Part B. Statistical Methods

Part B. Collections of Information Employing Statistical Methods:

The Situational Policing Officer and Neighborhood Survey will require the employment of statistical methods.

B.1. Respondent Universe and Sampling Methods

The research team intends to test the "situational policing" concept in both large and small cities with diverse neighborhoods and experiences with crime. In addition, they plan to implement it in a metropolitan county. Ohio County, WV is a metropolitan county surrounding Wheeling, WV and close by to Morgantown, where West Virginia University is located. Cleveland and Pittsburgh are cities over 250,000 in population (Group I by FBI definitions), while Akron is a city with less than 250,000 residents (Group II). Cleveland has a violent crime rate that is 1.5 times that of the average for similar sized agencies. Akron's violent crime rate is 6% lower than the average Group II agencies. Pittsburgh's violent crime rate is about 7% higher than the average of similar sized agencies. All of these cities have diverse, but well defined neighborhoods. In addition there is diversity in regard to sworn police officers per residents. In Cleveland there are 351 sworn officers per 100,000 residents; in Pittsburgh the ratio of sworn officers to residents is 261 per 100,000 in the population. Akron police to citizen ratio is the lowest of the three at 213 per 100,000 residents. Finally, all three cities and the one metropolitan county are driving distance from Morgantown, WV which lowers the cost of travel during the project period. In addition, these cities and their local police departments are supportive of the survey efforts and have agreed to participate. Gaining cooperation from city leaders and police officials can be difficult and is essential to the success of the project.

Neighborhood Component: The respondent universe in the neighborhood component of the Situational Policing Officer and Neighborhood Survey is "total households in the neighborhoods selected for this study." The sampling will be conducted in two stages. First, face blocks will be selected at random using a random number generator. Second, each resident in the selected face block will be asked to participate in the study. We plan to get 100 surveys from each neighborhood (400 for each city and 1,600 for the entire study).

 As mentioned previously, the jurisdictions involved in the study will be Pittsburgh, Cleveland, Akron, and Ohio Count, WV Sheriff's Department. In each jurisdiction we will select four neighborhoods. Diversity in neighborhood selection will include racial makeup, socioeconomic status, ethnicity, level of crime, type of land use, among others. Once the neighborhoods are identified, the researchers will obtain a street map of the area. For the purposes of this study we will not select neighborhoods that cross census tracts. In other words, the face blocks in each of the identified neighborhoods must aggregate up to the full boundaries of one or more census tracts.

Prior to sampling the researchers will drive through the neighborhoods and identify the face

blocks that contain residences. Blocks that contain only parks, vacant lots, businesses, government buildings etc. will be excluded from the sampling frame. We will number only the blocks that have residences and then randomly select a number of blocks to survey. Once selected, all residences in the block will be asked to participate in the survey.

Our primary purpose is to create a method for police and residents to *see* and assess neighborhood-level characteristics that are for the most part latent. Armed with this information from our survey, the police are able to enter into a dialogue with residents about the accuracy of their findings. Therefore, we suggest a two-stage approach that we believe is feasible under most circumstances that a local law enforcement agency will be able to implement. Stage 1 involves the random selection of face blocks within the neighborhood, while stage 2 is the actual attempt to obtain completed surveys from all or most residents in a randomly selected block.

We tested this process in four neighborhoods in Wilmington, Delaware during August 2007, prior to entering into a contractual agreement with the COPS office. In order to assess how well our sample represented the neighborhood as a whole, we compared known Census parameters for the neighborhoods against our sample statistics. The standard errors were calculated according to equation 1.

$$ 1. \quad \sqrt{\frac{N-n}{N}\frac{PQ}{n-1}} \text{ , where P = point estimate of proportion and Q = 1-P} $$

Table 1 presents these findings. In the first set of comparisons we check our estimate of "percent white" against what is reported by the U.S. Census for each neighborhood (Census tract), i.e., Eastside, Hilltop, Little Italy, and Forty Acres. For example, the Census parameter for "percent White" in the Eastside neighborhood is .04 (or 4%). The point estimate of this parameter based on our sample was .02 or 2%. The 95% confidence interval for this estimate was 0 to 5%. Therefore, the populations fits within this confidence interval. On the other hand, our point estimate for "percent White" in Forty Acres was 91% with a confidence interval of 82% to 99%. Again, the population parameter 90% fits within this interval.

The known population parameters fit within all of our confidence intervals in all cases except two. These two cases fall within the category "percent home ownership." Our estimate of this parameter was 43% homeownership on the Eastside and 66% homeownership in Little Italy. The actual parameter of Eastside was 19%, which was well outside the 95% confidence interval (29% to 56%). The population parameter for Little Italy was 51% home ownership, which was just outside the 95% confidence interval (52% to 79%). It is felt that this disparity was the result of a policy decision not to send student surveyors into apartment buildings. This resulted in an overestimate of home ownership in the two neighborhoods where apartment buildings were abundant (Eastside and Little Italy).

As depicted in Table 1, many of the estimates are very close to the known population parameters even though the confidence intervals are large. For example, consider the estimate of home ownership in the Hilltop neighborhood. The population parameter is 47% and the estimate is 49% while the confidence interval is 33% to 64%. This wide range is caused by a small sample size

(41 in Hilltop). In our planned use of this survey instrument in our upcoming study, our sample size will be in the area of 100 surveys per neighborhood which will have the effect of shrinking the confidence interval.

