An Analysis of Panel Attrition and Panel Change on the 2006-2008 General Social Survey Panel

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Introduction

The General Social Survey (GSS) is in transition from a replicating, cross-section design to a replicating, panel design. Under the new design each biennial GSS will have three components: 1) a new cross-section or starting panel with a target n of 2,000, 2) the first reinterview of the previous GSS sample, and 3) the second and final reinterview of the next previous GSS sample. The 2010 is the first year that fully implements the new design with the new 2010 panel, the initial reinterview of the 2008 panel, and the second and final reinterview of the 2006 panel. In future rounds of the GSS this replicating, panel design will continue with a new panel starting and an old panel ending each year. The 2008 GSS utilized a transitional design in which there was a new panel drawn and reinterviews were attempted for the 2,000 cases in the 2006 GSS panel. Of these 2,000 cases 59 were out of scope having died or no longer living in households in the US, 1,536 were reinterviewed, and 405 were nonrespondents. When weighted to take the GSS sample design into consideration, 77.8% were respondents, 19.8 % were non-respondents, and 2.4% were out of scope. Among the in scope, the weighted, reinterview response rate was 79.7%.

This paper examines two aspects of the 2006 panel: 1) what was the pattern of attrition between 2006 and 2008 and to what extent did panel mortality bias the sample and 2) how did values change on variables between 2006 and 2008.

Panel Attrition and Panel Bias

To examine bias from panel attrition 132 variables were examined that covered all main background variables and a wide range of attitudinal and behavioral measure. It specifically included all available variables that past research had suggested were associated with panel attrition (Alwin, 2007; Bailar, 1989; Bartels, 1999; Cao and Hill, 2005; Cohen, Machlin, and Branscome, 2000; Dennis and Li, 2003; Fay, 1989; Kalton et al., 1990; Lepkowski and Couper, 2002; Lipps, 2010; Loosveldt and Carton, 2001; Lynn et al., 2005; Olsen, 2005; Waterton and Lievesley, 1987).

Table 1 shows which variables had statistically significant variation by reinterview status. The numbers shown are the probability levels. The first column retains all cases in the analysis and has three categories: respondents, non-respondents, and out-of-scope. The second column considers only those eligible for reinterviews and thus has only respondents and non-respondents. Table 2 summarizes the results form Table 1. Considering all cases 43 of the 132 showed statistically significant differences. When only eligible cases are examined 35 of 132 were significant. When the criterion is set as being statistically significant for both all cases and for just the eligible cases, 28 of 132 variables met this standard. Table 3 examined these 28 variables. All variables were dichotomized and it shows the group that was underrepresented in the reinterviews or in other words the group that was more likely to attrit out. Even among these variables showing statistically significant variation, the panel mortality bias is small, averaging only -1.6 percentage points.

Several patterns appear in the attrition results. First, there is a general pattern for the disengaged and unconnected to attrit out. There is an underrepresentation of those not socializing with relatives daily (-1.1 points), those not reading a daily newspaper (-1.2 points), non-voters (-1.4 points),

those livening alone (-1.5 points), non-attenders of religious services (-1.9 points), and the not married (-2.8 points). However, this pattern did not extend to all engagement variables. For example, there were no statistically significant differences by having a political party identification or socializing with friends or with neighbors. Also, underrepresented are renters (-3.4 points), non-gun owners (- 2.4 points), and those under 50 (-2.3 points) which goes along with the greater attrition on the not married and those living alone. Second, consistent with past research (Cohen, Machlin, and Branscome, 2000; Kalton et al., 1990; Lepkowski and Couper, 2002; Lipps, 2010; Loosveldt and Carton, 2001; Olsen, 2005), those with less positive ratings by interviewers are underrepresented: those rated as less than friendly/interested (-1.9 points) and those with less than good comprehension (-1.2 points). This later difference may also be related to the greater attrition among those with less than a high school education (-1.5 points). Third, the largest attitudinal differences involve thinking that too little is spent on either drug rehab or dealing with drug addiction (-3.2 and -3.6 points). Given that none of the other spending items show differences nor did the one other drug-related measure on legalizing marijuana, it is unclear why these related items show a relatively large attrition bias. Finally, the remaining differences in Table 3 are mostly small and scattered.

In addition, to looking at individual items, two general hypotheses about attrition that have been proposed in the existing literature were investigated: 1) that those with no opinion are more likely to attrit out and 2) that those holding extreme attitudes will be less likely to do reinterviews.

Two tests checked the hypothesis that attriters were more likely to have no opinion on questions. Those without opinions might be less interested in the subject matter of the GSS and/or possibly less inclined to be reinterviewed given their lack of opinions on issues (Loosveldt and Carton, 2001; Waterton and Lievesley, 1987). Two DK scales were made constructed. The first scale counted the number of DKs to the 13 confidence questions, running from 0 to 13. Only 7.6% gave 1+ DKs to these items and there was no statistically significant association between giving DKs and doing the reinterview (neither for all cases nor for those still eligible at time 2). The second scale counted DKs across 11 variables (five spending items, death penalty, severity of courts, attending religious services, belief in life after death, political ideological self-placement, and racial composition of neighborhood). 29.4% gave one or more DKs and giving DKs was again unrelated to doing the reinterview.

