

ABSTRACT

Miller, James Kirk. *Race, Place, Cops and Stops: Local Context, Racial Profiling, and Social Control in North Carolina*. (Under the direction of Matthew T. Zingraff.)

The importance of race in explaining criminal justice processes and outcomes has been a research focus of sociologists interested in social control. In spite of conventional wisdom to the contrary, the expected negative effects of racial minority status on social control outcomes have been somewhat elusive in empirical tests. The practice of racial profiling, defined as the use of race by police in decision-making and especially traffic stops, is at the forefront of contemporary public concern about policing, racial discrimination, and public safety.

The dissertation begins to address the open questions about racial profiling by developing and testing a multilevel conceptual model of police traffic stops. The conceptual model focuses on four distinct sources of police decision-making and behavior: suspect or driver characteristics, legal or driving behaviors, organizational characteristics of the police, and community contextual characteristics.

The research incorporates survey data collected in 200 and 2001 on 1445 licensed Black and 1475 licensed white drivers in North Carolina with 1990 and 2000 census data and criminal justice data spanning the 1997-2000 time period. The survey data contain measures of driver characteristics and driving practices along with geographic markers which allow the individual level data to be linked with community data sources.

Hierarchical linear modeling (HLM) techniques are used to separately model driver reported traffic stops by local police agencies and by the North Carolina State Highway patrol (NCSHP).

Key aspects of the conceptual models are confirmed by HLM models of local police stops which suggest that driver characteristics which compose social threat are important to increases in the risk of experiencing a traffic stop. Driver race, gender, and age are important predictors of increases in traffic stop risk, while many driving factors do not appear to be related to the risk of a traffic encounter with local police. In contrast, models of NCSHP stops suggest that stop risk is increased for those who self-report higher level of illegal driving behaviors. Driver race and gender are not related to stop risk by the NCSHP. Evidence for contextual effects is mixed. Implications for current and future police research are discussed.

RACE, PLACE, COPS AND STOPS: LOCAL CONTEXT, RACIAL PROFILING AND SOCIAL CONTROL IN NORTH CAROLINA

By

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APPROVED BY:

Chair of Advisory Committee

DEDICATION

To my family: Kristen, Samantha, and Isabel. Thank goodness it is finally finished!

And to the memory of Gary Hill, a wonderful person and a continuing intellectual inspiration.

BIOGRAPHY

I was born an only child in Charlottesville, VA, in 1971 to James Earl Miller and Sandra Goodman Miller. My parents divorced when I was still a small child, though I was fortunate to be able to spend lots of time with my father while I lived with my mother in Charlottesville. My father committed suicide the summer before my senior year in high school. I graduated from Virginia Tech in Blacksburg in 1993 with Bachelor's degrees in Sociology and Communications.

The next stage of my life began in Raleigh, NC, in 1993 when I pursued graduate study in Sociology at North Carolina State University. At NCSU, I met many people who continue to be very important in my life. I completed my Master's degree under the direction of Gary D. Hill in the spring of 1996. That spring was truly bitter sweet. Gary Hill prematurely died from a brain aneurism a few weeks after my thesis defense.

In May of 1996 I married Kristen Myers, a fellow graduate student in Sociology at NCSU. She defended her dissertation later that summer and then moved to DeKalb, IL, to become an assistant professor of sociology at Northern Illinois University (NIU). I stayed in Raleigh that year ostensibly to complete my doctoral preliminary exams. After the first year of our marriage living apart, flying frequently, and accumulating debt, I moved to Illinois to be with Kristen.

Initially, I worked at NIU in the Provost's Office as an assistant to the Multicultural Curriculum Transformation Task Force and as a part-time research assistant in the Center for Governmental Studies. I stayed in these positions for less than one year and soon accepted a Research Associate position as a study director at the NIU Public Opinion Laboratory (POL), a survey research center. I worked in this position for four years, occasionally teaching in the Department of Sociology at NIU. It was at the POL that I was able to become involved in the survey data collection project for the North Carolina Highway Safety Study (Smith et al 2002) which was instrumental in the dissertation research.

In August of 1998 our first daughter, Samantha Barrie, was born in DeKalb. Less than a year later, Kristen and I bought our first home there. In January of 2002, our second daughter, Isabel Blythe, was born.

In the fall of 2002, I began a new position as an assistant professor of Sociology at Northern Illinois University.

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I would like to thank a number of people who have been helpful to me during the long and winding pathway to this milestone. I do not stop often enough to consider how fortunate I have been to be surrounded by smart and caring people who have provided me with intellectual, technical, and emotional resources which have fueled my dissertation research and my graduate career in general. I have incredibly supportive and understanding family, friends, and colleagues. Besides these sources of support, my committee members, who also happen to fall into the friends and family categories, have provided timely motivation, intellectual insights, and constructive criticism that have made my dissertation research possible.

The most important people are the people I see every day and who have had little choice but to experience the brunt of both good and bad that the dissertation has held for me. My family has been incredibly patient and understanding. My wife and partner Kristen has shown a level of tolerance for my unusual research and writing habits during the dissertation process that can not be understated. While I tended to draw away into the work only to pop out from time-to-time, she continued to be supportive and helped keep my desire and head up when the project felt like more than I could stand. She never gave up on me, although it must occasionally have been tempting to do so. Kristen has often been a primary parent for our girls while I worked on the dissertation. Our parenting partnership has often been less than she bargained for. She has filled the large amount of time and catalogued the memories I have missed away from our girls, Samantha and Isabel, over the past few years. I am forever in her debt. Samantha, Isabel and I are so lucky. Of course, Samantha and Isabel have been incredibly joyous distractions from the dissertation, and have changed my life in ways more profound than I could have ever imagined.

Both my mother, Sandy Miller, and father, Jim Miller, are responsible for structuring my childhood in a way that emphasized the importance of educational pursuits as well as liberal value orientations that stressed fairness and social justice. In hindsight their influences were central to my path towards sociology. My mom has also been patient in her expectations, and has been a support by understanding that patience does eventually pay off. My grandma Mary has also been influential by creating a family environment that values knowledge. Besides my family, I have also been fortunate to become part of Kristen's family, and her parents, Doug and Linda Worsham and Rich and Candi Myers, are nothing but understanding and supportive.

Of course my committee has played a prominent role in getting to this point, as faculty in my graduate program, as dissertation advisors, and as friends. Patty McCall has been a fantastic advisor and confidant at different times throughout graduate school and the dissertation process. Patty has been supportive, complimentary and willing to assist whenever possible. Don Tomaskovic-Devey has been the biggest believer in the usefulness of survey methods for studying police bias, and thus has been a strong source of intellectual support for my dissertation. Don has taught me a lot about sociology and

research method throughout my graduate career. He makes it seem so effortless and that is an inspiration. Bill Smith has served as my analytical compass. His expertise in multilevel modeling, analytical insights, and his high expectations for quality research have only improved my dissertation. My chair, Matt Zingraff has been on the phone and at the computer to discuss where my head is, ask about the progress of drafts, and help refocus my energies from the beginning. The unique data collection experiences I have gained and the subsequent access I have enjoyed are largely an outcome of his faith in my ability.

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CHAPTER I

THE RESEARCH PROBLEM

Despite the fact that African Americans have experienced increased economic and political success in the years since the modern civil rights movement, the issue of racial discrimination in the United States has continued to receive a great deal of popular and scholarly attention (see Wilson 1978; Feagin 1991; and Massey and Denton 1993). Few issues have crystalized contemporary American race relations more than the phenomenon known as “Driving While Black”, or racial profiling. Racial profiling, following Langan et al. (2001) is defined as the use of race by police in deciding to make and decide the outcome of a traffic stop. Racial profiling is an example of racial discrimination, differential treatment based upon race resulting in outcome disparities, by police officers and departments. Racial profiling has received a great deal of attention in the national news media (Kocieniewski and Haley 2000), was a topic of debate in the 2000 presidential election (Bond and Henderson 2000), and is seen as widespread by a majority of both whites and African Americans according to a national 1999 Gallup poll (Newport 1999).¹

Media accounts, anecdotal evidence, and public opinion all suggest that racial profiling is a real problem. However, whether race-based stopping practices by police

¹Public opinion about profiling activities has shifted in the wake of the coordinated suicide assaults on the World Trade Center buildings and Pentagon in September, 2001. The public discourse on profiling has changed with the default subject of law enforcement profiles now focused on Middle Easterners and Muslims in the new “War on Terrorism” rather than African Americans or Latinos, perhaps the primary targets of the

are a systematic characteristic of state and local police departments and their officers remains unclear. Until recently, few states or localities required officers to record driver demographic characteristics when issuing citations, let alone when giving written or verbal warnings. Without reliable information about the numbers of drivers being stopped by race, no definitive conclusion about the existence and extent of racial profiling can be reached. In addition, data gathered from police sources in order to investigate race bias among police agencies and their officers are subject to criticisms that official data possess biases that favor the police. Such critiques of the validity of official police data result from the apparent conflict of interest police face in providing data to researchers and the public at large when the purpose of data collection is to assess whether the police have acted unfairly when making traffic stops.

This dissertation examines reported police stopping practices and seeks to determine the extent to which legal factors, extra-legal factors, and community characteristics impact the likelihood of being stopped by police while driving. This broad research question will be examined using self-report data collected with a telephone survey of 1445 licensed African American and 1475 licensed white drivers (n=2920) in North Carolina conducted from June 2000 to March 2001 (Zingraff 1999). The original goal of the survey was to measure the prevalence of vehicular stops by police along with aspects of driving practices among North Carolina residents in order to determine whether racial profiling is occurring. These survey data are supplemented with county level census and criminal justice data to perform multi-level analyses that

“War on Drugs”.

focus on the contextual character of police bias in automobile stopping practices. This dissertation bridges an important knowledge gap by investigating whether and how important contextual aspects of communities, especially racial composition and inequality, moderate the importance of legal and individual factors in police decision making.

The survey data were collected as one part of a larger triangulated research design that was focused on the stop practices of the North Carolina State Highway Patrol (Zingraff 1999). The larger project included extensive analysis of official stop data collected by the North Carolina State Highway Patrol (NCSHP) in 2000 and 2001, observation and radar surveys of randomly selected road segments across the state, focus groups with NCSHP personnel, and white and Black drivers across the state, in addition to the statewide telephone survey of drivers. A number of the project's data collection strategies were designed to gather information to estimate a valid baseline with which to compare race-specific stop data. In doing so the study goes far beyond the scope of most police stop studies conducted in states and cities across the U.S.

In contrast, most police stop studies are forced to rely upon population data for estimates of the distribution of race specific drivers in a given jurisdiction. Such population data baselines fail to account for race differences in driving habits, such as the amount of driving, the types of roads, and the different types of typical driving behaviors associated with drivers. Smith and colleagues (2002) measure the proportion of race-specific drivers who are driving on the roads of North Carolina and who actually violate the law. This baseline goal provides a much better basis for determining whether the race distribution of stops and stop outcomes by any police agency reflect fair law

enforcement, racial bias, or some combination.

