sensitive, requires detailed record keeping, is affected by relatives or friends who block access to the respondent (gatekeepers), or is part of a longitudinal panel in which retention of the panel over time is important (COPAFS, 1993, pp. 8-9).

It was apparent that the 1995 NSFG would be longer and more sensitive than the 1988 survey; it would also be part of a panel survey, and would be affected by gatekeepers (such as husbands and parents) who might try to prevent the interviewer from talking to the respondent. Under these conditions, we thought that incentives would be necessary if we were to meet our goals for response rates, costs, and complete reporting of event histories and sensitive behaviors. Accordingly, we chose to test a $20 incentive for in-home interviews.

6. Incentives for in-home interviews.--The $40 incentive for the non-home interview was a compound variable. We became concerned that the non-home interviews with a $40 incentive might increase response rates and/or data quality, but we would not know whether that improvement was due to the $40 incentive or to the non-home site. We were also concerned that $40 incentives for non-home interviews might be too costly to implement in a national survey. Thus, we began to look for an alternative that would cost less, and would shed light on whether it was the non-home site or the incentive that was producing any differences.

INCENTIVES

The literature cited by Groves et al (1992:480-481) suggests that incentives may work in three ways: first, incentives may create a reciprocation norm--i.e., that people are more willing to comply with a request "if compliance constitutes repayment of a perceived gift." Second, incentives can be understood in terms of social exchange theory: an incentive creates an informal contract between the respondent and interviewer. Thus, incentives may result in both higher response rates and higher data quality if respondents feel obligated to carry out their part of the "contract." Third, incentives may be viewed by some respondents as straightforward compensation. Some respondents may simply want the incentive money, and may cooperate if the task seems reasonable and the request appears legitimate.

A growing number of federal social and health surveys have characteristics that make incentives necessary and cost-effective--because they are long, sensitive, involve repeated interviews, and sometimes ask the respondent to leave their home or keep detailed records. In short, they make demands on respondents that exceed the public's idea of what a "survey" is. (Ezzati-Rice et al, 1994). These include the High School and Beyond Survey, the 1977 National Medical Care Expenditure Survey and the 1980 National Medical Care Utilization and Expenditure Survey. These medical care surveys ask the respondent to go to the doctor and save medical records and participate in several interviews. The National Health and Nutrition Examination Survey (NHANES) asks respondents to take a long medical exam in a non-home site as well as respond to an interview. Experiments with the NHANES have found that incentives have consistently increased response rates. The National Longitudinal Survey of Youth, conducted every year for 14 years with thousands of young adults, has used incentives to maintain its consistently high response rates.

The NSFG contract was awarded about October 1, 1992. Interviewer training for the Pretest occurred October 3-10, 1993. Interviewer training was held in Durham North Carolina. About 30 interviewers were trained. Pretest interviewing occurred from October...
The primary reason that the response rate was less than 70% is simple: this was a list sample, and 41% of the sample had moved at least once since the NHIS interview. Because the amount of time and money available to trace movers was limited, about one-fourth of the movers (9% of the sample) could not be traced. Since most of this 9% would be found in a main study, and since persons cannot respond to an incentive or advance letter if they cannot be found, that 9% of the sample is excluded from the "completion rates" shown in Table 1. The next section describes the results in each of the 3 main Pretest groups: in-home interviews with no incentive; in-home interviews with $20 incentive; and non-home interviews with $40 incentive.

The sample was drawn from households that had responded to the 1991 National Health Interview Survey (NHIS), in New York City, Nassau-Suffolk (Long Island--NY), Dallas and Austin, Texas, and 4 areas in North Carolina: 2 rural counties, and the cities of Greensboro and Winston-Salem. These areas provide some variation by region, socioeconomic status, and size of place-- from very large cities like New York and Dallas to rural areas.

**PRETEST RESULTS**

Group 2: $20 incentive at home:

The response rate was 67% in both incentive groups compared with 59% in the no-incentive group (table 1). The completion rate is a response rate as a percent of those located; it is a better estimate of what the Main Study response rate will be. The completion rate was 81% for the $20 incentive group, compared with 73% for the no-incentive group. Overall, most of the difference in response rates between incentive and non-incentive cases was a result of lower refusal rates for incentive cases (table 1).

The percent of women who broke 1 or more appointments with an interviewer was substantially lower for the $20 in-home cases (24%) than for non-incentive cases (37%). Partly as a result of this large difference in broken appointments, interviewers worked an average of 2.1 hours less to get a completed interview with a $20 incentive (group 2, 8.8 hours) than without an incentive (group 1, 10.9 hours).

The time of all interviewer costs over $10 an hour, including wages and fringe benefits. So the incentive saved the interviewers 2 hours of labor per case (8.8 in group 2 vs. 10.9 in group 1), which saves the $20 cost of the incentive, and makes the $20 incentive interviews slightly cheaper than the non-incentive interviews. In short, the $20 incentives paid for
clearly that incentives are helpful in raising response rates, cutting costs, and increasing the completeness of the data on abortion. For these reasons, we asked OMB for permission to pay each respondent a $20 cash incentive in the 1995 NSFG, and that permission was granted. So a $20 incentive will be used in the 1995 NSFG.

REFERENCES


### TABLE 1: SELECTED RESULTS OF THE NATIONAL SURVEY OF FAMILY GROWTH PRETEST, OCTOBER-DECEMBER 1993, NY, TEXAS, AND NC:

<table>
<thead>
<tr>
<th>Group</th>
<th>Number eligible</th>
<th>Completed interviews</th>
<th>Response rate</th>
<th>Completion rate</th>
<th>Refusal rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>333</td>
<td>196</td>
<td>59%</td>
<td>73%</td>
<td>16%</td>
</tr>
<tr>
<td>2</td>
<td>227</td>
<td>153</td>
<td>67%</td>
<td>81%</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>227</td>
<td>151</td>
<td>67%</td>
<td>80%</td>
<td>11%</td>
</tr>
</tbody>
</table>

### TABLE 2: PERCENT OF WOMEN 15-44 YEARS OF AGE WHO REPORTED EVER HAVING HAD AN ABORTION: 1988 NSFG AND 1993 NSFG PRETEST

<table>
<thead>
<tr>
<th>Group</th>
<th>1988 NSFG</th>
<th>1993 Pretest</th>
</tr>
</thead>
<tbody>
<tr>
<td>No $, No ACASI</td>
<td>13% (96)</td>
<td>14% (96)</td>
</tr>
<tr>
<td>$20, No ACASI</td>
<td>22% (72)</td>
<td>30% (80)</td>
</tr>
<tr>
<td>No $, ACASI</td>
<td>20% (98)</td>
<td>30% (80)</td>
</tr>
<tr>
<td>$40, Non-home</td>
<td>29% (147)</td>
<td>30% (80)</td>
</tr>
</tbody>
</table>