Next, the hypothesis that extremists might be more likely to attrite was examined. It was thought that people with extreme positions might find the survey less congenial than middle-of-the-road respondents and/or that their extreme positions might have triggered some negative feedback from interviewers (despite the fact that interviewers are instructed and trained not to react in such a manner). First, self-ratings on political ideology and political party identification were looked at. Neither measure was statistically significantly related to attrition and political party showed no extremist pattern, but there was a slight tendency for extreme liberals and extreme conservatives to not do interviews at time 2 (they were 7.0% of the 2006 sample, 8.1% of non-respondents, 8.6% of not eligibles, and 6.8% of reinterviews). Then three attitudinal scales were created: 1) using the 15 Stouffer civil liberties items and running from 15 to 30, 2) the seven abortion items and ranging from 7 to 14, and 3) the 13 confidence in institutions items with values of 13 to 39. For all three scales DKs were coded to middle values. All three scales significantly varied with being reinterviewed, but the differences were

small and not consistent with the extremism hypothesis. For the Stouffer civil liberties scale the largest shift was a decline of 1.9 percentage points in the middle of the scale. For the abortion scale the shifts were even more modest and basically consisted of a slight (1.1 percentage points) overrepresentation of those with pro-abortion positions. For the confidence-in-institutions scale the change was also minor (1.1 percentage points) and towards those with less confidence. Overall, there is little support for the extremism hypothesis.

Overall, while statistically significant differences were found in a little over a fifth of the variables, the bias from panel morality was generally small which is consistent with most past studies (Alwin, 2007; Kalton, Kasprzyk, and McMillen, 1989). Bias that did occur followed patterns in the existing literature with attrition greater for the disengaged, those rated less positively by interviewers, and those with some, but not all attributes of lower socio-economic status (e.g. less education, renters, worsening of finances, but not income or self-rated social class). Analysis of the third wave of the 2006 panel once the 2010 GSS data are cleaned and processed will indicate if these patterns exacerbate over additional waves as frequently occurs (Kalton, Kasprzyk, and McMillen, 1989).

Panel Stability

Variables change values across panel waves due to two reasons: measure error or true change. Change due to measurement error can be thought of as unreliability. Change due to true change means that the real value differed from time 1 to time 2. High stability indicates both high reliability and little true change. Low stability could be due to either unreliability or high true change or most likely a combination of both. For most variables with two time points it is impossible to separate out unreliability and true change. With a three-wave panel there are statistical techniques that given certain assumptions allow the separate calculation of reliability and true change levels (Smith and Stephenson, 1979). However, for variables that could not show true change over the reinterview period, the stability measure in effect becomes a reliability measure. That is, with true change being 0 and all reported change is due to measurement error (Smith and Stephenson, 1979). In addition, for the unchanging variables, one can look at each category and see where the unreliability is concentrated. That is, since no real change has occurred all cases should be unchanged and those cases that change represent measurement error and the categories in which more change occurs are the less reliable or more measurement-error prone categories.

There are 25 variables that are considered as unchanging (Table 4). Of these 11 involve past information about parents or grandparents (country of birth, education, occupation and industry), five are attributes fixed at birth (gender, year of birth, race, Hispanic origin, ethnicity), five are aspects of the respondent's family when growing up (relative income level, community type, region, religion, and who raised), and three involve more recent, but still past, events (age at birth of first child, if voted in 2004 presidential election, presidential candidate voted for in 2004).

For family situation at age 16 the overall stability level was 87.7%. Using the 2006 reading as the reference category, stability was especially high for those reporting intact, two-parent families (95.8%), especially low for those in the other category (50.0%), male and female relatives (45.8%), and female

relative (46.7%). It was intermediate for the rest of the categories mostly involving one parent or a parent and step-parent (59.4-75.3%). One can get a further understanding of the measurement error by looking at what categories the changes occur between. For example, 71.4% consistently reported being raised by father and stepmother and most of the rest (19.0%) reported Father only at time 2. This could indicate a tendency not to count a stepmother or reflect that the stepmother was added to their family around age 16. Looking at the overall pattern of switches and also examining responses to a follow-up question about why respondents were not living with both their mother and father (FAMDIF16), indicates that most unreliability came from the shifting and sometimes complex family situations that arose during their upbringing.

Religion raised in had an overall stability level of 89.9%. It was high for Jews (100%), Catholics (96.5%), and Protestants (91.7%), notably lower for those raised in no religion (62.9%), and lowest for the various remaining religions (51.0%). Among the other religions, the designation of Christian was especially unstable with only 16.7% being consistent. While based on only a dozen cases, this result is consistent with previous research on religious identification indicating difficulty in distinguishing generic Christians from such other categories as generic inter/non-denominational, inter/non-denominational Protestants, and other Protestants in denominations using the word Christian in their name (Smith and Kim, 2005; Smith, 2005). Respondents' religious classification can easily shift between these categories, because of often unclear boundaries and ambiguities. Of those initially saying they were raised in no religion, but who changed their report, they overwhelmingly mentioned Protestant (72% of changers). Of the 28 cases that were Christian in 2006 or 2008, but not in both years, 26 were Protestant in the other year and two were Catholic. None indicated no religion or generic inter/non-denominational. Stability in religion at age 16 is also much lower among those who reported that their current religion was different from their religion at age 16 (66.9%) than for those who reported they were still in the same religion (94.7%). This suggests that actual past changes in religion identification contributes to low consistency in reporting religion at age 16. This in turn means the instability does not represent random measurement error, but is in part systematically related to religious switching.

Relative income when growing up showed an unique pattern. Overall stability was low (59.6%). It was highest for those reporting their incomes as average (67.9%) and dropped off both when moving down (55.4% for below average and 38.8% for far below average) and upwards (56.7% for above average and 47.6% for far above average). Perhaps "average" scored the best because it was the default response that people tended to give.

Mother's educational degree had a stability of 82.1% and father's was 85.5%. Stability was fairly even across degrees with the notable exception of junior college/associate degree which was only 48.7% for mothers and 31.6% for fathers.