THEORETICAL BACKGROUND

Sociologists interested in questions of race and social control have used the basic logic of the conflict perspective to explain the racial distribution of social control in contemporary society (Hawkins 1987; Jackson 1989; Liska 1992; Bridges and Myers 1993). First articulated and applied systematically to questions of formal social control by the Frankfurt School social theorists Rusche and Kirchheimer (1939/1968), the conflict perspective assumes that social control efforts are an expression of dominant group interests in a particular historical and spatial setting. More contemporary theory has focused on conceptualizing dimensions of dominant group status and the processes that produce social control of groups that represent threats to the interests of the powerful and social order in general (Quinney 1971; Chambliss and Siedman 1980).

In the American experience, theory and research in the conflict perspective have frequently focused on race as well as social class in examining questions of the criminal justice system and other forms of social control. For example, criminologists interested in criminal justice outcomes or the rate of social control have examined individual level attributes, such as offender race as well as the rate or proportion of race-specific population in an area to account for fluctuations in threats to dominant group status. A contemporary example of this legacy of the conflict perspective is Blalock's (1967) theory of minority group threat. Minority threat is typically measured as the proportion of African American population in a given area.

In an effort to link fluctuations in race status at the individual and/or community level with social control outcomes, a variety of outcomes have been examined. Formal social control is measured with various dimensions of the criminal justice system, including a number of policing practices and outcomes (Walker et al. 2000), which are especially relevant to studies on race bias among police. Research investigating the impact of race on policing has examined police department expenditures (Jackson and Carroll 1981), hiring of racial minority personnel (Turner 1998), patrol activity focused on neighborhoods with high concentrations of minority residents (Klinger 1997), response time differences for calls from white versus African American victims as well as propensity to perform field searches of suspects and suspect property (Bachman 1996; Stenross 1984), likelihood to arrest based on the race of suspect (Cureton 2000; Lundman 1996; Worden 1989), and use of excessive and deadly force by police (Fyfe 1982).

In contrast to criminal activities, driving practices that constitute traffic violations, and especially speeding, are normative on many roads in many communities regardless of driver or community characteristics. Such norms suggest that all who are stopped by police are likely to have broken the law (as have many who are not stopped). Why are certain drivers stopped by police while others drive without intrusion? Are there certain thresholds of violating behavior that trigger police stops? For example, is speeding tolerated up to a certain level, after which it attracts the attention of police who respond by stopping motorists? If a driver violates such a threshold and police respond to the threshold violation, then in practice, legal factors are still operating in the decision process by police. Police discretion to exercise authority in these examples is an

important and relevant consideration in questions of race discrimination in policing practices and outcomes.

Aside from legal factors, discretionary decisions by police officers are affected by departmental considerations and orientation (Walker 1993; Kelling and Moore 1988), situational, environmental, and contextual elements associated with the surrounding community (Black 1980), and extra-legal factors associated with the parties involved in a police decision. It is important to consider departmental factors that contribute to decisions to invoke police authority, including agency policies, directives, and training as well as supervisor and peer expectations for behavior because they form behavioral resources and constraints for officers in the field (Mastrofski et al. 1994). The importance of situational factors in police discretion, especially suspect demeanor, is a point of intense empirical debate (Klinger 1996b; Lundman 1996; Worden 1989). Demeanor is important because of its potential impact on police decisions after the stop has occurred, for example when deciding to issue a ticket or a warning, or in initiating a decision to make searches of suspects and suspect property, such as a vehicle.

Environmental or contextual factors provide a sense of the local climate in which policing occurs. Contextual factors may vary by community, so that the same behavior (such as driving 8 to 12 miles per hour over the posted speed limit) may trigger a police decision to stop a vehicle in one community but not in another. Applied to racial profiling, the same driving behavior, such as speeding 5 miles above the limit, by a Black motorist may trigger a stop in an all white community and no stop in a community with a sizable African American population. Contextual factors are experienced by different

motorists in terms of the *intensity* of policing. Finally, extralegal factors such as citizen race, social class, gender and age may influence police decision making. Black's (1980) sociology of the law predicts that police use status inequalities between themselves and the persons they encounter as cues to activate their legal authority. For example, Black argues that police (who tend to be white, male and working of lower middle class than the American population as a whole) are likely to defer to white motorists and apply their discretion to invoke the law among non-white motorists. In light of so many non-legal factors, some have characterized police work in general as extra-legal because informal factors tend to govern most of what police do in any given circumstance (Reiss 1971).

This dissertation research seeks to answer two primary research questions about police bias in traffic stops:

- To what extent do extra-legal factors, net of legal factors, explain race disparity in stop likelihood?
- To the extent that race disparity is present in stop patterns, how do these patterns vary by the racial and economic characteristics of local community context?

DATA, METHODS, AND ANALYSIS

Data from three sources will be used to examine the research questions. The main source of data on stops by police comes from self-report data collected in 2000 and 2001 through a telephone survey of African American and white licensed drivers in the state of North Carolina. A summary of the survey questions and response categories can be found in Appendix A. Contextual data at the county level is derived from Census Bureau publications on racial composition, and racial economic inequality. Also, county level information regarding the context of the local criminal justice system will be used,

including estimates of the local crime rate and the number of public police and sheriff personnel per capita. These data capture variation in 1) the demand for police services measured with data on arrest rates constructed from 1998 Uniform Crime Reports at the county level (U.S. Department of Justice, Federal Bureau of Investigation 2001), and 2) the extent of local law enforcement resources, primarily in the spatial distribution of law enforcement personnel. Both of these community measures are designed to account for the community's capacity to police drivers. These county level and survey data will be integrated to perform multi-level analyses.

Individual Level Sample Data

Media accounts (Bond and Henderson 2000) and public opinion (Newport 1999) suggest that racial profiling is an event experienced by many in minority communities. These sources however, fail to yield the kind of systematic information necessary to assess whether race based policing is happening or whether a relatively few newsworthy traffic stops serve to galvanize public opinion that Blacks continue to be unfairly antagonized by police. Indeed, until recently few states or localities required officers to record driver demographics when conducting traffic stops (Ramirez et al. 2000; Strom and Durose 2000). In spite of the recent implementation of traffic stop data collection systems by police agencies, alternative sources of data about traffic stops, such as surveys, are likely to be useful in examining racial profiling. This is true in part due to the assumed conflicts of interest among police agencies collecting their own traffic stop data; driver surveys may serve as an audit of official data collection programs instituted by local and state police forces. Motivated by these concerns, a survey of North Carolina

licensed drivers was undertaken to gather information about police stops from a source besides police: motorists.²

These survey data describe a sample drawn from official North Carolina state driving records obtained through cooperation with the state Department of Motor Vehicles (NCDMV). Information about adult licensed drivers drawn from NCDMV records included driver race, sex, birth and a count of lifetime convictions for driving violations. Data were obtained from a random sample of drivers who have renewed their licenses in the past 12 months with an intentional over-sample of African American drivers. Unfortunately, state driving records do not require licensees to report telephone numbers. Therefore, a phone matching process, called a “telematch” was performed based on driver identification information that yielded a subset of drivers to be surveyed by telephone.

The telematch only returns matches on listed phone numbers, meaning that unlisted numbers are excluded from the data. Samples that rely only on listed telephones have been criticized for not being generalizable due to the selection bias that results from systematically excluding those with unlisted telephones, although recent research suggests that the population differences between listed and unlisted households is quite small (Brick, Waksberg, Kulp, and Starer 1995). Such criticisms tend to be focused on sampling frames that have little or no additional information about the elements of the frame, or the population to which one seeks to generalize. Therefore, one is left to

2 Surveys continue to be much less used than techniques that rely on official police data on traffic stops and outcomes in examinations of police bias, or racial profiling. Approaches relying on official data are further supported by the idea that official data, despite its problems, continues to be the most logical and useful source of wide-scale police traffic stop information.

speculate how the listed and unlisted are similar and different from one another.

Ultimately, this sort of selection bias would be most problematic if the criteria for selection are correlated with the measures contained in the survey analysis. A major advantage of NCDMV records is that driver race, age, and gender data in the records can be employed to perform a bias analysis for the sample data to determine whether the sample data are reflective of the sample frame as well as the population of North Carolina licensed drivers. Analysis presented below shows that selection bias is not a significant problem in these survey data.

The racially stratified sample design ultimately yielded 2920 completed surveys, 1445 from African American and 1475 from white respondents. A total of 626 respondents (21.4%) admitted to being stopped by the police at least one time in the last 12 months. Asking people about police stops is a potentially sensitive topic and is subject to social desirability effects, which may yield bias in the reporting of police stops by respondents. There are reasons to suspect that reporting bias may cause an over-estimate of the prevalence of stops for some respondents while alternative theories of reporting error suggest drivers may under-report their stop encounters with police. For example, because being stopped by the police is a memorable event for most motorists, who generally attempt not to be stopped, respondents may be likely to recall stops from the distant past, say more than a year ago, as occurring more recently than they actually did. This effect, known as “telescoping” (see Gaskell, Wright, and O’Muircheartaigh 2000 for a discussion of sources of telescoping and their consequences on behavioral estimates), tends to inflate estimates of the prevalence of police stops in some bounded

period of recall time. For certain respondents, especially Black drivers, the potential for telescoping may be increased due to the political salience that police relations represent for citizens of color in the United States today.

In contrast to the factors that promote over-estimates of the prevalence of police stops, it is also reasonable to expect some amount of under-reporting of police stops due to social desirability factors. Under-reporting of stops may be an outcome of more than one process. For example, failure to report a police stop when one has occurred may be an interactional strategy for some respondents for concealing the stigma associated with admitting a police stop to an interviewer. Others may under-report as a strategy to limit the burden of a longer interview. Another plausible process that may lead to under-estimates of police stops is the limited recall of respondents; drivers may simply forget a police stop in the context of the interview contact, or incorrectly remember the stop as occurring beyond the constraints of a given time period, referred to as reverse telescoping.

For these reasons, a second smaller survey was conducted of persons known to have been ticketed for speeding in North Carolina in the last 12 months. This survey procedure, known as a reverse record check, is designed to measure the extent of reporting bias associated with sensitive or otherwise embarrassing questionnaire item responses. Analysis by Wright and Tomaskovic-Devey (2000) shows that under-reporting is something to be concerned about and that there are racial patterns in under-reporting -- African Americans who have been stopped are less likely to report a stop than whites. The reverse record check demonstrates that self report approaches may

contain errors that impact analytical outcomes. Further, self report approaches hold the capability of overcoming these errors through new survey designs and data weighting schemes. Ultimately, the analyses presented here employ un-weighted survey data, the results of which are grounded in what we know about the nature of self report data.

