# Community Context and Survey Response

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Survey cooperation is essential for the continued viability of survey data (House, Singer, Kahn, Schuman, and Juster 2004:5). Consensus on declining response rates (Curtin, Presser, and Singer 2005; De Leeuw and De Heer 2002) compels survey researchers to seek to better comprehend survey nonresponse because of its implications for data collection cost as well as data quality, which is related to inference and bias. Even the General Social Survey (GSS), which had been an exception to the trend of declining response rates, had a 70% response rate in the 2000s after relatively stable response rates for 30 years: 76% in the 1970s, 76% in the 1980s, and 74% in the 1990s. Clearly, survey nonresponse has long been recognized as an important factor for the quality of surveys (Deming 1944) and had become a major concern by the mid-1960s (Frankel and Frankel 1987). Still, in her 2004 presidential address to the American Association of Public Opinion Research (AAPOR), Martin (2004) calls on survey organizations to better inform the public in order to help them fully digest survey results and to focus on causes and consequences of nonresponse.

Understanding who participates in surveys requires knowledge of four elements of survey nonresponse: (1) social environment, (2) household characteristics, (3) interviewers, and (4) design features (Groves, Fowler, Couper, Lepkowski, Singer, and Tourangeau 2004:176). While the lack of information about non-respondents limits attempts to study nonresponse (see Smith 1983, for a review), controllable elements such as incentives, advance letters, and interview tailoring have been extensively studied (see Groves et al. 2004:189-194; Weisberg 2005:176-190, for a review). It might appear that the effect of social environment on survey response would have been widely assessed due to its relatively easy availability; however, few studies have examined this effect. Making generalizations from these studies is complicated due to the differences in survey dimensions. They are (1) fielded in different countries (Van Goor, Jansma,

and Veenstra 2005 for the city of Groningen, The Netherlands; Goyder, Lock, and McNair, 1992 for three Canadian cities in the province of Ontario); (2) employ different modes: telephone (Van Goor, Jansma, and Veenstra 2005) and in-person interviews (Goyder, Lock, and McNair 1992); (3) report different types of response rates: refusal rates (House and Wolf 1978) and cooperation rates (Groves and Couper 1998); (4) use different methods of statistical analysis: bivariate (Smith 1983) and multivariate (Van Goor, Jansma, and Veenstra 2005); and (5) analyze different kinds of geographic areas: region (DeMaio 1980; Smith 1983), central cities (Fitzgerald and Fuller 1982; Sudman 1976:114; Tuckel and O'Neill 2002), urbanicity (DeMaio 1980), zip-codes (Holbrook, Cho, and Johnson 2005), Primary Sampling Units (House and Wolf 1978), and blocks (Groves and Couper 1998).

Even studies concerned with the effect of geographic areas on survey response were either done quite some time ago (SRC 1956-1972 presidential election survey, House and Wolf 1978) or used data with an extremely high response rate (92 percent, Groves and Couper 1998). Although the importance of social-psychological variables, such as fear of crime and trust, was acknowledged (House and Wolf 1978; Groves and Couper 1998), the researchers could not incorporate them into their models. Furthermore, the extant research offers no consistent findings for environmental factors associated with survey response, and the mechanisms by which place affects survey cooperation remain to be explored (Van Goor, Jansma, and Veenstra 2005).

Guided by the seminal works of House and Wolf (1978) and Groves and Couper (1998), we linked the 2000 Census and 1994-2000 General Social Survey (GSS) with the 2002 GSS. We hypothesize that the compositionally disadvantaged areas–as determined by measures such as residential stability, poverty level, and ethnic heterogeneity–are more likely to be associated with low cooperation rates. We further hypothesize that neighborhood contextual characteristics, such

as trust and fear of crime, are mediating mechanisms between disadvantaged areas and response rate.

## Background

### *The Causal Flow of Community Context and Survey Cooperation*

One of the most influential frameworks for studying the community is social disorganization theory, in which structural conditions such as urbanicity and economic conditions affect the social relations of people. Wirth (1938) posits that population size, density, and heterogeneity accompanying urbanization weaken individual, family, neighborhood, and social ties. Shaw and McKay (1969) show an association between certain structural conditions and the concentration of social ills such as delinquency. They attribute the higher prevalence of social ills in socially and economically disadvantaged areas to the differences in social organization in the community. In an attempt to find mechanisms that mediate the effect of socially disadvantaged areas on delinquency, Sampson, Raudenbush, and Earls (1997:918) have identified collective efficacy, rooted in trust among neighbors and a willingness to intervene on behalf of the common good.