One set of variables asks about the employment of one's parents when growing up. For mothers an initial question asks if she was in paid employment while the respondent was growing up. Then for both mothers and fathers questions are asked to determine employment status (self-employed/employee), occupation, and industry. For mother's paid employment stability was 87.1%. It was higher for those reporting that their mother worked (93.0%) than for those reporting no paid

employment (74.6%). For self-employment the pattern for mothers and fathers was quite different. While overall stability was similar for fathers and mothers (respectively 91.6% and 90.7%), they differed by employment status. Stability in employment status was reported as fairly similar for fathers (self-employed 82.6% and employee 93.0%), but stability was much lower for self-employed mothers (58.2%) than for mothers employed by others (95.2%). Perhaps mothers more often worked out of the home (e.g. doing sewing or other piece work) and their employment status was less clear to their children. For parent's occupation using the full three-digit code, stability was 47.4% for mothers and 52.4% for fathers. Using major occupational categories showed stability rates of 67.0% for mothers and 66.6% for fathers. For industry the uncollapsed stability rates were 63.1% for mothers and 61.8% for fathers and for major industrial categories they were 79.2% for mothers and 75.5% for fathers. The complexity of people's occupations and the difficulty of reliably coding occupations contributes to this low stability (Smith, Crovitz, and Walsh, 1988).

For first racial self-identification stability overall was 91.6%. It was higher for whites (98.1%) and blacks (95.1%), lower for other listed races, and lowest for those coded under the "some other race" category (37.4% for Hispanics and 20.0% for other). The Census race question employed by the GSS is designed to minimize mentions of Hispanic since this is considered an ethnicity and not a race. The low stability of Hispanics in effect reflects that intent since the item often succeeds in steering respondents from volunteering a Hispanic identity and instead giving what the Census measure considers to be a relevant racial classification. Of all switched racial identification 79% involve the "some other race" category at one time or the other and most of these or 71% of all changes involve a Hispanic identity. Among the 21% of switchers not involving "some other race," mentions of American Indian disproportionately contributes to changes. Of the 21% of switchers that didn't involve "some other race" most (18 of 25 cases) involved mixed race individuals including five cases who had merely reversed the order of their biracial identity across surveys (e.g. from Chinese-White to White-Chinese), three involved people with multiple Asian identities, three involved a likely miscode at one time point, and for one case the circumstances were unclear.

Hispanic identity is highly stable (98.5%) and equally consistent for Hispanics and non-Hispanics.

Among those selecting a main ethnicity at both time points, 75.4% were consistent. This is much lower than for race or Hispanic identification. It comes mostly from the combination of great complexity in many people's ethnic background and from the relatively low salience that ethnic identity has for many people (Smith, 1980; 1983; 1985; 2001). Of those reporting different ethnicities, 10.9% actually mentioned both ethnicities at both points, but shifted between what they selected as their main ethnicity. Another 30.1% mentioned the two ethnicities they selected at one, but not both, time points. Thus, 41.0% are consistent in mentioning the same ethnicity at both time points, while not consistently reporting on what their main ethnicity was. In addition, another 22.5% reported different ethnicities, but were actually either expressing their same ethnic background in slightly different ways or their ethnicity was being recorded in slightly different ways. Prime example are being recorded as Spain/Spanish at one time and a specific Hispanic nationality at the other (e.g . Mexican, Puerto Rican), French Canadian and French, Canadian and French Canadian, and Russia/USSR and a post-Soviet collapse nationality. That leaves 36.5% of those with different ethnicities neither consistently reporting

any ethnicity nor overlapping/similar ethnicities. This most discordant group consists of several types of cases. First, there are those mentioning different and dissimilar ethnicities at the two points in time (e.g. China and Other Europe; England/Wales and Other Spanish; Czech and Dutch). It is quite possible many of these people are of mixed ancestry, but they have not so indicated this at the same point in time. However, they may be satisficing, mentioning only the single ethnicity that first comes to mind during each survey. Others may represent simple measurement error (e.g. miskeyings or mishearings). Second, there are inconsistent codings of ethnicities involving the term "American." Code 97 covers mentions of America, United States, specific states in the US, and related. It appears that it is sometimes mixed up with codes of 30 "American Indian" which would also include mentions of "Native American" and of 1 "Africa" which also includes mentions of African-American and Black. Third, there is a group with very complex backgrounds. The GSS records up to three ethnicities. Some people mention from 4-6+ different backgrounds and may simply be inconsistent in which three they mentioned first and/or which were recorded at each time point.

Gender agrees for 99.1% of the cases. A review of the gender information from the household enumeration form, the name of respondents, and pronouns used by interviews in describing contacts with respondents definitively determined the correct gender of all cases and showed that the few inconsistencies were the result of simple data-entry errors. (For similar findings see Smith, 2005).

Cohort has a stability rate of 94.2%. Most differences were small with 35.5% being plus/minus one year. 19.4% were +/- 2 years, 20.4% were +/- 3 to 9 years, 9.7% were +/- 10 years, and 15.1% were +/- 11 or more years. While the numbers are too small to be definitive, the +/- 10 years rate is notably higher than either the 3-9 or 11+ rates which suggest that single-digit, data-entry errors disproportionately contributed to these discrepancies. Part of the differences comes from the fact that COHORT is calculated from the variable AGE. AGE is mostly based on a variable asking date of birth, but when year of birth is missing, the household enumeration form (HEF) is consulted. The HEF attempts to list the current age of all household members. Any adult in the household can supply information in the HEF. AGE and subsequently COHORT are based on the HEF listing of age when direct information on year of birth in the questionnaire is missing. As a result COHORT can differ because it can be collected in these two different manners and possibly from two different persons (when the HEF is not completed by the respondent) and this reduces the stability rate.