The survey data provide information about stops by race as well as information about driving behavior or "exposure to stop risk," such as miles driven annually, frequency of interstate driving, aggressive driving (such as likelihood to pass), and speeding levels for different speed zones. One component of the survey data is whether the police officer conducting the stop was a North Carolina State Highway Patrol (NCHSP) officer or a representative of another local department. On balance the survey data allow for an opportunity to examine a range of characteristics (of both the driver and driving behavior) that may predict a traffic stop outcome.

Group Level Sample Data

The smallest patrol unit maintained by the NCSHP is known as the troop district. The NCSHP has divided the state into 53 such troop districts, whose boundaries are cleanly defined by the state's 100 county boundaries. Hierarchical Linear Modeling (HLM) procedures assume implicit sampling at both the individual and group level (Raudenbush and Bryk 2002). An optimal sample design for multilevel analysis is a cluster sample, which ensures that the group-level units are randomly sampled and therefore generalizable, and that the number of individuals within the group units is sufficiently large to produce robust and valid estimates. As such, the number of lower level observations per higher level unit is more or less equal across groups. The stratified

random sampling design employed for the licensed driver survey does not create roughly equal concentrations of individuals in a sample of group units. Instead, the group distribution of the individuals reflects the distribution of North Carolina's population of licensed drivers. This means that group units, i.e., counties or troop districts, with larger populations also have larger counts of individual observations. In that sense, the group distribution of individual observations is self-weighting. Some troop districts are so small in population, especially in the eastern swamp and western mountain areas that aggregation of contiguous troop districts is necessary in order to meet minimum individual level sample size specifications for multi-level statistical procedures.

Analysis

The first stage of analysis is a series of logistic regression models predicting various dimensions of being stopped by police using demographic characteristics of respondents, exposure to stops, risky driving, and speeding to control for differences in illegal driving behavior that may prompt police to stop drivers. Because the survey data contain multiple measures of stops by police, a series of separate models are modeled to explain being stopped or not and severity of the stop outcome (measured by formality of stop outcome: ticket or warning).

It is important to account for miles on the road, as opposed to racial population, as well as illegal driving behavior (risky driving, speeding) in order to disentangle racial differences in stop likelihood by police from racial disparity in stops by police. Zingraff et al. (2000) and Langan et al. (2001) both assert that racial differences in stops must be considered relative to race-specific differences in traffic violations before conclusions

about racial profiling can be drawn. Norris et al's (1992) field study of police stops of pedestrians serves as an example of one problem with trying to distinguish group differences from disparities and discrimination. They use population data as the source of information to estimate the expected distribution of stops by race. Yet by failing to adjust for race differences in the population of pedestrians, let alone pedestrian illegal behaviors, their results are only reflections of racial differences in police stops rather than discrimination. Police patrol the population of traffic rather than the residential population of an area, and behaviors police react to are not necessarily distributed equally in different segments of a population. One of the design strengths of the survey data is that they contain information to employ the appropriate population measures, race specific data on miles driven and frequency of driving as well as information about the extent of routine driving behaviors that constitute traffic violations, or otherwise risky driving practices, especially prone to elicit a stop by police.

If race differences in self-reported stops are observed in the survey data, it is quite plausible that those stop patterns are attributable to real differences in driving behavior averaged across race. However, if race (and other characteristics of individuals such as gender and age) continues to predict stops as legal variables are entered into the models, we can conclude that some racial disparity in police stop patterns exists in North Carolina. Such a finding can be further refined by enhancing the modeling process to account for stop discrepancies by different types of police, for example NCSHP stops vs. local police stops, which provides an opportunity to examine aspects of departmental factors in stop patterns. One might expect the actions of local police agencies and their

personnel to better reflect the political-economic realities of the communities within which they operate. One might also expect local police departments, particularly in smaller and rural localities, to have less training and other professional resources compared to larger, urban departments, or state police agencies such as the NCSHP (see for example Reaves and Goldberg 1997). Combined, these assumptions lead to the hypothesis that local police, on average, may be more likely to employ extra-legal factors in stop decisions.

Building from those assumptions and attempting to bring context into the models, multi-level models are tested that use census data and criminal justice data about police resources and demand for service aggregated to NCSHP troop districts. This portion of the analysis closely parallels the individual level models but ground the survey data in the political-economic and criminal justice context of the local region defined by troop districts. How does social control operate in different contexts? Does “Driving While Black” mean the same thing and operate in the same way in rural and urban districts? Does it mean the same thing in rural counties such as those in the northeastern part of the state with large proportions of African American residents compared to rural counties in the far western part of the state with virtually no African American residents? Does the importance of race as a factor in police decision-making vary according to the local supply of police resources and more or less demand for such resources as measured by the official crime rate?

These issues will be examined by use of multilevel modeling procedures, which allow for cross-level interaction terms. The statistical rationale for HLM is that it

accounts for the violations of assumptions associated with individual level inferential statistical procedures (Hox and Kreft 1994). For example, multiple regression assumes that observations are independent of one another, have independent error terms, equal variances of errors for all variances and a normal distribution of errors. In fact, hierarchical data are not independent but rather nested within distinct groups (in this case NCSHP troop districts). This means that within group observations tend to be more similar than they are to observations in other groups. As such, their errors are not independent, and their errors may have different variances (Hox and Kreft 1994). Because of the discrete nature of the outcome variables, 1) stopped by police or not and 2) ticketed or not, a separate model known as the multi-level Generalized Linear Model (GLZ), otherwise known as a hierarchical logistic model, is required to better handle the distributional properties of a categorical dependent variable (Hox and Kreft 1994), a model that is essentially equivalent to logistic regression with multilevel data.

LIMITATIONS OF THE RESEARCH

Despite concerns about bias in official sources of data on police traffic stops and outcomes, official data sources provide a valuable tool and represent the most prominent approach to the study of racial profiling by police. Smith et al. (2002) for example, employ a variety of research methods, including analysis of official traffic stop data collected by the North Carolina State Highway Patrol to examine the patterns of traffic stops and outcomes in that state. The empirical outcomes of the survey approach utilized in the Smith et al (2002) study are largely consistent with the official record analysis findings when it comes to analysis of the North Carolina State Highway Patrol,

suggesting that these approaches may be complimentary rather than competing. Smith et al (2002) find that in general no evidence exists for widespread racial profiling among the NCSHP, and that where disparity in stops is evident a number of alternative explanations may account for such disparity. Such alternative explanations, for example patrol patterns related to density or traffic accidents, fail to reflect intentional bias by NCSHP troops or individual officers, but may indeed have moderately disparate consequences in terms of traffic stops.

Data about local police stops were unavailable to Smith et al (2002) except by self reports, and thus there is no way to compare the official data to survey results on local police. Nevertheless, the survey approach, with its reliance upon self reports is prone to a wide variety of errors associated with both sampling and measurement. In many ways, Smith et al's (2002) use of survey methods, along with the Bureau of Justice Statistics 1996 and 1999 Police Public Survey, which is an addendum to the National Crime Victimization Survey program, is among the first steps in applying survey designs to research questions concerned with police bias in traffic stops.

SIGNIFICANCE OF THE RESEARCH PROBLEM

The dissertation research will contribute to policy and practice in crime and justice by providing information to help identify the types of community contexts where police departments and their officers may be more prone to race bias in traffic stops. It also will contribute to our understanding of how survey methodology is useful for studying racial discrimination by police. Understanding how race, the local political economy, and policing activity are related will provide a solid basis for addressing race-

based policing practices. Identifying contexts in which race-based policing occurs provides opportunities for local and state police professionals to target areas for training programs to increase racial sensitivity among police personnel. One by-product of training is that police personnel may be better able to provide service to members of minority and other disadvantaged communities. Another outcome of directed training may be the enhancement of both real and perceived levels of social and criminal justice among citizens.

This research will also contribute to a small and growing empirical collection of data describing dimensions of public/police interactions, especially traffic stops. While not an explicit part of this research, part of the contribution is to begin to build knowledge about alternative methodological approaches for studying racial discrimination by police departments, especially racial profiling. Survey methods may be more attractive than official records analysis, particularly for local communities. Sampling makes survey methods efficient in administration time and cost. Surveys provide an opportunity for citizens and police to become a part of the research process thereby providing opportunities to develop positive police-citizen relationships.

Sociologically, the dissertation contributes to theory and research in the area of social control. Criminological research has recently begun to make substantial use of advances in multi-level modeling procedures to test increasingly sophisticated theories of offending likelihood (see for example, Simcha-Fagan and Schwartz 1986; Sampson and Groves 1989; Gottfredson, McNeil and Gottfredson 1991; Horney, Osgood, and Marshall 1995; Sampson, Morenoff and Raudenbush 2001) and victimization or fear of

victimization (Rountree, Land and Meithe 1994; Rountree and Land 1996a, 1996b). Still, social scientists interested in criminological questions and using multi-level modeling applications have focused almost exclusively on questions of crime causation, via either offenders or victims. This dissertation research therefore is quite unique in that it expands the criminological application of contextual analysis to questions of formal social control. In doing so, it provides the opportunity to disentangle the varied and complex sources, both individual and contextual, that contribute to the likelihood of discriminatory policing in North Carolina.

CHAPTER II

SOCIOLOGY OF RACIAL INEQUALITY: STRUCTURE AND INTERACTION

In light of the large body of research on race in America, it's somewhat surprising that among the most contentious empirical disputes among sociologists focuses on the impact that race has on the life chances and quality of life of individuals in the U.S. Contemporary discourse and research is analytically framed by Wilson's (1978) nuanced historical examination of American race relations and his conclusion that race has declined in significance as a factor in determining individual life chances. Wilson has been criticized by scholars who suggest that race continues to be germane to life chances (Thomas, Herring and Horton 1994) and that Wilson's analytic lens fails to capture the cost of being minority in the everyday practices and interactions of social life (Feagin 1991.)

Generally, research has tended to privilege either structural or interactional approaches to empirical investigation of racial stratification in the US. This reflects epistemological and methodological differences in the discipline. Racial profiling research can benefit from both structural and interactional data sources as well as a theoretical integration that incorporates elements from both theoretical approaches. The contextual approach of this dissertation research, incorporating individual and interactional data with structural data, is intended to bridge this theoretical gap. In doing so, the research has the potential to make a contribution to scholarship in both domains.

Two very distinct lines of theory and research are prevalent in the sociology of

race and inequality. These two dimensions of race research can be distinguished based upon their analytical focus. Structural research tends to focus on aspects of the economic standing of Blacks and other racial minority groups. Approaches range from human capital and status attainment research to labor market competition, while others have synthesized aspects of both approaches. Regardless, the structural approach essentially regresses to the mean the economic standing of African Americans in the United States. For this research approach, racial discrimination is evident when meritocratic differences fail to explain differences in economic and other outcomes, such as housing.