We believe that our sampling strategy will be relatively easy for police officers to replicate, while it provides fairly accurate estimates of neighborhood level parameters. In addition, our findings will be checked against what residents believe to be true about each of our estimates, especially where the parameters are unknown, such as the measures of the Psycho Emotional Neighborhood (PEN) and Sense of Community (SOC). Although it is important to accurately estimate the variables in our study, it is also important for residents and police to discuss and confirm these findings via dialogue and deliberation. This is consistent with our *action research* approach to studying neighborhoods and for our primary audience, local law enforcement and community leaders.

See Table 1 below.

Table 1. Comparing Census Parameter to Sample Estimate for Neighborhood Demographics and Home Ownership

	N	*n*	*Census Parameter % White*	*Sample Estimate %White*	*Standard Error*	*95% Confidence Interval*
Eastside	2947	51	0.04	0.02	0.02	0 to .05
Hilltop	3468	41	0.17	0.24	0.07	.11 to .36
Little Italy	2121	44	0.60	0.62	0.07	.47 to .76
Forty Acres	1614	43	0.90	0.91	0.04	.82 to .99

	N	*n*	*Census Parameter % Black*	*Sample Estimate % Black*	*Standard Error*	*95% Confidence Interval*
Eastside	2947	51	0.90	0.96	0.03	.90 to 1.0
Hilltop	3468	41	0.49	0.62	0.07	.47 to .76
Little Italy	2121	44	0.32	0.26	0.07	.13 to .39
Forty Acres	1614	43	0.07	0.07	0.04	0 to .14

	N	*n*	*Census Parameter % Hispanic*	*Sample Estimate % Hispanic*	*Standard Error*	*95% Confidence Interval*
Eastside	2947	51	0.05	0.04	0.03	0 to .09
Hilltop	3468	41	0.45	0.36	0.07	.21 to .50

	N	n	Census Parameter % Own Home	Sample Estimate % Own Home	Standard Error	95% Confidence Interval
Little Italy	2121	44	0.10	0.09	0.04	.01 to .17
Forty Acres	1614	43	0.02	0	0	0
Eastside	2947	51	0.19	0.43	0.07	**.29 to .56**
Hilltop	3468	41	0.47	0.49	0.08	.33 to .64
Little Italy	2121	44	0.51	0.66	0.07	**.52 to .79**
Forty Acres	1614	43	0.61	0.71	0.07	.57 to .84

Note: Due to rounding, confidence intervals may be slightly larger or smaller than 1.96 times the standard error.

Officer Component: In the Officer component of the Situational Policing Officer and Neighborhood Survey, the researchers will work at the District Commander level to distribute surveys to all officers who work in the district/precinct. They will ask the division commanders to have the survey distributed to officers throughout the districts in which the target neighborhoods are located. Therefore, the universe of respondents in the officer component of this study is total district officers (The unit of analysis is "officer.") Based on our pilot study in Wilmington Delaware of the Officer component of this study, we expect a response rate of 85 to 90 percent.

B2. Procedures for the Collection of Information

Neighborhood Component: The researchers will work with undergraduate and graduate students at West Virginia University and Duquesne University to administer the neighborhood component of the Situational Policing Officer and Neighborhood Survey. Students will be paired with professors or experienced researchers and asked to go door to door in selected blocks. Each team will have a script to read and will offer the resident one of two choices for completing the survey: 1) Questions read and survey completed by the researchers, 2) Questions read and survey completed by respondent while researchers wait. The researchers will be given guidance on reviewing the responses for errors. For safety reasons, we will negotiate with division commanders to have police officers onsite with the researchers, but out of sight of the respondents so as not to influence the survey results.

Officer Component: The officer component of the survey will be distributed through the organizational chain of command in the police district where the neighborhoods are located. The survey component asks questions about the officer and about his or her perceptions of the target neighborhoods. A postage paid return envelope will be attached to each survey instrument.

B3. Methods to Maximize Response Rates and Deal with Issues of Non-Response

Neighborhood Component: In order to maximize response rate due to the residents not being at home during the daytime hours, the researchers will be on sight in the neighborhoods on weekdays and weekends. For example, researchers will plan to spend a Friday, Saturday, Sunday, and Monday in each neighborhood. They will work only daytime hours, but hope to catch residents at home on either weekends or weekdays

Officer Component: The researchers will work with division commanders to strongly encourage participation. During the month-long data collection period, the researchers will administer several written reminders about participation.

B4. Tests of procedures or methods to be undertaken

To date, the researchers have conducted two pre tests of the Situational Policing Officer and Neighborhood Survey prior to their contractual arrangement with the Federal government. The neighborhood component was initially pre tested in four neighborhoods in North Central West Virginia. Based on responses and the analysis of findings, improvements were made to the instrument. In August 2007, the researchers worked with police in Wilmington, Delaware to test both components of the instrument. Based on the results of the Wilmington study, more improvements were made to the instrument and the data collection methods.

B5. Individuals consulted on statistical aspects of the design and organization/persons collecting and analyzing the data.

James J. Nolan, Ph.D.
Associate Professor
Division of Sociology and Anthropology
West Virginia University
(304)293-5801 ext. 3210

Ronald Althouse, Ph.D.
Associate Professor
Division of Sociology and Anthropology
West Virginia University
(304) 293-5801 ext. 3203

Matthew C. Scheider, Ph.D.
Assistant Director
U.S. Department of Justice
Office of Community Oriented Policing Services
(202) 514-8289