Age at birth of first child had a stability rate of 62.2%. Differences were highly clustered around stability and were evenly spread out between gains and declines in reported age (e.g. -1=12.4%; -2= 2.0%; -3=1.3% and +1=12.5%,; +2=2.9%; +3=1.0%). Stability was stable across age groups from those in their 20s to those in their 60s (ranging from 62.0% to 66.8%). It then dropped for those in their 70s (59.8%) and 80+ (49.2%). This late life decline could be due to cognitive impairment associated with aging and/or to the longer recall period involved. Mothers were much more consistent in reporting their age (71.1%) than fathers were (48.7%). Stability was greatest for those with 1-2 children (64.6%) and declined among 3 children (61.4%) and 4+ children (58.8%). Possibly with more children it becomes more difficult to consistently recall age at birth for one of their multiple offspring.

Region lived in at age 16 has high stability and little regional variation (95.8% overall and ranging from 92.7% to 98.2). In contrast, community type lived at age 16 has low and more variable stability. The overall rate was 66.7% and it is highest for those raised on farms (81.6%) or large central cities (77.0%) and lower (56.5-70.1%) for suburbs, smaller cities, towns, and other areas. It appears that respondents at the two ends can more reliably classify their residence, while those in intermediate categories are less consistent in reporting their residence. Geographic mobility around age 16 also probably contributed to variable reports.

Voting in the 2004 election was consistently reported by 86.5%. Stability was highest for those who said they voted (92.3%), followed by non-voters (71.8%), ineligibles (58.2%), and don't remember (11.1%). Of the 18 cases reporting don't remember in 2006, two-third in 2008 said they had voted. While these numbers are small, this pattern is consistent with the finding that people over-report voting and over the longer recall period people may be more likely to over-report due to errors in recall. Among presidential voters in 2004, stability was 95.2%. Levels were comparable across candidates.

Stability is greater for whether the respondent was born in the United States (98.8%), lower for parents (96.5%), and lower still for grandparents (84.9%). This results not only from the greater distance across generations, but also due to the greater complexity. When referring to themselves these is only one person involved, for parents there are two, and for grandparents four. Both more complex and less regular situations are less reliably reported than simpler and more standard statuses. Stability on being born in the US is high (98.8% overall; 99.6% for native born and 93.2% for foreign born). For those with both parents born in the US, stability was 97.5% and for neither parent born in the US it was 98.3%. For all mixed situations stability was 73.1%. Likewise, for people with all four grandparents born in the US, 92.3% of reports were consistent, for all four born outside the US the level was 85.4%. For some born in and some outside the US the rates were only 51.3-57.5%.

Overall across the 25 unchanging variables, stability ranged from 47.4% for mother's occupation to 99.1% for gender and averaged 81.8%. Stability was lower for changeable background variables (73.0%) and lower still for attitudes/behaviors (64.7%)(Table 4). Presumably much of the lower stability is due to the added element of true change, but this cannot be definitively demonstrated.

Drawing mostly on the analysis of the unchanging variables with some corroboration from the pattern show by the changeable variables, certain measurement patterns can be discerned.

Stability rates are generally higher when a condition is affirmed than when one reports the condition not having occurred. Thus, stability is greater for having a mother employed for pay than not employed, born in the country vs. not born in the US, voted for president vs. not voted. It is possible that people who are more certain that a condition applied answer affirmatively and that "no" responses as less stable because they include some less certain people who at time 2 are more likely to alter their responses. A yea-saying bias could also contribute to greater stability for the affirmative responses. Alternatively, since the affirmative response is always also the initial response, one cannot rule out a response-order effect, but that explanation seems less plausible.

Stability is generally lower when there are more response categories. Asking for more details and/or asking people to make finer distinctions in their response leads to lower stability. Stability rates are naturally higher when values are recoded into fewer categories. For example, when year of birth is collapsed into decades, it increases from 94.2% to 98.5%. Likewise, age of birth of first child rises from 62.2% to 93.0% when recoded in a similar manner. When exact number of siblings is reduced by top-coding high values stability moves from 77.4% to 84.6%. When father's industry is collapsed from the three-digit code to major industrial categories, stability increases from 63.1% to 79.2%. These results are support by the pattern from the changeable variables. Variables with many categories such as frequency of attending religious, hours of television viewed daily, and vocabulary score are among the lowest in stability. Overall, it appears that dichotomies have the highest stability and scales using three or more responses have lower stability. However, since there is no experimental control for content and other factors, this conclusion is uncertain.

Certain response scales may also contribute to low stability due to greater unreliability. The four "help" items score among the lowest on stability (averaging 44.9% compared to all attitudes/behaviors of 64.7%). The help items use an unusual response scale. Each question offers two opposing assessments (e.g. "I strongly agree the government should improve living standards" vs. "I strongly agree that people should take care of themselves") and places them at points one and five on a five-point horizontal line and then labels the mid-point (3) as "I agree with both answers."

Complexity in the attributes being reported on also lowers stability. This is clear from the high consistency in racial and Hispanic origin reports vs. the lower stability for the more complicated ethnic background. Complexity is also a factor in the lower stability of parental occupation and industry and for structure of family of origin.

Stability is also lower when there has been a shift in the true status over time. While there is no true change in the values of the unchanging variables, if there were changes in the attribute before, around, or after the reference point less stability occurs because people fail to consistently refer to the attribute at the right point in time. Presumably multiple changes and changes around the point of reference as opposed to much earlier or later contribute to lower stability. This is seen in the analysis of the family status and religion raised in variables and should apply to variables in general.

Conclusion

Initial analysis of panel attrition bias indicates that it is small and generally follows predictable patterns. The application of attrition weights can be readily applied to adjust for these biases (Lepkowski, 1989; Stafford, 2010) and should allow the second-wave, reinterview data to be considered as closely equivalent to the initial sample. Analysis of third-wave, reinterview after the 2010 GSS data are available will test whether bias remains limited across subsequent reinterview waves.