How are community structural conditions related to survey cooperation? It is hypothesized that community characteristics affect the receptivity of individuals to respond to the request of strangers such as interviewers. Treating refusal rates in Primary Sampling Units (PSUs) "as a behavioral measure of interpersonal trust or helpfulness," House and Wolf (1978:1030) show a positive relationship between crime rate and refusal rate, and find that the total crime rate shows the strongest positive explanatory power on variation of refusal rates among different places. Groves and Couper (1998) show that, controlling for household

characteristics, only population density and the percentage of individuals under 20 years of age are positively related to survey cooperation. However, Van Goor, Jansma, and Veenstra (2005) found no association between social disorganization index and nonresponse.

## METHODS

### *DATA*

The GSS is a full-probability sample of English-speaking adults aged 18 and over living in U.S. households and has been collected by NORC at the University of Chicago since 1972. For our analysis, we used GSS data collected in 2002 by computer assisted personal interview (CAPI) based on the 1990 census sampling frame (see Davis, Smith, and Marsden 2005, for detailed GSS information). The response rate for the 2002 GSS is 70% with 2,765 completed cases.

With the aim of linking the 2002 GSS with 2000 Census information at the census tract level, we converted 1990 census tracts recorded in the 2002 GSS to 2000 census tracts using MapMarker software and MapInfo Professional because the 2002 GSS was based on 1990 census information. To verify the geocoding based on mapping databases, two researchers independently checked each address using American Fact Finder Census data search. A third researcher then re-checked and corrected all discrepant cases from the two independent researchers. The reconciled tract data was used when there was a discrepancy between the mapping database and the address check.

The 1994-2000 GSS allow us to generate information about the fear of crime and trust at Primary Sampling Unit Segments (PSUSEG). Since the 1994-2000 GSS are also based on the 1990 Census sampling frame, overlapping PSUSEG boundaries enable us to link 1994-2000 fear

of crime and trust items at the PSUSEG level to the 2002 PSUSEG. Twenty-nine out of 271 PSUSEGs include more than one tract. All tracts belonging to the same PSUSEG are assigned the same information for fear of crime and general trust items. In this fashion, 271 tracts among 406 tracts in the 2002 GSS eventually have information about the fear of crime and general trust. The descriptive statistics between 271 tracts and 406 tracts are very similar (not shown).

Measures:

Our dependent variable, the response rate, is based on Response Rate 1 in the AAPOR Standard definition, defined as "the number of complete interviews divided by the number of interviews (complete plus partial) plus the number of non-interviews (refusal and break-off plus non-contacts plus others) plus all cases of unknown eligibility (unknown if housing unit, plus unknown, other)" (2006:32). Response rates range from 0 to 1 with a mean value of .6912 (std=.23619). The screening rate has a mean of .988 and is larger than .8 except for only two cases out of 406. In addition, 376 tracts (92.6%) show perfect screening (contact) rate. In sum, we believe that the screening rates are not only extremely high but also show little variation across tracts.

Based on the theoretical framework and previous empirical findings, we include measures that indicate residential stability, poverty, heterogeneity, and social cohesion. Residential stability is measured as the percentage of the population aged five and over who have lived in the same house since 1995. For socio-economic status, we use the percentage of people living below the poverty level in 1999. Heterogeneity is measured by Herfindahl index, based on four racial/ethnic groups, where higher scores mean more racial/ethnic heterogeneity (Hipp, Bauer, Curran, and Bollen 2004:1345). The percentage of the total population under 18 is known

to be an important factor for social cohesion (Groves and Couper 1998:180). In addition, we controlled for region, urbanicity, and population density because previous research has shown that these variables are correlated with differences in response rate. Region is divided into four categories with the Northeast being the reference. Urbanicity includes three categories: urban (inside urbanized areas and urban clusters), rural (farm and nonfarm), and mixed areas. Urban is the reference category. Population density is defined as people per square mile (logged).