Interactional approaches to the study of race and inequality focus on the lived experiences of racial minorities and the small but concrete consequences of both formal and informal discrimination. Approaches range from in-depth interviews and participant observation to survey research. Much of the research is concerned with documenting how racial prejudice is experienced by persons who are the subject of such prejudice. This research is also concerned with the impact such practices may have on the attitudes and cultural understandings of society that racial minorities possess. Both structural and interactional approaches are important and useful to developing research expectations for policing and race. What follows is a brief review of both structural and interactional research on race and inequality.

RACE AND STRUCTURAL INEQUALITY

Several theoretical frameworks have sought to explain racial inequality. Power threat theory, split labor market theory and explanations that highlight the spatial dynamics of racial residential segregation all provide cogent explanations of past and

enduring race-based inequalities in the United States.

Power Threat

The underlying theoretical frame for this project is research examining the dynamics and impact of racial competition on economic and political outcomes.

Scholarship about racial competition focuses on three distinct interest groups: white workers, racial minority groups (primarily African American workers,) and elites (primarily whites.)

The lineage of contemporary statements of competition can be traced to Blalock (1967) who argues that economic, political and status threats may be posed by racial minority groups to the power and itinerant privileges afforded racial majority groups. He argues that economic, political and other social status threats are contingent upon the relative size of a minority population. As the size of a minority population increases, the competition for scarce resources increases, and the level of social threat posed by a minority group intensifies. Blalock formulates two distinct but related arguments about the dynamics of minority population size and economic and political outcomes. First, Blalock suggests that as political threat increases, the intensity of discriminatory practices should increase in turn; specifically, as the size of a minority population increases, discrimination against that group should intensify. Blalock terms this hypothesis "power threat." Second, Blalock asserts that as the economic threat in terms of the market competition of minority populations increases, the increase in discriminatory practices will increase at a less intense pace. This hypothesis is termed "economic competition." Both hypotheses suggest that racial minorities experience

discrimination and social control as a result of increased population size. However, somewhat contradictory social control outcomes are expected depending upon the type of threat posed, that is, whether the threat is political or economic.

Split Labor Market Theory

Blalock's hypotheses are only one way to conceptualize racial threat. Split labor market theorists further refine and extend Blalock's threat hypothesis by arguing that race and class must be considered in theoretical concert in order to understand racial inequality. Bonacich (1972) for example, argues that society may be seen as divided among three rival groups along race and class lines. White elites have an interest in maintaining a constant supply of inexpensive labor. Such elites have little reason to constrain African Americans, assuming that the labor supply is constant. White workers are interested in maintaining control over labor opportunities that are offered by the white elite. African American labor represents a direct threat to those opportunities, while putting downward pressure on wages. Split labor market theory holds that African American labor threatens white working class interests. According to this perspective, social control efforts directed at African Americans are a result of threat to white racial hegemony.

Racial competition perspectives (Bonacich, 1972; Szymanski 1976) suggest that racial threat explanations are over-simplified accounts of economic and political competition dynamics. Racial competition theories pay closer attention to the class interests of race specific actors in formulating predictions about economic outcomes. Racial competition theorists recognize that race interests may occasionally be trumped by

class interests, particularly for white elites in the owner class. The capitalist economic system of production in provides owners with the power of choice in hiring decisions. The logic of capitalism also creates a need to minimize production costs. Labor is a chief production cost. Racial competition theorists show that race is employed by owners to create downward pressure on wages, thus lowering production costs and increasing surplus value. This is possible because the cost of labor is in part determined by the race of the laborer in question. The legacy of slavery, racism and discrimination provides a context in which minority labor is forced to work for a lower wage; in short, minority laborers are hungrier for work, and a wage that represents a loss to whites is likely to represent an increase for minority laborers.

In response to the economic threat of a cheaper labor supply of minorities, white labor's relative power in the economic process is diminished while white elites gain. White workers need not necessarily be displaced as long as the threat of displacement is guaranteed by a sufficient supply of minority labor. While white labor appears to lose economically, it still possesses race-based advantages in other spheres of society, historically employing a number of strategies to maintain and reproduce its advantage. Perhaps the most (in)famous and effective strategies employed by whites were the Black Codes and Jim Crow in the South. Jim Crow ensured that through a system of social and spatial separation, white advantage would be preserved. Even after Jim Crow policies were outlawed, housing segregation (Massey and Denton, 1993) and educational segregation (Roscigno 1998) that result in inequitable life chances for minority group members have flourished and continue to be an integral part of the contemporary U.S.

Still more sophisticated work has refined the explanatory power of the racial competition perspective. Tomaskovic-Devey and Roscigno (1996), for example, take into account the local context of labor competition among Black and white workers as well as the homogeneity of the (white) local elite. The insight of this approach is that the local context of economic development and industry vis-à-vis elite interests is significant in explaining the logic of race-based competitive outcomes. In homogenous economic contexts, as in areas with less economic development, more traditional economic sectors - agriculture, natural resources, manufacturing, elites are able to foster an economic climate that disadvantages white and Black labor. Owners are able to depress white workers' wages and the quality of working conditions by using the threat of less expensive Black labor to demonstrate the possibilities of economic displacement. White labor is forced to accept lower wages or be displaced. The result is that elite interest is solidified while white workers wages decline and Black workers economic opportunities continued to be limited by white labor.

In economic contexts marked by heterogeneous development (for example, areas with "new economy" development - economic sectors such as public sector, retail, managerial) a concomitant lack of elite unity should preside. In such contexts, white workers may gain at the expense of Black labor. As elite interests become less uniform, elites are less able to successfully manipulate racial fears to their advantage in the labor market. In the absence of a uniform elite structure, white labor steps up to better its position relative to Black labor.

Research that uses a racial competition framework to examine social control has

tended to focus on the U.S. South where a repugnant history of racial inequality offers a rich sociological laboratory. This research tends to be focused on explaining historical trends in post-Bellum violence, especially lynchings (Myers 1990; Olzack 1990; Tolnay, Beck and Massey 1989) and to a lesser extent 20th century racial violence in the North and Midwest affected by inexpensive Black labor being pushed out of the South (Tolnay and Beck 1992) and pulled toward other regions in search of low-skill high wage employment. Because social control, as opposed to various forms of economic discrimination, is not the focus of this perspective, it is unclear exactly how race and class interest is translated into increased social control of African Americans. Myers' work (1990a, 1990b, 1993) along with that of Beck and Tolnay (1990) and Tolnay et al. (1989) suggests that extra-legal activity, especially lynching in the post-Bellum South, is one of the primary ways in which white labor was able to control the economic threat of the African American working class. Liska (1992) and others (Jackson 1989) have developed the competition or threat perspective in thinking about social control of African Americans and other minorities in the U.S.

Race and Spatial Mobility

One legacy of the Chicago School of Sociology and its focus on urban life is an analytical interest in spatial dynamics of communities and their interaction with social factors, such as race and socio-economic status. Focused on the spatial patterns of juvenile delinquency Shaw and McKay (1942), for example, equate social mobility with spatial mobility within the urban landscape. They suggest that as individuals become socially integrated, they develop greater stocks of social capital. Such capital

accumulation is translated into spatial mobility in the form of decisions about where to live within the city and its burgeoning suburbs and the ability to execute these decisions. Crime and other "malignant" properties of certain social areas within the city are a consequence of a number of factors associated with the process of integration endured by persons new to the city and neighborhood in question. These malignancies become relatively permanent qualities of these neighborhoods, regardless of the ethnic or racial identities of the residents inhabiting these areas. Shaw and McKay (1942) and more recently Wilson (1991) have suggested that malignant qualities become elements of an enduring cultural milieu within economically distressed neighborhoods.

This theoretical scenario provided a relatively tight explanation of urban dynamics and group mobility in the early part of this century with the large and constant influx of upwardly mobile immigrant groups in urban centers such as Chicago, New York and Boston. Since World War II, the character of ethnic immigration has changed (Wilson 1978). Newcomers to urban neighborhoods in the post-WW II era have been much more likely to remain in economically depressed neighborhoods. In other words, their ability to become fully integrated into the urban social/political/economic system has been limited. Such groups have been denied access to capital accumulation at much greater rates than pre-WW II immigrants. Without the necessary forms of capital, large portions of these groups have become stranded in spaces traditionally thought of as areas of residential transition.

Wilson (1978) provides us with an updated theory of urban social organization rooted in the same Chicago School tradition as Shaw and McKay's work. Following World War II and accelerating since then, the migration of blacks to urban areas has coincided with shifts in the industrial organization of cities. Low skill, high wage industry has left central cities for new suburban, regional and often international locations of production where labor supply is relatively large and wages are lower. In the mean time, the service industry has grown in central urban areas most spatially proximate to these new black pools of labor. Service industry jobs provide lower wages, fewer benefits and shorter job ladders. In short, they are economic turnstiles. What higher wage jobs exist in the burgeoning service sector require much greater human capital investment to secure. That is, credentialing is increasingly important in order to earn high wages. According to Wilson, shifts in the employment structure over the last half century have encouraged the creation of community contexts rife with despair. Such contexts breed high levels of out-of-wedlock births, illiteracy, welfare dependency, and crime.

The despair in these communities is exacerbated by the flight of middle-class blacks from inner-city neighborhoods. Due to socio-political developments, most notably Affirmative Action policies, some blacks have been able to take advantage of expanded human capital investment opportunities through increased access to educational credentialing. Because mobility opportunities have increased in Wilson's view, he argues that race is declining in significance in terms of its impact on the distribution of life chances in the economic market. Blacks left behind in the

concentrated poverty of ghetto communities have more in common in terms of life chances, from Wilson's view, with other economically disadvantaged persons (including working-class whites) than with middle class blacks. Status group characteristics have become less important in determining one's life chances.

Kasarda (1992), like Wilson, documents the "spatial mismatch" of persons residing in poverty and the location of jobs. In addition, he observes that the desirable jobs that are spatially available to ghetto residents tend to underscore the skills mismatch that many in poverty endure when they need work. Essentially, those jobs in inner-cities that pay high, or even living, wages are highly specialized, requiring college or other special training. Kasarda demonstrates that race differences in one's risk of being impoverished exist. However, skill requirements are incumbent in jobs, and while access to training may be racialized to some extent, social class is the predominant sorting mechanism in the credentialing process.