The analysis of the unchanging demographics indicates that unreliability is often high and highly variable across not only variables, but also across values within variables as well. Factors contributing to lower reliability include using very detailed response categories, measuring complex attributes with

multiple features, asking about variables that have actually changed over time, and probably certain types of response scales.

Replication of this analysis using the 2008-2010 panel will help to determine the robustness of these observations in general and in particular allow for closer examination of several findings that were based on a relatively small number of cases. Likewise, adding the third wave to the 2006 panel will advance the understanding of both variable stability and cumulative, panel-attrition bias.

Table 1

Sample Attrition on the 2006-2008 GSS Panel

(Prob.)

Variable (MNEUMONIC)	All Cases	Eligible for Reinterview
Background Variables:		
Community (SRCBELT)	.000	.000
Community (XNORCSIZ)	.274	.102
Region (REGION)	.022	.057
Education (DEGREE)	.000	.022
Gender (SEX)	.047	.116
Age (AGE)	.000	.001
Race (RACECEN1)	.284	.100
Hispanic (HISPANIC)	.165	.002
Marital Status (MARITAL)	.000	.000
Ever Divorced (DIVORCE)	1.00	.981
Labor Force (WRKSTAT)	.000	.001
Hours Worked (HRS1)	.138	.199
Household Size (HOMPOP)	.000	.000
Number of Children (CHILDS)	.000	.533
Number of Siblings (SIBS)	.010	.372
Family at Age 16 (FAMILY16)	.177	.392
Religion (RELIG)	.077	.114
Family Income (INCOME06)	.001	.076
Political Party (PARTYID)	.512	.195
Moved Since Age 16 (MOBILE16)	.030	.211
Country of Birth (BORN)	.019	.005
Parents Born in USA (PARBORN)	.864	.380
Attitudes/Behaviors:		
Self Rated Health (HEALTH)	.000	.220
Political Ideology (POLVIEWS)	.490	.857
Spending on Space (NATSPAC,NATSPACY)	.180	.235
Spending on Defense (NATARMS,NATARMSY)	.264	.125
Spending on Education (NATEDUC, NATEDUCY)	.171	.358
Spending on Environ. (NATENVIR,NATENVIY)	.062	.027
Spending on Foreign Aid (NATAID,NATAIDY)	.480	.373
Spending on Health (NATHEAL,NATHEALY)	.047	.150
Spending on Halting Crime (NATCRIME)	.007	.113
Spending on Law Enforcement (NATCRIMY)	.658	.466
Spending on Welfare (NATFARE)	.524	.290
Spending on Asst. to Poor (NATFAREY)	.012	.556
Spending on Drug Addiction (NATDRUG)	.005	.000

Table 1 (continued)

	All Cases	Eligible for Reinterview
Spending on Drug Rehab (NATDRUGY)	.002	.000
Spending on Solving Big City Probs. (NATCITY)	.167	.297
Spending on Asst. to Big Cities (NATCITYY)	.241	.049
Spending on Imprv. Con. of Blacks (NATRACE)	.803	.469
Spending on Asst. to Blacks (NATRACEY)	.051	.320
Spending on Social Security (NATSOC)	.641	.482
Spending on Highways (NATROAD)	.000	.773
Spending on Parks/Rec. (NATPARKS)	.731	.622
Spending on Mass Transit (NATMASS)	.299	.067
Spending on Childcare (NATCHLD)	.148	.200
Spending on Science Res. (NATSCI)	.678	.411
Communist Teach (COLCOM)	.454	.218
Communist Speech (SPKCOM)	.537	.248
Communist Book (LIBCOM)	.474	.166
Racist Teach (COLRAC)	.665	.418
Racist Speech (SPKRAC)	.099	.029
Racist Book (LIBRAC)	.307	.088
Anti-religionist Teach (COLATH)	.626	.624
Anti-religionist Speech (SPKATH)	.016	.007
Anti-religionist Book (LIBATH)	.533	.506
Homosexual Teach (COLHMO)	.092	.428
Homosexual Speech (SPKHOMO)	.584	.648
Homosexual Book (LIBHOMO)	.054	.017
Militarist Teach (COLMIL)	.061	.215
Militarist Speech (SPKMIL)	.030	.020
Militarist Book (LIBMIL)	.031	.019
Legal Abortion, Mother's Health (ABHLTH)	.031	.014
Legal Abortion, Birth Defect (ABDEFECT)	.033	.006
Legal Abortion, Low Income (ABPOOR)	.057	.340
Legal Abortion, Not Married (ABSINGLE)	.407	.262
Legal, Raped (ABRAPE)	.040	.012
Legal Abortion, No More Kids (ABNOMORE)	.133	.192
Legal Abortion, Any Reason (ABANY)	.670	.676
Confidence in Fed. Exec. (CONFED)	.997	.982
Confidence in Congress (CONLEGIS)	.253	.059
Confidence in Supreme Court (CONJUDGE)	.749	.384
Confidence in Companies (CONBUS)	.124	.106
Confidence in Unions (CONLABOR)	.112	.591
Confidence in Education (CONEDUC)	.476	.603
Confidence in Medicine (CONMEDIC)	.444	.714
Confidence in Science (CONSCI)	.801	.888
Confidence in Religion (CONCLERG)	.539	.425
Confidence in Banks (CONFINAN)	.124	.077
Confidence in Press (CONPRESS)	.112	.220

Table 1 (continued)

