cal Report #35. Chicago, IL: National Opinion Research Center.

———. 1992. "Discrepancies between Men and Women in Reporting Number of Sexual Partners: A Summary from Four Countries." *Social Biology* 39:203–11.

Stolzenberg, Ross M., Mary Blair-Loy, and Linda Waite. 1995. "Religious Participation in Early Adulthood: Age and Family Life Cycle Effects on Church Membership." *American Sociological Review* 60:84–103.

Comment on Hadaway, Marler, and Chaves, ASR, *December 1993*

WHEN SURVEYS LIE AND PEOPLE TELL THE TRUTH: HOW SURVEYS OVERSAMPLE CHURCH ATTENDERS*

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Hadaway, Marler, and Chaves (1993, henceforward HMC) argue that actual church attendance in the United States is only half the level reported by surveys. If this is true, surveys may misreport other behaviors and attitudes by similar margins. Unfortunately, such errors are difficult to detect because we have few reliable behavioral counts to compare with survey estimates (and we have no direct access to people's attitudes). Moreover, if social desirability causes gaps between what happens and what surveys report, this would presumably bias correlations between socially desirable behaviors, and researchers would have difficulty distinguishing real correlations from spurious ones.

Thus, the church attendance gap observed by HMC has implications far beyond the sociology of religion. Previously I provided a comprehensive examination of this gap, and concluded that little of it appears to be caused by social desirability bias (Woodberry 1997a). In this study, I suggest that about 29 percent of Americans attend church or synagogue on an average week (i.e., adjusted head counts and reduced survey estimates meet at slightly under 29-percent attendance). However, in this comment I restrict my attention to how surveys oversample church attenders.

OVERSAMPLING CHURCH ATTENDERS

Most surveys oversample church-goers because they are easier to contact and more cooperative than non–church-goers. Regular attenders are easier to contact because people with nine-to-five jobs, married couples, families with children, and families in which the wife is a homemaker or works part time all tend to be more religiously active (Woodberry 1997b). Referrals probably accentuate this bias because easy-to-contact family members (e.g., homemakers) often tell researchers when difficult-to-contact members (e.g., husbands with busy schedules) are likely to be home. Thus, in the 1988–1992 National Election Study (NES) (Miller and NES 1995), when we regress the probability of attending church on the number of calls needed to contact respondents (variable "V9123"), the coefficient is negative and highly significant ($b = -.01$, S.E. = .002, $p = .000$, with a range of 1 to 33).[1] For each additional call needed to contact a respondent, respondents are typically one percentage-point *less* likely to have attended

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[1] The NES asks respondents how often they attend religious services. I recoded their responses into the literal probability of attending church during an average week: "every week" = 1, "almost every week" = 36/52 = .69, "once or twice a month" = 18/52 = .39, "A few times a year" = 4/52 = .08.

church. Telephone surveys accentuate this problem because 5 to 8 percent of the U.S. population do not have a telephone in their homes, and on the 1988–1993 General Social Survey (GSS) (Davis and Smith 1996) those without phones are 16.4 percentage points less likely to attend church on an average week ($t = 9.70$. $p = .000$).

Highly religious respondents are generally also more cooperative and thus presumably are less likely to refuse an interview. On the GSS and the National Survey of Black Americans, interviewers consistently code highly religious respondents as more friendly and cooperative (Morgan 1983; Ellison 1992). Moreover, on the 1988–1992 NES, respondents who required a persuasion letter to induce participation were 5.1 percentage points less likely to attend church ($t = 2.79$, $p = .005$). This suggests that surveys with high refusal rates also oversample church attenders.

PROBLEMS WITH WEIGHTING TECHNIQUES

Unfortunately, current survey weighting techniques do not adequately adjust for noncontacts and refusals. Most researchers analyze these data problems and create weights with no theoretical rationale (Groves and Lyberg 1988:209).[2] Researchers typically analyze and weight data by race, sex, region, age, and education level. These variables are easily measured, and are *correlated* with noncontact or refusal; but they do not directly *cause* contactability or cooperativeness. For example, surveys generally oversample women, thus researchers often weight surveys to match the census gender ratio. But being female per se does not make women easier to contact—the fact that more women are homemakers, work part time, or are home in the evening and on weekends caring for children makes women easier to contact. If researchers merely weight surveys by the census gender ratio (rather than the ratio of full-time workers to part-time workers and homemakers), they will undersample women who work full time. Such undersampling inflates attendance estimates, because women who work full time attend church less regularly—as do their families (Hertel 1995).