The proportion of fear of crime at the PSUSEG level is the proportion saying "yes" to, "Is there any area right around here–that is, within a mile–where you would be afraid to walk alone at night?" Interpersonal trust is the mean proportion based on three questions: (1) "Generally speaking, would you say that most people can be trusted or that you can't be too careful in life?", (2) "Would you say that most of the time people try to be helpful, or that they are mostly just looking out for themselves?", and (3) "Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair?". Items originally with three response categories were recoded into dummy variables (i.e., most people can be trusted vs. can't be too careful, depends), and then these were used to compute the weighted average of social trust for each PSUSEG.

## ANALYSIS

The unit of analysis for this paper is 406 census tracts in 2002, and mean number of cases per tract is 9.73 (std=5.01). We first show the descriptive statistics and zero-order correlations (Table 1). In Table 2 ordinary least square regression examines the association between response rates and neighborhood structural factors, controlling for region, urbanicity, and population density in Model 1 (N=406) and Model 2 (N=271), and indicates how the effect of community

structural variables changes when we include two additional variables, fear of crime and trust in Model 3 (N=271).

The lower part of Table 1 displays descriptive statistics and shows that response rates are skewed to the left in the range of 0 to 1. This skewness of our dependent variable concerns us with the potential problem of heteroskedasticity, and we use White standard errors or robust standard errors for statistical tests, in order to deal with this problem (Greene 2002:219-221). It is also notable in advance that square-transformation for the response rates does not alter our main statistical findings, though not presented in this article.

<Table 1 about here >

## RESULTS

Contrary to social disorganization theory, the percentage living in the same residence since 1995 is negatively correlated with the response rate, while the percentage below the poverty line and racial/ethnic heterogeneity are positively associated. As expected, the percentage of individuals 18 and under are positively related with the response rate. The correlation of fear with the response rate is positive, but not statistically significant, whereas trust is negatively associated and statistically significant. While the relationship between the social disorganization structural factors and the response rate is unexpected, the relationship between the structural factors and social-aggregate factors is as predicted. For instance, higher poverty areas show higher levels of fear of crime and lower levels of trust.

<Table 2 about here>

To sort out the unique effects of these variables, we ran the OLS regression. Table 2 displays the regression of the response rate on the structural variables (Model 1, Model 2) and social-psychological aggregates (Model 3). Model 2 shares the identical variables with Model 1, but analyzes census tracts where social-psychological aggregates for Model 3 are available. The comparison between Model 1 and Model 2 illustrates the robust relationships between social structural variables and response rate: in general, residential stability shows a negative relationship with the response rate, while the percentage below the poverty line and the percentage under 18 are positively correlated, which is similar to the correlations seen in Table 1.

In Model 3, fear of crime or trust is neither statistically significant nor does it change the significance of other key variables preexisting in Model 1 or Model 2. In sum, regression analyses did not confirm the hypotheses that socially disadvantaged areas have a lower response rate, nor that social-psychological aggregates mediate the relationship between structural characteristics in the area and response rate.

## DISCUSSION

Linking the 2002 GSS with Census information and the 1994-2000 GSS, we have examined how structural factors are related to response rates at the census tract level, and whether this relationship is mediated by fear of crime and community norms. Our findings show that economically disadvantaged areas or residentially unstable areas show higher response rates, and also that racial heterogeneity is not associated with the cooperation rate, but areas with a higher percentage of residents aged 18 and under are associated with a higher response rate.

In line with the findings of Groves and Couper (1998), social cohesion as measured by the percentage of residents 18 and under, elicits higher response rates. However, we cannot directly compare our positive relationship between poverty level and response rate at the community level to their findings. In the model including both household level and community level characteristics, Groves and Couper (1998:130) only include household level SES, not community level SES, so that the relationship between community SES and cooperation rate was not explored. In any case, they do show that, in the household only analysis, household SES was negatively related with cooperation rate.