	All Cases	Eligible for Reinterview
Confidence in TV (CONTV)	.015	.530
Confidence in Military (CONARMY)	.000	.001
People Trustworthy (TRUST)	.462	.224
People Helpful (HELPFUL)	.067	.042
People Fair (FAIR)	.874	.727
Death Penalty (CAPPUN)	.049	.971
Tough Courts (COURTS)	.066	.026
Fear of Crime (FEAR)	.022	.010
Vocabulary Score (WORDSUM)	.122	.154
General Happiness (HAPPY)	.179	.100
Marital Happiness (HAPMAR)	.058	.199
Satisfaction with Work (SATJOB)	.142	.182
Satisfaction with Finances (SATFIN)	.886	.812
Socializing with Friends (SOCFREND)	.499	.842
Socializing with Neighs. (SOCOMMUN)	.427	.222
Socializing with Relatives (SOCREL)	.001	.026
Socializing at Bar (SOCBAR)	.881	.972
Co-residence with Older Pars. (AGED)	.597	.338
Voted for President in 2004 (VOTE04)	.004	.011
Teenage Sex (TEENSEX)	.159	.059
Pre-marital SEX (PREMARSX)	.147	.058
Extra-marital Sex (XMARSEX)	.597	.277
Homosexual Sex (HOMOSEX)	.567	.360
Immigration Levels (LETIN1)	.135	.366
Race of Co-workers (RACWORK)	.682	.289
Race of Neighbors (RACLIVE)	.197	.046
Open Housing Law (RACOPEN)	.003	.000
Minority Advancement (WRKWAYUP)	.051	.063
Help Blacks (HELPBLK)	.766	.602
Own Firearm (OWNGUN)	.009	.002
Chance of Losing Job (JOBLOSE)	.844	.540
Chance of Finding Job (JOBFIND)	.752	.313
Change in Finances (FINALTER)	.002	.006
Parent's Stand. of Living (PARSOL)	.613	.426
Kids Stand. of Living (KIDSOL)	.143	.237
Social Class (CLASS)	.388	.269
Own Residence (DWELOWN)	.000	.000
How Get Ahead (GETAHEAD)	.494	.266
Legalize Marijuana (GRASS)	.209	.355
Women and Politics (FEPOL)	.051	.594
Women Affirmative Action (FEHIRE)	.390	.260
Working Mother (FECHLD)	.575	.672
Help Poor (HELPPOOR)	.220	.128
Help Sick (HELPSICK)	.488	.793

Table 1 (continued)

	All Cases	Eligible for Reinterview
No Govt. Help (HELPNOT)	.595	.791
Attend Church (ATTEND)	.048	.020
Believe Afterlife (POSTLIFE)	.043	.228
Believe God (GOD)	.303	.222
Frequency of Prays (PRAY)	.080	.084
Read Newspaper (NEWS)	.044	.046
Watch TV (TVHOURS)	.000	.763
Interviewer Rating Coop. (COOP)	.000	.000
Interviewer Rating Understand (COMPREND)	.012	.025

Table 2

Summary of Results in Table 1

Variables	All Cases	Eligible for Reinterview	Both All and Eligible
Background Vars.			
Significant	13	8	7
Not Significant	9	14	15
Not Background Vars.			
Significant	30	27	21
Not Significant	80	83	89
Total			
Significant	43	35	28
Not Significant	89	97	104
	132	132	132

Table 3

Difference between 2006 Sample and 2008 Reinterviews
for Variables Significant on Both All Cases and Eligible for Reinterview in Table 1

Attriting Group	Underrepresentation in Remaining Panel (Percentage points)
Resident of Large Central Cities	- 0.9
Less than High School Education	- 1.5
Not Married	- 2.8
Under 50	- 2.3
Not Retired	- 0.9
Lives Alone	- 1.5
Foreign Born	- 1.1
Too little Spending on Drug Rehab	- 3.2
Too Little Spending on Drug Addiction	- 3.6
Against Militarist Speaking	- 2.3
Against Book by Militarist in Library	- 1.8
Against Anti-religionist Speaking	- 0.9
Opposed to Abortion for Mother's Health	- 1.5
Opposed to Abortion for Birth Defect	- 1.2
Opposed to Abortion in Case of Rape	- 1.9
Great of Confidence in Military	- 0.7
Courts Too Harsh	- 0.9
Afraid to Walk Alone at Night	- 0.7
Not Socialize with Relatives Daily	- 1.1
Did not Vote in 2004 Presidential Election	- 1.4
Not for Open Housing Law	- 0.8
Doesn't Own Firearm	- 2.4
Finances Better	- 0.8
Rents Residence	- 3.4
Doesn't Attend Religious Services Weekly	- 1.9
Doesn't Read Newspaper Daily	- 1.2
Interviewer Doesn't Rate as Friendly/Interested	- 1.9
Interviewer Doesn't Say Understanding was Good	- 1.2

Table 4

Change in Responses, 2006-2008

Variable (MNEUMONIC)	% Stable
Unchanging Background Variables:	
Gender (SEX)	99.1
Year of Birth (COHORT)	94.2
Race (RACECEN1)	91.6
Hispanic (HISPANIC)	98.5
Ethnicity (ETHNIC)	75.4
Country of Birth (BORN)	98.8
Parents Born in USA (PARBORN)	96.5
Grandparent Born in USA (GRANBORN)	84.9
Family at Age 16 (FAMILY16)	87.7
Community Raised in (RES16)	66.7
Region Raised in (REG16)	95.8
Religion Raised In (RELIG16)	89.9
Income of Family Raised In (INCOM16)	59.6
Mother Worked (MAWRKGRW)	87.1
Mother's Occupation (MAOCC80)	47.4
Mother's Industry (MAIND80)	63.1
Mother's Self-employed (MAWRKSLF)	91.6
Father's Occupation (PAOCC80)	52.4
Father's Industry (PAIND80)	61.8
Father's Self-employment (PAWRKSLF)	90.7
Mother's Degree (MADEG)	82.1
Father's Degree (PADEG)	85.5
Voted in 2004 (VOTE04)	86.5
President Voted for in 2004 (PRES04)	95.2
Age When Child Born (AGEKDBRN)	62.2
Other Background Variables:	
Marital Status (MARITAL)	88.3
Ever Divorced (DIVORCE)	96.6
Labor Force (WRKSTAT)	65.5
Hours Worked (HRS1)	26.2
Family Income (INCOME06)	25.3
Household Size (HOMPOP)	55.6
Number of Children (CHILDS)	85.4
Number of Siblings (SIBS)	77.4
Religion (RELIG)	83.4