CONSEQUENCES OF SAMPLING PROBLEMS

The sampling problems mentioned above accentuate the church attendance gap in two ways. First, they led HMC to overestimate the Catholic population.[3] Thus when they compare head counts to inflated estimates of the Catholic population, the percentage attending church appears artificially low. Second, sampling problems inflate estimates of church attendance.

Overestimating the Catholic Population

HMC use the National Survey of Religious Identification (NSRI)(Kosmin 1991) to calculate the proportion Catholic within each diocese. They then multiply this proportion by the diocese's census population to estimate the number of Catholics in each. However, despite the NSRI's large sample size (N = 113,000), the survey is flawed. Among other problems, the data come from a series of 113 different bi-weekly, telephone marketing polls that has a 50-percent cooperation rate, gives no information on contact rate, and attempts a maximum of only four calls per household (Kosmin and Lachman 1993). These procedures bias the NSRI sample toward easy-to-contact and highly cooperative respondents. The higher-quality GSS/NES estimates of the Catholic population are lower—92.7 percent of the NSRI estimate.[4]

[2] Presumably, this lack of theoretical foundation is why weighted surveys often do not match census data on other variables, and why identically weighted telephone and face-to-face survey samples remain significantly different (Massey and Botman 1988:159–60).

[3] See Woodberry (1997b) for a description of problems with HMC's Protestant data.

[4] The 1989–1990 NSRI estimate of the U.S. Catholic population is 26.2 percent (Kosmin and Lachman 1993:299), the 1988–1993 GSS is 24.5 percent, and the 1988–1992 NES is 24.1 percent. No GSS or NES survey has ever estimated the Catholic population as high as 26.2 percent. Moreover, in every year I have analyzed (1974–1992) the published Gallup estimate of the Catholic population is higher than the GSS and NES estimates. This suggests that telephone polls and low-quality face-to-face surveys consistently

Thus, if we multiply the NSRI estimates of the proportion Catholic in each diocese by .927 (see HMC, table 1, p. 745), Catholics attending church increase from 28.0 percent to 30.2 percent of the Catholic population and 2.2 percentage points are removed from the attendance gap.

Overestimating Church Attendance

Sampling problems also make survey estimates of church attendance too high. HMC match 1990 Catholic head counts from 18 Catholic diocese to a 1991 Gallup telephone poll; they match Protestant counts/estimates in Ashtabula County, Ohio, to their own telephone poll. However, telephone polls strongly oversample church attenders when compared with higher-quality face-to-face surveys. To test this I put the GSS attendance question on the October 1996 Southern Focus Poll (SFP), a national telephone poll with a maximum of 4 call attempts.[5] The *national sample* of this poll estimates church attendance to be 14.9 percentage-points higher than does the 1996 GSS (a face-to-face survey with over 33 call attempts) *using exactly the same question* ($t = 8.84$, $p = .000$).[6]

I assume this 14.9 percentage-point difference exaggerates the extent of the problem: The SFP has a less sophisticated weighting scheme than Gallup surveys, and the 1996 GSS attendance estimate is unusually low. However, even if we arbitrarily assume 5 percentage points of this difference are due to other causes, sampling problems still can explain away over half of the church attendance gap observed by HMC.

This was not obvious earlier because telephone polls and high-quality face-to-face surveys have used such differently worded questions that direct comparisons were impossible. Until recently, questions about church attendance "in the past seven days" were asked only on telephone polls, and detailed questions about average attendance were asked on face-to-face surveys. Literal translations of these later questions into the probability of attending church during an average week masked the extent of these sampling problems (e.g., Smith 1991; HMC p. 746; see Woodberry 1997b for an empirically based translation).

CONCLUSION

I suggest that telephone polls seriously oversample church attenders and thus do not accurately reflect the U.S. population. To correct this problem, researchers should use high-quality surveys or more theoretically-grounded weighting techniques (see Woodberry 1997b). Researchers also should analyze how sampling problems may distort survey information regarding behaviors other than church attendance (e.g., voting behavior and voluntarism). Much of the gaps scholars attribute to social desirability bias may actually be caused by sampling problems, methodological flaws, and errors in records (Woodberry 1997a, 1997b).

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oversample Catholics. Both the GSS and NES are high-quality face-to-face surveys demanding at least 33 call attempts per respondent and showing completion rates of over 70 percent.

[5] The SFP is a random-digit-dial telephone poll with a 55-percent cooperation rate among those contacted (N = 1,222). I weighted these data to compensate for the oversampling of people in the South, so the data reflect the national population.