Why is our original hypothesis not confirmed? Our findings may not be surprising if we consider that a survey is the interaction between interviewers and respondents. Survey organizations try with considerable effort to frame survey requests to fit respondents' tastes. As leverage-theory points out, respondents actively weigh several dimensions including interviewer tailoring and incentives for survey participation (Groves, Singer, and Corning 2000). A plausible alternative explanation for the high response rate in high poverty areas is that, given the higher correlation between the percentage below poverty levels and unemployment, people living in poor communities are likely to have more free time and fewer resources than those in wealthy communities. Thus, incentive dollars may be more attractive and effective for people in these areas. Regressions with unemployment level in place of poverty level (not presented) show identical effects across the three models and support this conjecture.

Another reason could be access. People with more money are more likely to live in wealthy communities shielded from interviewers by locked buildings, gated drives, and doormen. Can interviewer tailoring or incentives work for respondents who are first contacted over an intercom or by a third party? Survey organizations may be less efficient in dealing with this type

of access issue, whereas they have several ways to deal with crime-ridden areas such as sending two interviewers at the same time or only asking them to work during certain hours.

Beyond the practical implications for field operations (Groves and Couper 1998:189), our findings may have important implications for researchers using the survey response rate as an indicator for community norms. First, House and Wolf (1978) make an excellent point that refusal rates may have great consequences for sample representativeness. For instance, they mention that if there is no difference between urban and non-urban areas on a general item about trust, this may be the result of the undercoverage of urban areas with more refusers. In terms of our findings, the 2002 GSS does not underrepresent people who live in economically disadvantaged areas. Secondly, although the response rates of mail surveys have been shown to be related with community norms (Knack and Kropf 1998), this finding may be less applicable for face-to-face surveys.

There are several limitations to our ecological study. First, we have omitted elements of survey cooperation in our analysis. In particular we could not include individual characteristics of selected samples or interviewer information, so we could not perform multilevel analysis (O'Muircheartaigh and Campanelli 1999). Second, although the areas with high poverty levels have higher response rates, those individuals who cooperate may not have the population characteristics of the area in which they live. As we have seen, there is very little multivariate research on neighborhood characteristics and response rates in multivariate analysis, so additional research at the census tract level using the in-person mode is needed. Third, as House and Wolf (1978) noted, our trust items are general, so they may not accurately gauge neighborhood specific trust. Furthermore, given the conceptual linkage of the cooperation rate

with helping behavior, we think it is worthwhile to study the association between community context and helping behavior.

In conclusion, our findings provide important contextual information for GSS users concerned that their findings based on individual analysis may be biased because of reduced representation of people in socially disadvantaged areas. Related to this concern over middle-class bias (Goyder, Warriner, and Miller 2002; Van Goor and Rispens 2004), the 2002 data do not have middle-income area bias. Furthermore, in this period of increasing interest in the mechanisms by which community context influences individual well-being (Booth and Crouter 2001; Brooks-Gunn, Duncan and Aber 1997; Kawachi and Berkman 2003), understanding why poor areas have higher response rates may suggest how to approach community development.

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Table 1. Zero-Order Correlations (N=406, except fear of crime (N=271) and trust (N=273))