The spatial concentration of blacks is especially acute in contemporary urban areas. Residential segregation is experienced along class lines as suggested by Wilson's work (see also Jargowsky 1996), but racial residential segregation appears to be at least as powerful a phenomenon influencing the racial concentration of groups into neighborhoods within urban settings. Massey and Denton (1993) demonstrate that the spatial concentration and isolation of blacks in U.S. cities is a crucial element of any complete explanation of how life chances are shaped for blacks and whites. Like Shaw and McKay (1942) imply, Massey and Denton argue that spatial mobility has always been closely associated with social mobility in urban areas. There are several historical

examples of this point.³ According to Massey and Denton, aside from economic power, race has been used as criteria to deny blacks free access to the housing market. This has effectively undercut Blacks' attempts to experience social mobility - even for middle-class blacks who have experienced some limited sense of mobility. They suggest that residential segregation was set in place by the actions of white urban residents whose neighborhoods became increasingly threatened by black migratory-driven encroachment. In an effort to ensure racial exclusion, violence has been one resource used by white residents of neighborhoods that have experienced black and other minority encroachment (see for example, Heitgard and Bursik 1987). Making efforts to secure neighborhood racial homogeneity is an important element in the process of race-based social closure (Parkin 1979) that is manifest in the spatial organization of urban areas.⁴

Police departments can also be interpreted as a local community resource that can be called upon to support white group efforts to segregate and thereby preserve the local racial order. Police are able to enlist the moral authority of the law and the power of the state to produce and maintain race relations that isolate Black and other racial minority

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Historically, immigrant groups in the US settled in the least desirable neighborhoods of urban areas, in part because of the affordability of housing in these areas and because of the local stock of low skill jobs nearby. As new immigrant groups began to experience upward social mobility, most moved farther from the center city to more desirable and expensive housing in other neighborhoods.

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Racial segregation is just one example of the broader concept of social closure developed by Parkin (1979). Essentially, social closure is the practice of preserving advantage, and hence power, by limiting access to the supply of social resources. In the case of segregation, race is used as a primary cue in determining claim to housing resources.

communities.

Beyond local resources, the federal government has also contributed to the high levels of racial spatial closure in the urban U.S. by using race as a decision factor when granting guaranteed home loans, such as in the Veterans Administration (VA) and First Home-buyers Association (FHA) programs. These practices have made the discriminatory practices of real estate and insurance companies, such as redlining (Squires, Velez and Taueber 1991), less difficult. Realtors, for example, commonly steer customers to different properties based upon neighborhood racial composition. The cumulative result of these and other discriminatory housing practices have served to disproportionately deny African Americans the ability to own their own homes, perhaps the chief economic building block of middle class family status and the essence of the post-war American dream (Oliver and Shapiro 1995).

Theory and research in racial inequality highlights the power threat, split labor market/competition, and spatial mobility/residential segregation explanations of racial inequality. All provide important insights into the mechanisms of racial inequality and the constraint of achievement pathways and outcomes in contemporary American society. All three approaches share a common macro lens to questions of racial inequality. The macro approach is powerful in drawing conclusions generalizable to large parts of American society and for describing trends at the societal level. Each also contributes to our sociological understanding of the mechanisms and social processes that create and perpetuate racial inequalities. However, this focus fails to capture certain important features of racial inequality as it is experienced in interaction by members of all racial

groups. These everyday reminders of race are also important to consider, particularly when seeking to understand decision making that takes place in interactional encounters, such as the police officer's decision to make a stop or write a ticket.

EVERYDAY ACTS OF PROFILING: RACIAL INEQUALITY IN SOCIAL INTERACTION

Inequalities on a more personal level are also documented by the sociological literature. Feagin's (1991) work, in direct response to Wilson's (1978) thesis that race has declined in significance relative to social class in determining life chances shows that African Americans, even those who have experienced economic mobility into the middle class continue to be faced with everyday reminders of their racial subordination in the US. Feagin, for example, finds that Blacks are forced to endure a variety of disrespectful gestures, some unmistakably racial in nature, others cloaked in ambiguity in terms of the perpetrators motives. Most of these racialized encounters occur in public areas in which Blacks and whites come into contact, places like retail stores, schools, banks, doctor's offices, and public roads. Disrespectful gestures are perhaps expected, though insulting, for some portions of the Black population, but for the portion that have been able to transcend class lines and enjoy middle class status, such gestures of disrespect may be particularly difficult psychologically. Regardless of class position, it is clear from this type of research, replicated in a variety of settings over the past decade that Blacks are frequently reminded of their caste position in the American racial system. Such are powerful in both symbolism and consequences in terms of whites and other non-Blacks asserting their racial power, even in the face of other resources for interactional power

that may disadvantage the non-Black actors.

Feagin's (1991) work to document the interactional, everyday and ordinary nature of race-based discrimination in the United States documents the ways that race continues to be played out in interaction (Feagin and Sykes 1994; see also Myers and Williamson 2001). These studies show that race is something we negotiate each and every day. The "cost" of being Black in America is felt in terms of (dis)respect, psychological stress, and tactics that produce social distance between whites and non-whites. All of these costs are outcomes of structural factors that are supported by whites' attitudes about race and ethnicity. A variety of survey research studies have been conducted in attempts to gauge the state of racial attitudes in contemporary America. The empirical record of substantive findings is inconsistent. For example, much of this research actually fails to find racially prejudiced attitudes among whites instead arguing that prejudice is merely a specific manifestation of traditional American value orientations emphasizing individualism over group affiliation, of conservative political views, or authoritarian values, all of which may be related (Sears, Sidnius and Bobo 2000), while other studies find that whites continue to harbor relatively negative attitudes about racial minorities, especially Blacks. Bonilla-Silva and Forman (2000) argue that white Americans have become more sophisticated in their ability to communicate their feelings about race. For example, even whites who are openly against Affirmative Action programs frequently assert their racial progressiveness or deny that they are racist before they provide an explanation for their feelings about social policies designed to erode racial disadvantages. Perhaps one of the unintended consequences of cultural changes associated with political

correctness movements is that while some whites are likely to have become more accepting of cultural diversity, racial prejudice has remained or grown for others. At the same time, whites of all stripes have developed interactional strategies which results in public denials of their own racial prejudice, and the ability to criticize Affirmative Action programs and minorities in general by couching their opinions in other ways, such as talking about problems of the “inner city”.

The informal costs of being Black in America, documented by Feagin and his colleagues, and the controversy over survey research findings about race (Sears, Sidanius and Bobo 2000) provides an important dimension to explanations of racial inequality. It provides an interesting and useful addition to Blalock's (1967) power threat and Bonacich's (1972) competition theories of racial inequality, especially when considering the problem of explaining racial profiling. One of the problems with structural theories of racial inequality is that they assume rather than explain that power threat and racial competition translate into individual level attitudes that motivate whites to work to limit opportunities and outcomes for Blacks and other racial minority groups. Van Ausdale and Feagin (2001) and Bobo (1998, 2000) both help us by documenting that whites continue to hold prejudiced attitudes about Blacks, that these attitudes are learned, and lead us to conclude that whites are likely to act on these prejudices in making decisions about housing, education, hiring, promoting, and firing.

Implicit in the empirical record on racial inequality and the theoretical arguments that emerge is that police officers, and particularly white officers, should be expected to have racial attitudes that disadvantage Blacks. However, documenting the racial attitudes

of police is likely to be difficult because the public nature of their work has honed their political correctness skills. Police officers know that bias is culturally not to mention legally unacceptable. Yet to expect that police officers are more racially progressive than the average person seems naive. Recent empirical work (Weisburd, Greenspan, Hamilton, Williams, and Bryant 2000) finds that one in five police officers believes that white suspects are treated better by police than Black and other race suspects. More than half of the Black officers surveyed believed that black suspects were more likely to experience police use of force compared to five percent of whites.

Weisburd et al., suggest that these results show that most police do not think that race is a salient characteristic in American policing today – a conclusion that is consistent with the antiseptic consequences of political correctness on survey research about race issues. Despite this broad conclusion, Weisburd and his colleagues state that while “most American police do not believe that race and class are important in understanding police abuse of authority, a sizeable proportion -- ranging roughly from 10-20% -- of police officers do recognize differential treatment of suspects based upon racial and class background.” This research confirms that prejudiced racial attitudes among police are likely to exist. It also suggests that police institutions may be an organizational site ripe for institutional racism.

Informed by the insights of interactional research on race and racism, criminologists have become interested in the cost of being African American (Mann 1993; Walker, Spohn and Delone 2000.) African Americans are assumed by white citizens and formal agents of social control, most commonly police, to be untrustworthy,

criminal, and at times violent. Such assumptions underlie the historical conflict and distrust between African American communities and police agencies in this country (Mann 1993). Cultural as well as statistical associations (as measured by arrest data) between minority status and drug use, violence, and other personal crimes have provided support and perhaps, in the eyes of some, justification for race-based policing practices (Applebaum 1996). For example, Anderson (1990) finds that whites' perceptions of risk and related fear of crime are especially sensitive to black males. His research suggests that anonymous young black males are especially imposing figures in the context of public spaces for whites (see also Messerschmidt 1993). The basis of a racial profile is the connection between characteristics associated with a racial group and the perception that those characteristics predict a high likelihood of criminality or dangerousness. They are supported by cultural scripts, picked up and molded by would-be moral entrepreneurs (Becker 1963) and communicated to society and to society's rule-keepers, the police, in ways that perpetuate racial advantage for whites.

CHAPTER III

THEORIES OF BIAS IN POLICE OUTCOMES

Research and especially theory that seeks to explain the behavior of the criminal justice system and its constituent elements - the police, courts and corrections - continues to be under-developed (Hagan 1989). Theoretical insights and applications tend to be borrowed from other realms of sociology and retrofitted to the research problems of policing, administration and outcomes of the criminal justice in the court systems, or corrections. Ironically, Hagan (1989) too fails to offer a unique theory of the criminal justice system or its operations, instead opting to apply organizational systems theory (Perrow 1972) to elucidate how the concepts of system coupling and environment are useful in understanding the behavior of an organization, which happens to be focused on crime. Hagan's contribution is that he introduces criminologists to a heretofore underutilized sociological tradition in organizational theory and is able to shed new light on the criminal justice system in the process. Research on questions of police behavior takes a similar stance by sparsely employing theory and relying on sociological traditions originally developed without regard to the unique problems or issues of the police.

This chapter is a review of that literature on policing. Policing is treated as both a mechanism and outcome of social control. Conceptualizing police behavior as a social control outcome is important because racial profiling is generally conceived of as an outcome that begins and ends with police action. This is somewhat different than studies of the criminal justice system, in which police are seen as the first stage in a multi-staged

process. From a theoretical perspective, the mechanisms of policing provide the basis for variations in policing outcomes. Understanding how police operate and what factors are most important in the production of different types of outcomes is a fundamental building block to developing theoretical expectations for research on police.