[6] On both surveys I calculated the literal probability of attending church on an average week as follows: "more than once a week" and "every week" as 1.0 (= 100-percent chance); "nearly every week" as 42/52 = .81; "2 to 3 times a month" as 30/52 = .59; "once a month" as 12/52 = .23; "several times a year" as 4/52 = .08; "once a year" as .002; and less than once a year as .001.

REFERENCES

Davis, James A. and Tom W. Smith. 1996. *General Social Surveys, 1972–1996* [MRDF]. Chicago, IL: National Opinion Research Center [producer]. Storrs, CT: Roper Center for Public Opinion Research [distributor].

Ellison, Christopher G. 1992. "Are Religious

People Nice People? Evidence from the National Survey of Black Americans." *Social Forces* 71:411–30.
Groves, Robert M. and Lars E. Lyberg. 1988. "An Overview of Nonresponse Issues in Telephone Surveys." Pp. 191–211 in *Telephone Survey Methodology*, edited by R. M. Groves, P. P. Biemer, L. E. Lyberg, J. T. Massey, W. L. Nicholls II, and J. Wakesberg. New York: John Wiley and Sons.
Hadaway, C. Kirk, Penny Long Marler, and Mark Chaves. 1993. "What the Polls Don't Show: A Closer Look at U.S. Church Attendance." *American Sociological Review* 58:741–52.
Hertel, Bradley R. 1995. "Work, Family, and Faith." Pp. 81–121 in *Work, Family, and Religion in Contemporary Society*, edited by N. T. Ammerman and W. C. Roof. New York: Routledge.
Kosmin, Barry A. 1991. *The National Survey of Religious Identification: 1989–90* [MRDF]. New York: The Graduate School and University Center of the City University of New York [producer, distriburtor].
Kosmin, Barry A. and Seymour P. Lachman. 1993. *One Nation Under God: Religion in Contemporary American Society*. New York: Harmony Books.
Massey, James T. and Steven L Botman. 1988. "Weighting Adjustments for Random Digit Dialed Surveys." Pp. 143–60 in *Telephone Survey Methodology*, edited by R. M. Groves, P. P. Biemer, L. E. Lyberg, J. T. Massey, W. L. Nicholls II, and J. Wakesberg. New York: John Wiley and Sons.
Miller, Warren E. and the National Election Studies (NES). 1995. *American National Election Studies Cumulative Data File, 1952–1994* [MRDF]. 8th ICPSR version. Ann Arbor, MI: University of Michigan, Center for Political Studies [producer]. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor].
Morgan, S. Philip. 1983. "A Research Note on Religion and Morality: Are Religious People Nice People?" *Social Forces* 61:683–92.
Smith, Tom W. 1991. "Counting Flocks and Lost Sheep: Trends in Religious Preference Since World War II." *GSS Social Change Report.* No. 26, revised January 1991. Chicago, IL: National Opinion Research Center.
University of North Carolina. 1996. *Southern Focus Poll* [MRDF]. Chapel Hill, NC: University of North Carolina, Institute for Research in Social Science [producer and distributor].
Woodberry, Robert D. 1997a. "How Then Shall We Measure?: Adjusting Survey Methodology to Remove the Gap between Head-Counts and Survey Estimates of Church Attendance." Paper presented at the annual meeting of the American Association for Public Opinion Research, May 15–18, Norfolk, VA.
Woodberry, Robert D. 1997b. "The Missing Fifty-Percent: Accounting for the Gap between Survey Estimates and Head-Counts of Church Attendance." Master's thesis, Department of Sociology, University of Notre Dame, Notre Dame, IN.

Reply to Caplow, Hout and Greeley, and Woodberry

OVERREPORTING CHURCH ATTENDANCE IN AMERICA: EVIDENCE THAT DEMANDS THE SAME VERDICT*

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In "What the Polls Don't Show: A Closer Look at U.S. Church Attendance" (Hadaway, Marler, and Chaves 1993), we presented evidence that weekly church attendance in the United States is substantially below the 40-percent level reported by most social surveys and public opinion polls. We also concluded that the overreporting of church attendance by survey respondents explains a major portion of the "gap" between attendance counts and poll-based estimates. Our findings are questioned by three critical comments. Woodberry (1998) agrees with us that survey-based attendance rates are inflated, but claims that response bias accounts for most of the inflation. Caplow (1998) and Hout and Greeley (1998) argue that survey-based rates are not substantially inflated, so there is no inflation to be explained. These

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