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) Response rate | 1 | | | | | | | | | | | | | | |
| (2) Northeast | -0.04 | 1 | | | | | | | | | | | | | |
| (3) Midwest | 0.04 | -0.25 ** | 1 | | | | | | | | | | | | |
| (4) West | 0.02 | -0.28 ** | -0.26 ** | 1 | | | | | | | | | | | |
| (5) South | -0.02 | -0.41 ** | -0.37 ** | -0.41 ** | 1 | | | | | | | | | | |
| (6) Urban | -0.06 * | 0.11 | -0.03 | 0.16 ** | -0.21 ** | 1 | | | | | | | | | |
| (7) Mixed area | 0.04 | -0.09 | -0.01 | -0.12 * | 0.19 ** | -0.87 ** | 1 | | | | | | | | |
| (8) Rural | 0.04 | -0.05 | 0.08 * | -0.10 + | 0.06 | -0.36 ** | -0.15 ** | 1 | | | | | | | |
| (9) Pop. Density(logged) | -0.01 | 0.23 ** | -0.08 * | 0.15 ** | -0.26 ** | 0.75 ** | -0.51 ** | -0.53 ** | 1 | | | | | | |
| (10) % same residence since 1995 | -0.15 * | 0.20 ** | 0.02 | -0.24 ** | 0.01 | -0.26 ** | 0.13 ** | 0.27 ** | -0.35 ** | 1 | | | | | |
| (11) % below poverty (logged) | 0.27 ** | -0.02 + | -0.09 * | 0.06 | 0.03 * | 0.18 * | -0.21 ** | 0.04 | 0.28 ** | -0.32 ** | 1 | | | | |
| (12) racial/ethnic heterogeneity | 0.15 ** | -0.09 | -0.22 ** | 0.28 ** | 0.01 * | 0.37 ** | -0.31 ** | -0.16 ** | 0.44 ** | -0.38 ** | 0.40 ** | 1 | | | |
| (13) % under 18 | 0.17 ** | -0.09 | 0.08 | 0.07 | -0.05 | -0.09 * | 0.09 * | 0.02 | 0.02 | 0.17 ** | 0.19 ** | 0.15 * | 1 | | |
| (14) Proportion of the fear of crime | 0.10 | 0.00 | -0.07 | 0.02 | 0.04 | 0.36 ** | -0.26 ** | -0.23 ** | 0.45 ** | -0.20 ** | 0.45 ** | 0.38 ** | 0.00 | 1 | |
| (15) Proportion of the trust | -0.15 * | 0.05 | 0.09 + | 0.04 | -0.16 ** | -0.18 ** | 0.14 * | 0.09 | -0.25 ** | 0.02 | -0.46 ** | -0.34 ** | -0.35 ** | -0.32 ** | 1 |
| Mean | 0.69 | 0.21 | 0.23 | 0.20 | 0.35 | 0.61 | 0.30 | 0.09 | 7.23 | 53.36 | 2.36 | 0.32 | 26.05 | 0.43 | 0.45 |
| Std. Dev. | 0.24 | 0.41 | 0.42 | 0.40 | 0.48 | 0.49 | 0.46 | 0.28 | 2.10 | 12.82 | 0.74 | 0.20 | 6.92 | 0.24 | 0.17 |
| Min | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.43 | 11.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 |
| Max | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 12.14 | 100 | 4.04 | 0.76 | 47.36 | 1 | 1 |

+ significant at 10%; * significant at 5%; ** significant at 1%

Table 2. Multiple Regression Analysis of the Response Rate (Unstandardized Coefficients)

| | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| Northeast (Ref.) | | | |
| Midwest | 0.019 | 0.008 | 0.005 |
| | [0.032] | [0.043] | [0.044] |
| West | -0.044 | -0.041 | -0.041 |
| | [0.036] | [0.047] | [0.047] |
| South | -0.057 + | -0.044 | -0.050 |
| | [0.034] | [0.043] | [0.045] |
| Urban (Ref.) | | | |
| Mixed area (Urban and Rural) | 0.031 | 0.042 | 0.044 |
| | [0.035] | [0.046] | [0.046] |
| Rural | 0.010 | 0.029 | 0.037 |
| | [0.058] | [0.085] | [0.086] |
| Population density (logged) | -0.020 * | -0.014 | -0.016 |
| | [0.010] | [0.013] | [0.013] |
| % same residence since 1995 | -0.002 * | -0.003 * | -0.003 * |
| | [0.001] | [0.001] | [0.001] |
| % below poverty (logged) | 0.071 ** | 0.067 ** | 0.060 * |
| | [0.019] | [0.024] | [0.029] |
| % racial/ethnic heterogeneity | 0.133 + | 0.111 | 0.098 |
| | [0.075] | [0.095] | [0.092] |
| % 18 and under | 0.005 ** | 0.004 * | 0.004 + |
| | [0.002] | [0.002] | [0.002] |
| Proportion of the Fear of Crime | | | 0.030 |
| | | | [0.083] |
| Proportion of the Trust | | | -0.051 |
| | | | [0.109] |
| Constant | 0.643 ** | 0.622 ** | 0.681 ** |
| | [0.122] | [0.140] | [0.178] |
| Observations | 406 | 271 | 271 |
| R-Squared | 0.136 | 0.122 | 0.124 |

Robust standard errors in bracket

+ significant at 10% level * significant at 5% level ** significant at 1% level