Extant policing literature is divided according to its research focus, which encompasses a variety of specific police activities (Riksheim and Chermak 1993). Studies interested in explaining police behaviors have employed four distinct levels of analysis including structural, organizational, situational, and individual level explanations. Structural explanations of policing outcomes are focused on the importance of community level factors, such as racial composition and aggregate-level income inequality. Police research with an organizational focus is concerned with how department- and agency-level factors contribute to the process of policing and policing outcomes. Research interested in questioning what impact police force size and expenditures have on city-level crime rates is informed by both structural/community and organizational literature.

Situational studies are primarily interested in suspect characteristics and to lesser extent complainant characteristics.⁵ Suspect race, socio-economic status, gender and age along with other factors that structure police decision-making, including suspect

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Traffic enforcement activities are a little different than typical calls for service, often the focus of extant police research. This is because the police officer, rather than a private party, can be seen as the *de facto* complainant in an interaction with a traffic violator. Rarely are traffic stops the result of anything other than an explicit police decision to stop a motorist.

demeanor, and availability of evidence are all examples of important situational factors. Individual level research refers to studies that account for officer level influences on the process and outcomes of police behavior, including officer demographics and personality traits. Officers, therefore, are thought to be influenced by a variety of factors, including community context and culture, organizational policy, training and culture, as well as situational factors that are derived through interaction in the field.

The salience of each level of explanatory focus is constrained by the police behavior under examination. The bulk of research focuses on police activities that encompass the use of fundamental police powers, what separates police from the rest of society's members. In particular, most research is concerned with variations in the mobilization of the power to arrest and the use of force. These two powers define the police, distinguishing them from other public officials, and form the basis for much of the interactional opportunities between citizens and police. These two activities, particularly the arrest, are also among the most public formal activities in which police engage. As a result, research focused on other areas of police activity is less developed, partly because it has been considered less consequential than an arrest, and partly because much of it is less public, and therefore more difficult to observe. Of course police are involved in a wide variety of activities aside from arrest or the use of force. In fact, these activities comprise a very small proportion of what police do most of the time. Racial profiling is a special case of activities that entail traffic enforcement, one of the areas of policing that is less studied even though it is a much more common activity for most police officers than either arresting or using force against criminal suspects.

STRUCTURAL DIMENSIONS OF BIASED POLICING

Structural explanations of the police as formal agents of social control attempt to account for an array of community-level factors that might influence the nature and scope of policing in a given area. For example, structural explanations of patterns of police activity frequently incorporate legal and demographic properties of an area since police size, operations, and outcomes are conceptually linked to the nature of crime and population trends. Two types of structural theorizing about police reflect conflicts in the conceptual assumptions of what function the police serve in democratic societies, structural-functional and conflict theories.

The structural- functional or consensus approach assumes that society is a collective of individuals whose institutions are designed in order to maximize mutual benefits. From this view, the police are seen as an institution that works to ensure the collective good, primarily by commanding compliance with laws that govern social behaviors. Police help to maintain order by threat of force or by exerting force in situations where it is demanded. Order maintenance, then, is conceived as a collective good that all members of society benefit from and that is fundamental to what makes a functioning society possible. Taken from this perspective, police act in ways that reflect the moral and situational demands of community conscience. As such, otherwise questionable police behavior, such as violence or bias, is interpreted as an outcome of community outrage over the actions that elicited such police response (see Tittle 1994 for further discussion).

In contrast, the conflict perspective assumes that police are an institution

conceived to protect economic interest of powerful actors or dominant groups. Two strains of conflict theory differ on the strength of connection between the role of police and their utility in producing and maintaining relations of power with a given community. The instrumental conflict approach suggests that police are instruments of local elites and that their existence and actions reflect the needs and demands of elite interests. Other conflict theorists argue that police operate to ensure social stability, which maintains the economic and political system that is at the base of the community power structure in a given community. From this view, police are not seen as instruments of specific elite actors or specialized elite directives. Instead police serve as structural girders that provide constant support for a historically given form of capitalism. In contrast to the consensus perspective, conflict theorists argue that police violence and bias has utility for maintaining a structural status quo that rewards and penalizes community members based upon their relationship to the power structure.

Perhaps first articulated by Rusche and Kirchheimer's (1939/ 1968) *Punishment and Structure*, the conflict perspective assumes that social control efforts are a direct expression of dominant group interests. As initially conceived, conflict theory tends to focus on social class as the fundamental characteristic of group affiliation manifested as "owners" (bourgeois) and "workers" (proletariat) or, as Chambliss and Mankoff (1976) conceptualize, a class system with "Haves" and "Have Nots." Social control mechanisms are devised and employed in order to produce and preserve social relations of power. Quinney (1975) argues that the very definition and substance of illegal acts and the social construction of our notions about what constitutes "crime" are outcomes of the powerful

exerting their interests. The notion of a dangerous class and Spitzer's (1975) "social dynamite" provide a powerful imagery for one aspect of the police role in modern society.

Examination of the function of police institutions in American society frequently take a historical perspective on the role that police have played in creating and maintaining formal social control in local areas, particularly in the US south (Reichel 1992) and urban north, where historical examples of groups deemed social dynamite are apparent. Reichel's connection of the development of southern police departments with enforcement of slave codes and eventually Jim Crow laws provides an important backdrop to modern examinations of police behavior vis-à-vis minority communities. Barlow and Barlow (2000) argue that the importance of the slave trade to Charleston, SC helps explain why the first municipal police department in the US was located there. Connections between the development and growth of American policing is not unique to the South as police/minority relations have traditionally been strained, even in Northern urban centers and regardless of who constitutes the racial or ethnic minority group (Monkkenon 1981; Brown and Warner 1992). The influx of poor immigrant groups into northern urban centers was also met by the development of new police departments in the 19th century. The intersection of minority status, economic standing, and the rapid pace of growth of incoming immigrant groups created "dangerous classes" that served as the primary target for urban police activity.

Theoretically, these developments have been interpreted in a number of ways, some of which highlight the public good that stabilizing dimensions of police

departments provide for communities. This consensus-oriented interpretation argues that police departments were helpful and necessary developments in order for the American city to be a viable social arrangement. Others, such as conflict inspired analyses, focus on the development of police forces as a response to local needs to maintain power relations that produce and reproduce advantage in terms of social class and race.

Sociologists interested in questions of race and social control have used the basic logic of the conflict perspective to extend explanations about social control practices to racial minorities (Hawkins 1987). Within this framework, population dynamics associated with racial composition have enjoyed a prominent place among conflict studies of police bias. The theoretical influence of Blalock's (1967) power threat hypothesis is substantial as many studies have been concerned with linking macro level social control, including a variety of policing measures, with racial threat and competition. The threat perspective generally holds that increases in the percentage of non-white population in a given community results in increased levels of perceived threat, which is met by the dominant white population with increased levels of social control of those who compose the threat (Liska 1992).⁶ Research has examined such

⁶ The general relationship between racial and ethnic minority size and threat is argued to be non-linear as racial or ethnic minority groups who enjoy a numerical majority do not compose threats to dominant group members. In theory, communities that have a majority racial or ethnic minority population have diminished levels of social control since as a dominant group, community threat has dissolved. In practice, the experience of South Africa illustrates how important this part of the threat curve relies upon democracy, suffrage, and other mechanisms necessary to translate numerical power into economic and political arrangements that benefit the numerical majority. Over the past four decades, the changing racial composition of urban centers in the US and the concomitant

policing outcomes as police force size (Jacobs 1979; Greenberg, Kessler, and Loftin 1983), police expenditures (Jackson and Carroll 1981; Jackson 1989), race specific arrest rates (Chamlin and Liska 1992; Liska and Chamlin 1984), and police use of deadly force (Liska and Yu 1992).

Generally, this line of research has found support for the threat perspective, although it appears to be conditioned by a number of factors including region and temporal dynamics that cast minority group members in the eyes of whites in especially threatening terms. It has been suggested that the association between racial groups and threat depends upon the success of claims-makers and politicians in linking such groups to a threatening behavior such as crime, drug use, or other moral deficiencies (Chambliss 1999). Therefore, the perception of minorities as threatening may be contingent upon the cultural activation of imagery that links Blacks or other minorities with a “dangerous”

trend in formal social control reflect the curvilinear nature of the threat hypothesis. For example, several studies suggest that threats in large American cities decreased in the 1980s even as the relative size of racial minority groups increased (Chamlin and Liska 1992, Warner 1992, Jackson 1989). In part this is attributed to the political power that African Americans, in particular, have been able to achieve in cities where Blacks are at least a numerical plurality if not a majority. The election of Black mayors in New York, Chicago, Philadelphia, Washington, DC, Detroit, and Los Angeles during this time period provides further evidence of this effect.

activity and that rule enforcers are equipped with sufficient resources to control the threat. Much of the empirical work on police and threat has focused on relatively narrow time periods in which minority threat is heightened due to the racial character of the historical moment. For example, a number of studies were conducted in the 1980s and 1990s using data from the 1950s, 60s and 70s, a time period when the US is undergoing a tremendous amount of change in race relations, spanning Jim Crow, court-ordered desegregation, and the Civil Rights movement. These political and social changes were coupled with growing minority populations in urban areas. In other historical contexts, particularly absent such racial conflict, the perceived threat of racial minorities may be smaller or absent all together.

Jackson (1989) and her colleagues (Jackson and Carroll 1981) for example, find a positive linkage between the proportion of Black population, interracial inequality, city-level crime rate, and population size in large cities with police force expenditures in 1971 and 1978. She explains this pattern as a response to racial minority threat to whites and especially to whites' fear of victimization, particularly in urban contexts. She proposes a contextual model that treats the national region, size, and historical proximity to racial strife as contextual factors that predict social control resources through mediating factors such as racial and economic characteristics, social disorganization factors, and crime-based fear of victimization within US cities. Jackson's thesis (1989, 1992) is that the trend for minority group threat effects on concern with social control of threatening groups is diminishing, even as minority concentration in urban contexts continues to increase. Jackson suggests that while minority groups continue to pose threats to whites

in local areas, social control is declining relative to minority presence at the community level. She argues that the latter 1970s and 1980s were different historical eras that were more temporally distant from urban race riots in the 1960s. This contextual change coupled with Affirmative Action gains in the interim period translated into political and economic mobility for urban minorities. All of these trends have led to a diminished level of threat and lower relative expenditures for local police. In other words, increased expenditures for social control was tied to an increased sense of threat among whites in the context of racial conflict during and immediately after the civil rights movement.

Jackson's research has been criticized for failing to focus on police behavior or outcomes rather than expenditures. Chamlin and Liska (1992) and Warner (1992) both make similar arguments as Jackson in their analyses of minority group threat and social control while extending tests of the threat hypothesis to police outcomes. However, both fail to find strong support for the threat perspective.