Table 4 (continued)

Political Party (PARTYID)	53.9
Moved Since Age 16 (MOBILE16)	80.2
Community (SRCBELT)	90.3
Community (XNORCSIZ)	87.0
Region (REGION)	97.3
Education (DEGREE)	83.1
Attitudes/Behaviors:	
Self Rated Health (HEALTH)	61.5
Political Ideology (POLVIEWS)	47.3
Spending on Space (NATSPAC,NATSPACY)	67.8
Spending on Defense (NATARMS,NATARMSY)	59.4
Spending on Education (NATEDUC, NATEDUCY)	73.8
Spending on Environment (NATENVIR,NATENVIY)	71.2
Spending on Foreign Aid (NATAID,NATAIDY)	64.0
Spending on Health (NATHEAL,NATHEALY)	76.1
Spending on Halting Crime (NATCRIME)	65.0
Spending on Law Enforcement (NATCRIMY)	61.2
Spending on Welfare (NATFARE)	61.5
Spending on Asst. to Poor (NATFAREY)	73.4
Spending on Drug Addiction (NATDRUG)	60.9
Spending on Drug Rehab (NATDRUGY)	64.1
Spending on Solving Big City Probs. (NATCITY)	54.4
Spending on Asst. to Big Cities (NATCITYY)	54.6
Spending on Improving Con. of Blacks (NATRACE)	68.1
Spending on Asst. to Blacks (NATRACEY)	60.5
Spending of Social Security (NATSOC)	69.7
Spending on Highways (NATROADS)	57.1
Spending on Parks/Rec. (NATPARKS)	66.7
Spending on Mass Transit (NATMASS)	63.2
Spending on Childcare (NATCHLD)	60.0
Spending on Science Res. (NATSCI)	57.9
Communist Teach (COLCOM)	73.0
Communist Speech (SPKCOM)	82.3
Communist Book (LIBCOM)	74.7
Racist Teach (COLRAC)	65.8
Racist Speech (SPKRAC)	72.4
Racist Book (LIBRAC)	71.1
Anti-religionist Teach (COLATH)	71.9
Anti-religionist Speech (SPKATH)	84.7
Anti-religionist Book (LIBATH)	74.8
Homosexual Teach (COLHMO)	84.0
Homosexual Speech (SPKHOMO)	86.7
Homosexual Book (LIBHOMO)	79.4
Militarist Teach (COLMIL)	70.7
Militarist Speech (SPKMIL)	75.3

Table 4 (continued)

Militarist Book (LIBMIL)	73.1
Legal Abortion, Mother's Health (ABHLTH)	89.9
Legal Abortion, Birth Defect (ABDEFECT)	85.3
Legal Abortion, Low Income (ABPOOR)	80.7
Legal Abortion, Not Married (ABSINGLE)	81.8
Legal Abortion, No More Kids (ABNOMORE)	81.2
Legal Abortion, Any Reason (ABANY)	80.9
Confidence in Fed. Exec. (CONFED)	58.8
Confidence in Congress (CONLEGIS)	59.6
Confidence in Supreme Court (CONJUDGE)	58.5
Confidence in Companies (CONBUS)	62.1
Confidence in Unions (CONLABOR)	63.8
Confidence in Education (CONEDUC)	61.0
Confidence in Medicine (CONMIDIC)	59.2
Confidence in Science (CONSCI)	61.3
Confidence in Religion (CONCLERG)	63.9
Confidence in Banks (CONFINAN)	53.2
Confidence in Press (CONPRESS)	61.0
Confidence in TV (CONTV)	57.9
Confidence in Military (CONARMY)	60.7
People Trustworthy (TRUST)	70.3
People Helpful (HELPFUL)	61.7
People Fair (FAIR)	63.3
Death Penalty (CAPPUN)	84.5
Tough Courts (COURTS)	68.6
Fear of Crime (FEAR)	75.4
Vocabulary Score (WORDSUM)	30.1
General Happiness (HAPPY)	61.5
Marital Happiness (HAPMAR)	72.0
Satisfaction with Work (SATJOB)	58.8
Satisfaction with Finances (SATFIN)	55.7
Socializing with Friends (SOCFREND)	36.5
Socializing with Neighbors (SOCOMMUN)	33.3
Socializing with Relatives (SOCREL)	37.1
Socializing at Bar (SOCBAR)	59.7
Co-residence with Older Parents (AGED)	54.2
Teenage Sex (TEENSEX)	69.9
Pre-marital SEX (PREMARSX)	61.6
Extra-marital Sex (XMARSEX)	78.0
Homosexual Sex (HOMOSEX)	77.0
Immigration Levels (LETIN1)	51.3
Race of Co-workers (RACWORK)	58.6
Race of Neighbors (RACLIVE)	80.4
Open Housing Law (RACOPEN)	69.2
Minority Advancement (WRKWAYUP)	51.1
Help Blacks (HELPBLK)	45.8

Table 4 (continued)