Warner (1992), for example, argues that one previously untested assumption of racial conflict and threat studies which find a positive relationship between measures of minority threat and social control is the functional conclusion that social control is produced on behalf of those in power, whether conceptualized as whites, the state, or elites. She argues that one logical measure of on whose behalf police officers serve is calls for police service. Measured as reporting crimes to police, Warner reasons that those in power whose position is protected by police should disproportionately show up in reporting data. This is particularly true in light of the documented tendency of police work to be primarily reactive in nature, responding to calls for service rather than

initiating contact with the public (Reiss 1971). However, contrary to her expectations, she finds that police tend to serve, in the sense of responding to calls, the same groups that are argued to compose threats to the power structure. Chamlin and Liska (1992) draw similar conclusions about the changing nature of group threat when they fail to replicate their earlier (1984) findings supporting the threat hypothesis. Using race specific arrest rates as measures of social control, they fail to find the expected positive and significant relationship between racial segregation, percent nonwhite and social control, measured as race-specific arrest rates.

Chamlin and Liska (1992) and Warner's (1992) findings provide evidence for the changing nature of race-based conceptions of threat and their empirical linkage to police activity, measured by patterns of arrest and calls to police. Conceptually, the apparent decline in racial threat in urban settings during the 1980s has been explained as an outcome of demographic shifts that have decreased the aggregate level of inter-racial contact. Lower levels of social control in response to lessened racial threat has been explained as a component of social neglect towards minority communities and crime victims, what Liska and Chamlin (1984) term the "benign-neglect" hypothesis.

In addition to suggesting how important context is to conceptions of threat, the inconsistency in empirical findings testing the threat perspective may help explain contradictions in the cultural critiques of police performance. On the one hand, police are criticized for responding inadequately to crime in minority communities, what might be called "under-policing" or "de-policing"; while on the other, police are perceived as being overly aggressive in police-citizen encounters including those that result in arrest

(Browning et al. 1994; Rome et al. 1995), which might be thought of as “over-policing.”⁷

Research using historical data (Brown and Warner 1992, 1995) provides additional support for the contextual nature of group threat and its link with formal social control by police. Brown and Warner's (1992, 1995) research, using data from 50 large cities in the late 19th century, shows that the rate of alcohol violations, a measure of police intensity or control, can be explained by immigrant national diversity, police force size, and the level of reform towards meritocratic principles among the police force while controlling for per capita alcohol consumption, percent foreign born and other political variables. They show that immigrant heterogeneity limits the capacity for organized politics among immigrants, creating less resistance to dominant group political interests expressed through increased police control of immigrants.

Their research is important for a number of reasons. First, because it shows that the historical context of population dynamics is an important factor in explaining whether those dynamics become perceived as threatening. In this case, the connection between immigrant groups and alcohol use was an important dimension of the threat imagery. It is also important because it is focused on police activity, rather than police force size or expenditures, which are less precise measures of police capacity for social control than police activity measures. It is also important because the actual behavior presumed to predict the pattern of alcohol violations policing is included in the models. Their results show that threat dynamics appear to be much better predictors of policing activity

⁷ Other examples of activities that might constitute over-policing are flooding police into certain geographic areas, neighborhoods, or smaller areas in order to create an overwhelming police presence in such areas.

measured with the rate of alcohol violations than alcohol consumption itself. In addition, they are able to account for differences in police capacity by controlling for police force size. Presumably larger forces per capita are better able to respond to threats in the local community.

This study is important for the current research topic because Brown and Warner focus on alcohol violations as triggering threat-linked policing strategies. Alcohol violations are similar to driving violations in that they reflect public order maintenance issues. Alcohol violations also may be fairly compared to drug violations, which are clearly part of the cultural imagery that underlies automobile stop strategies and which have come to be known as profiling. Brown and Warner even argue that less serious behaviors, especially if linked to the basis for a moral panic, are a better test of the threat hypothesis than more serious crimes, such as those that result in arrest. More serious offenses provide officers with less flexibility or power in deciding how to handle a complaint. Less serious violations of the law are the kinds of events that provide police officers with the most amount of discretion and therefore more directly reflect officer and organizational level influences in the ways that discretionary power is enacted (Wilson 1968). In other words, police work focused on the objective of achieving public order, rather than crime control, is often more reflective of the social control imperative of moral panics.

More recent work by Klinger (1997) develops a theoretical framework that is focused on the geographical contexts within which police work is done. He argues that police areas, for example beats or districts, are circumscribed geographies with unique

levels of criminal activity and population dynamics that influence and feed off of officer level psychological factors, such as cynicism, and group level dynamics, such as the negotiated order of work group rules. In particular, Klinger reasons that police are likely to use their discretion to police in less vigorous ways in districts or other patrol geographies that possess high levels of serious crime. In other words, Klinger's ecological theory predicts that the threshold of behavior necessary for police to invoke their authority is much greater in high crime districts. In contrast, police will act aggressively to less serious behaviors in low crime areas.

This suggests a theoretically grounded expectation for the likelihood of being stopped (regardless of driver race) in areas characterized by different levels of serious crime. Specifically, Klinger's ecological theory of policing vigor leads to the prediction that stops are less likely in areas marked by higher levels of serious crime. Virtually any driving violation is a relatively minor illegal act. Driving violations are not legally criminal, with the exception of drunk driving, or other types of serious auto accidents which involves destruction of property or injury to others. The vast majority of driving violations involve only one party, which suggests the event is relatively less serious than other events police encounter where multiple parties are involved, for example a victim and a suspect. Driving violations or police stops are different from other types of police-citizen encounters because they are police, rather than citizen, initiated events.

Most of the literature on police use of discretion focuses on the importance of extra-legal variables, such as demeanor, in the context of arrest decisions. Arrest decisions are made when a crime has occurred, and police are most often responding to a

complaint which initiates the contact between police and a suspect. The dynamic is very different with a moving violation stop. Police initiate the stop and so the discretionary process may vary somewhat as well. It is nevertheless useful to incorporate Klinger's (1997) insights into the group level hypotheses and test for a "tolerance effect" in high crime areas, which translates into a diminished likelihood of stops for all drivers. This will be accomplished by modeling the effect of the district level serious crime rate on the full individual level model predicting likelihood of being stopped.

It also true that Klinger's (1997) focus on non-traffic policing intensity has implications for different sets of hypotheses for officers in local police departments compared to the North Carolina State Highway Patrol. Unlike patrol officers in local police departments, the NCSHP is focused on policing traffic and identifying violators of the laws that govern driving.

ORGANIZATIONAL EXPLANATIONS OF POLICE BIAS

Another literature that is relevant to the manner in which the police function as both departments and as individual officers focuses on what the police *should* be doing. What the police function is and how they go about performing that function is largely a question of philosophy and are reflected in large part by the organizational structure of a police department. Police departments throughout the US have experienced historical transformations from the political roots of their inception to the modern, post-industrial, professional police departments, particularly in large urban American police departments (Walker 1977; Uchida 2001).

The debate about how police should function in American communities goes to the core of how police officers accomplish their jobs on a day to day basis. Traditional, political conceptions of policing were based upon the English model of the night watchman. This model of policing relied on solitary officers to keep watch of neighborhoods and handle transgressions unilaterally. The method of keeping watch over a roughly defined geographic area gave rise to the method of policing known as patrol (Walker 1977). From this perspective, police discretion and authority are paramount to the effective control of the environment. In the American context, the authority of police was at the root of a system of street justice that was intended to control crime. Police jobs were often used for patronage by local politicians, and the physical power embodied in police authority were both used to influence local elections. As a result of this system of municipal policing, police were criticized for being corrupt and failing to enforce the law. Unsurprisingly, the result was a series of efforts to reform the police (Walker 1977).

Out of these concerns with reform rose a new style of policing that emphasized the tenets of meritocracy, efficiency, and rationality embodied in the concept of professionalism (Walker 1977). Professionalism began to take hold in municipal departments in the US in the early 20th century, and it meant significant changes in the way that policing was organized in US communities. Professionalism resulted in less autonomy among police officers. Police were provided with some standardized training, operated within a department with recognizable policies and procedures, and a more differentiated and specialized division of labor and hierarchy of formal authority. The

focus becomes law enforcement rather than crime control. This change in orientation fostered an operational shift that began to emphasize reactive measures to calls for service. A major consequence in this shift was the practical limitation of police autonomy and discretion since officers were reacting to events initiated by others rather than initiating citizen encounters on their own.

Organizational factors include a wide range of potential influences on police processes and outcomes. Such organizational properties can be related directly to departmental philosophy or to concrete characteristics that reflect a given department in a given community. Research has shown that smaller departments tend to possess higher rates of stopping motorists for traffic violations (Ostrom, Parks, and Whitaker 1978). Other research has shown that larger departments are less likely to arrest (Mastrofski, Ritti, and Hoffmaster 1987). Others have shown that policing styles and departmental policies are important organizational influences on police activity and outcomes. For example, proactive policing, measured by officer initiated stops, increases with officer level discretionary time (Worden 1989). Sherman (1992) and Sampson and Cohen (1988) have shown that more aggressive policing, particularly when targeted at a specific type of criminal offense results in higher levels of arrest. Mastrofski, Ritti, and Snipes (1994) show that agency policies, directives, and training as well as supervisor and peer expectations for behavior form behavioral resources and constraints for officers in the field.

Advocates for the professional model of policing emphasizing the law enforcement function of police departments argue that bureaucracy should be positively

related to arrests and that arrests in such organizations are more likely to hinge on legal (rather than extra-legal) characteristics of the call (Smith 1984; Walker and Katz 2002). However, this expectation is not consistently supported in the empirical literature. While Crank (1990) finds a positive association between bureaucracy and arrests in both urban and rural departments, others (Smith and Klein 1984) have found no effect or a negative relationship between bureaucracy and arrests.

Models of community policing often emphasize community input and order maintenance within neighborhood beats. Renewed emphasis on the order maintenance function of police was a popular response to violence, the war on drugs and the general crime problem in the 1980s and 1990s. Underlying the community policing movement was the notion that police could act in ways that reflect the moral standards and demands of communities by becoming more familiar to community residents and therefore create cooperative, rather than adversarial, police citizen relations. Mastrofski, Worden, and Snipes (1995) identify three distinct manifestations of community policing, including broken windows, which elevates the importance of minor crimes and incivilities for police attention (Wilson and Kelling 1982), a renewed commitment in some areas to preventing crime by building social capital in the community through police operations (Crank 1994, Skogan 1990), and problem oriented policing, which attempts to address underlying causes of community problems, frequently eschewing the use of legal sanctions in the process (Eck and Spelman 1987, Braga, Weisburd, Waring, Mazerolle, Spelman and Gajewski 1999, Mazerolle, Ready, Terrill, and Waring 2000).