Own Firearm (OWNGUN)	89.1
Chance of Losing Job (JOBLOSE)	60.9
Chance of Finding Job (JOBFIND)	59.2
Change in Finances (FINALTER)	50.0
Parent's Standard of Living (PARSOL)	50.7
Kids Standard of Living (KIDSOL)	47.5
Social Class (CLASS)	69.2
Own Residence (DWELOWN)	86.7
How Get Ahead (GETAHEAD)	60.6
Legalize Marijuana (GRASS)	84.6
Women and Politics (FEPOL)	81.2
Women Affirmative Action (FEHIRE)	44.4
Working Mother (FECHLD)	50.5
Help Poor (HELPPOOR)	47.2
Help Sick (HELPSICK)	40.9
No Govt. Help (HELPNOT)	45.6
Attend Church (ATTEND)	45.4
Believe Afterlife (POSTLIFE)	89.6
Believe God (GOD)	72.1
Frequency of Prays (PRAY)	50.5
Read Newspaper (NEWS)	53.1
Watch TV (TVHOURS)	38.2
Interviewer Rating Coop. (COOP)	75.9
Interviewer Rating Understand (COMPREND)	84.0

References

Alwin, Duane F., Margins of Error: A Study of Reliability in Survey Measurement. New York: John Wiley & Sons, 2007.

Bailar, Barbara A., "Information Needs, Surveys, and Measurement Errors," in Panel Surveys, edited by Daniel Kasprzyk et al. New York: John Wiley & Sons, 1989.

Bartels, Larry M., "Panel Effects in the American National Election Studies," Political Analysis, 8 (1999), 1-20.

Cao, Honggao and Hill, Daniel H., "Active versus Passive Sample Attrition: The Health Retirement Study," unpublished report, Institute for Social Research, University of Michigan, 2005.

Cohen, Steven B.; Machlin, Steven R.; and Branscome, Jim M., "Patterns of Survey Attrition and Reluctant Response in the 1996 Medical Expenditure Panel Survey," Health Services and Outcomes Research Methodology, 1 (2000), 131-144.

Dennis, J. Michael and Li, Rick, "Effects of Panel Attrition on Survey Estimates," Paper presented to the American Association for Public Opinion Research, May, 2003, Nashville.

Fay, Robert E., "Estimating Nonignorable Nonresponse in Longitudinal Surveys through Causal Modeling," in Panel Surveys, edited by Daniel Kasprzyk et al., New York: John Wiley & Sons, 1989.

Kalton, Graham et al., "Characteristics of Second Wave Nonresponse in a Panel Survey," Proceedings of the American Statistical Association, 1990. Washington, DC: ASA, 1990.

Kalton, Graham; Kasprzyk, Daniel; and McMillen, David B., "Nonsampling Errors in Panel Surveys," in Panel Surveys, edited by Daniel Kasprzyk et al. New York: John Wiley & Sons, 1989.

Lepkowski, James M., "Treatment of Wave Nonresponse in Panel Surveys," in Panel Surveys, edited by Daniel Kasprzyk et al., New York: John Wiley & Sons, 1989.

Lepkowski. James M. and Couper, Mick P., "Nonresponse in the Second Wave of Longitudinal Household Surveys," in Survey Nonresponse, edited by Robert M. Groves et al. New York: John Wiley & Sons, 2002.

Lipps, Oliver, "Effects of Different Incentives on Attrition and Field work Effort in Telephone Household Panel Surveys," Survey Research Methods, 4 (2010), 81-90.

Loosveldt, Geert and Carton, Ann, "An Empirical Test of a Limited Model for Panel Refusals," International Journal of Public Opinion Research," 13 (2001), 173-185.

Lynn, Peter et al., "A Review of Methodological Research Pertinent to Longitudinal Survey Design and Data Collection," ISER Working Paper, No. 2005-29, Institute for Social and Economic Research, 2005,

Olsen, Randall J., “The Problem of Respondent Attrition: Survey Methodology is Key,” Monthly Labor Review, 128 (February, 2005), 63-70.

Smith, Tom W., "Aspects of Measuring Race: Race by Observation vs. Self-Reports and Multiple Mentions of Ethnicity and Race," GSS Methodological Report No. 93. Chicago: NORC, 2001.

Smith, Tom W. "Discrepancies in Gender Codes," GSS Methodological report No. 102. Chicago: NORC, 2005.

Smith, Tom W., "Ethnic Measurement and Identification," Ethnicity, 7 (March, 1980), 78-95.

Smith, Tom W., “A Revisit to “The Vanishing Protestant Majority” and the Expanded Religion Probes on the 2004 General Social Survey,” GSS Methodological Report No. 105. Chicago: NORC, 2005.

Smith, Tom W., "The Subjectivity of Ethnicity," in Surveying Subjective Phenomena, edited by Charles F. Turner and Elizabeth Martin. New York: Russell Sage, 1985.

Smith, Tom W. "Problems in Ethnic Measurement: Over-, Under-, and Misidentification," American Statistical Association, Proceedings, 1983.

Smith, Tom W.; Crovitz, Sara P.; and Walsh, Christopher, "Measuring Occupation: A Comparison of 1970 and 1980 Occupational Classification Systems of the Bureau of the Census," GSS Methodological Report No. 59. Chicago: NORC, 1988.

Smith, Tom W. and Kim, Seokho, “The Vanishing Protestant Majority,” Journal for the Scientific Study of Religion, 44 (2005), 211-224.

Smith, Tom W. and Stephenson, C. Bruce, “An Analysis of Test/Retest Experiments on the 1972, 1972, 1974, and 1977 General Social Surveys,” GSS Methodological Report No. 8. Chicago: NORC, 1979.

Stafford, Frank P., “Panel Surveys: Conducting Surveys Over Time,” in Handbook of Survey Research, edited by Peter V. Marsden and James D. Wright. 2nd edition. Bingley, UK: Emerald, 2010.

Waterton, Jennifer and Lievesley, Denise, “Attrition in a Panel Study of Attitudes,” Journal of Official Statistics, 3 (1987), 267-282.