Regardless of the specific form of community oriented policing, one constant is

that it relies on greater discretionary applications by police officers. Individual officers are expected to address and resolve problems through both formal legal and informal mechanisms, with informal mechanisms favored for realizing community demands for justice that might otherwise be ignored or left incomplete by the criminal justice system. Its advocates therefore, argue that community policing and order maintenance are more efficient than the professional reform model arguing that the bureaucratic structure that accompanies professionalism makes the administration of justice inefficient, slow, and unable to contribute to the prevention of community crime. Some (Bayley 1994) caution that this has the potential to insert politics back into the work of police, and that it increases the likelihood that civil rights and due process will be violated by police officers. Suspicion automobile stops may be a useful strategy for local officers in community oriented departments.

The social organization of patrol is another important department level influence on the patterns of policing outcomes. Patrol patterns have consequences for studies of police bias, and especially traffic enforcement because patrol constrains the population of persons police officers will have contact with in their beat or district. The logic of assigning officers to specific patrol areas in a social space delimited by political boundaries provides the potential for bias that reflects these beat and patrol boundaries. It also defines the volume of space under the charge of specific officers. Some research has shown that large beats limit the provision of police services in those beats. The area of a beat or patrol creates constraints that influence the average rate of policing within the social space defined by the beat.

Because racial minority communities are often the target of community policing efforts, or at least are frequently assigned as somewhat unique patrol areas, a greater proportion of police attention is focused in these areas. The spatial coincidence of the racial composition of neighborhoods with the spatial scope of police beats suggests that residents or “passers-through” different neighborhoods have different likelihoods of encounters with police. Those in racial minority neighborhoods presumably have much greater likelihoods of such an encounter. The practice of racial residential segregation and the concentration of disadvantage it affords is useful for police departments to exploit, particularly in justifying increased attention to racial minority neighborhoods. So, for example, stop or arrest statistics that show racially disproportionate patterns do not necessarily indicate officers are biased, but may merely be a reflection of the spatial concentration of disadvantage which fosters criminal opportunity and victimization, and police organizational responses that piggyback those contextual features of neighborhoods in devising and employing patrol strategy.

SITUATIONAL AND INDIVIDUAL PERSPECTIVES

Most of the research that has examined police decision making, i.e. discretion, can be categorized as part of the interactional sociology of policing. Unlike the structural conflict and historical approaches that emphasize minority group threat or the organizational approaches that emphasize the development of professional and/or community oriented police forces, research that has focused on the importance of interactional factors has tended to be relatively a-theoretical. Situational factors tend to

be treated as those that are related to the suspect, or driver in the case of traffic, including suspect/driver demographic characteristics, but could also be the outcome of the interaction between police and suspects. Individual factors tend to be treated as officer characteristics, including demographics, although the bulk of the work on individual factors is concerned with attitudinal or orientation factors that are thought to distinguish types of officers (Muir 1977; Van Maanen 1978). Most of this research is concerned with explaining what factors account for the decision to invoke formal police authority to make an arrest. However, a small number of studies have examined traffic stops, either in the course of an arrest or in their own right as a policing outcome (Lundman 1979; Black 1980; Worden 1989).

Perhaps the leading theoretical voice in this line of police research is Black's (1980) sociology of law, who argues that police embody the law on the street for most members of society. Regardless of what legal statutes or case law exists, police enact the law in interaction with citizens, and it's the enactment of law as practiced by police that defines the behavior of the law for most of society. For example, according to Black (1980) relational (social) distance between parties in a criminal or legal dispute, the suspect and complainant, predicts mobilization of the law in the form of police action. The greater the distance the more likely police are to mobilize legal resources to resolve the dispute, particularly if the complainant possesses greater social status relative to the suspect. In disputes among parties known or related to each other, police are much more likely to use their discretionary power to handle the situation informally, rather than through an arrest. Police officers and/or shift supervisors serve the role of complainants

in traffic offense encounters. Frequently department level policy or imperatives influence the level of priority officers are to place on traffic enforcement, which helps shape the nature of day-to-day police conduct. Since the officer or more broadly the police department, manifest in the police supervisor, serve as traffic complainants, Blacks' perspective would predict that the greater the social distance between the officer and the driver, the more likely one should expect a stop or the formalization of a stop (ticket).

Discretion in police work provides the opportunity for discrimination at the level of individual officers. In traffic enforcement and patrol work, Black (1980) argues that police officers take into account the social characteristics of drivers or suspects in terms of their deservedness for police action. This includes the decision to initiate a traffic stop and the decision to issue a traffic ticket (as opposed to a warning). Discretion is especially important in traffic enforcement since this aspect of police work is entirely proactive, meaning that police officers must initiate any encounters with drivers themselves. This is in contrast to patrol work, which is largely reactive in nature. Patrol work possesses the same potential as traffic enforcement for discriminatory application of discretion, but it is more constrained by the calls for service that officers receive. The potential for discriminatory opportunities in patrol work is somewhat circumscribed by the social characteristics of complainants, which individual officers have little control over. Nevertheless, the relative importance of legal and extra-legal factors in police decision-making is the subject of intense debate and has spurred a number of empirical studies on the subject.

Much of this research has focused on extra-legal factors, such as officer attitudes, suspect race, gender and age, as they predict police outcomes. Legal factors include the perceived seriousness of the crime (e.g., physical injury to a victim), the presence of witnesses, witness willingness to cooperate with police requests for information, the availability of physical evidence of a crime or infraction, and perhaps as Lundman's (1979) research suggests, the demeanor of the suspect. As Worden's (1989; Worden and Shepard 1996) research shows, the presence or absence of these factors are important elements in police decision making. Police take these legalistic factors into account when deciding whether to enter the case into the formal realm of the criminal justice system through an arrest, or to handle the case informally with a warning or some other means. Although Worden (1989) also shows that what accounts for police disposition outcomes is either not accounted for with available data or attributable to random factors.

The role of situational factors in police discretion is a point of intense empirical debate (Klinger 1996b; Lundman 1996; Worden 1989; Worden and Shepard 1996). In defining what constitutes a situational factor, most of the research is concerned with the importance of a suspect's demeanor in subsequent police decision-making. Although most of the demeanor debate has been focused on questions of arrest outcomes, demeanor is also important to traffic stop dispositions. This is because of its potential impact on police decisions after a traffic stop has occurred, for example when deciding to issue a ticket or a warning, or in initiating a decision to make searches of suspects and suspect property, such as a vehicle. Of course, suspect demeanor is only relevant after a traffic stop has been made since the stop occurs before any interpersonal encounter between and

officer and driver. Therefore, the debate about the importance of suspect demeanor is of little importance to models designed to explain police stops.

In contrast to criminal activities, driving practices that constitute traffic violations -- especially speeding -- are normative on many roads in many communities. Such speeding norms suggest that virtually all who are stopped for speeding by police are likely to have broken the law (as have many who are not stopped). Why are certain drivers stopped by police for speeding while others drive unmolested? Are there certain thresholds of illegal behavior that trigger police stops? For example, is speeding tolerated up to a certain level, after which it attracts the attention of police who respond by stopping motorists? If a driver violates such a threshold and police respond to the threshold violation, then in practice, legal factors are still operating in the decision process by police. Police discretion to exercise authority in these examples is an important and relevant consideration in questions of race discrimination in policing practices and outcomes.

Again Black's (1980) sociology of law helps formalize predictions about the behavior of police arguing that police will exercise legal authority in terms of formal legal control in direct reaction to proportionately more serious legal violations. This theoretical tenet was intended to explain the disparate attention different crimes receive from police. For example, holding all other factors constant, such as the social characteristics of the complainant, robberies are generally treated as quite serious offenses worthy of formalization of the law by police compared to a simple larceny. One may observe that police have less discretion in application of the law with more serious

offenses. This proposition can also be applied to differentiate between the same offenses of varying seriousness. For example, police are more likely to initiate a traffic stop in situations where a motorist is traveling 20 miles above the speed limit compared to another motorist traveling 10 miles above the limit. In practice, this is recognized as a legally defensible basis for differential police treatment, as long as the differentiation is proportional to the offense. Therefore, an adequate assessment of police bias in traffic stops should take into account whether discretion is being applied in a way that reflects the proportionate nature of the decision to invoke formal police action.

The importance of offense seriousness on officer discretion is reflected in researchers' analysis of arrest decisions, too. For example, researchers have asked what role crime itself plays in the race/policing relationship (Klinger 1996a). This is particularly important for examinations of police discretion since officers are much more constrained in their ability to handle events informally when a serious crime has been committed. If minorities are more likely to be involved in crime, than race bias in arrests may be an artifact of unmeasured criminal involvement by suspects. This analytical dilemma has a parallel in traffic analysis, as race and other extra-legal characteristics may be correlated with driving behaviors, such as speeding or other practices that disproportionately attract police attention. As such, driving behaviors need to be accounted for in analyses of traffic enforcement.

Non-speeding stops are perhaps even more interesting since the assumption that the driver is guilty of a driving infraction is less certain. In other words, the police decision to make a stop for a non-speeding reason represents an event where even greater

discretion is being applied by officers. Therefore, this specialized kind of stop, conceptually similar to Worden's (1989) "suspicion" stop, is especially interesting from a theoretical standpoint for its empirical utility in tests of officer bias in applications of such discretion. In the post-*Whren* decision context of traffic enforcement, these kinds of stops along with speeding stops constitute opportunities for consent searches and other police inquiries into the driver's behavior and possessions.

Lundman's (1979) study of traffic ticketing is one of the most prominent studies of police decision-making focused on the issue of traffic enforcement. Lundman points out that police administrators like to use traffic citation statistics as measures of officer productivity. Traffic enforcement is an organizationally attractive measure because traffic offenses, unlike felonies, are virtually ubiquitous, and so officer level variation in stopping activity reflects the level of effort individual officers are putting forth. Lundman's empirical results are based upon data from fewer than 300 observations of moving violations among licensed drivers, less than 10% of who are Black, and should therefore be interpreted with caution. Lundman finds organizational norms have significant influence on officer ticketing behavior. Departments with high ticket quotas were more active in overall traffic enforcement and, more importantly, Black and lower social class drivers were more likely to be ticketed than in low quota departments. Above average verbal resistance was also an important factor in the decision to issue a ticket once a stop had occurred.

In another study of traffic stops, Worden (1989) echoes Lundman (1979) in arguing that traffic law enforcement is a fruitful aspect of police work to examine

questions of police discretion because it requires proactive work by police. Worden recognizes that officer opportunity is affected by contextual factors within the officers patrol area, for example traffic volume, behavioral propensities of the population of drivers in the area, and the volume of other demands on officers (1989, p. 683), such as calls for service, which he measures with perceptual assessments of the area robbery, burglary and vandalism rates. Worden's focus is also on officer level factors, such as attitudes, that might help explain officer level variation in the way discretion is exercised. Worden anticipates Hagan's (1989) organizational analysis of the coupling of criminal justice system components when he suggests that in the context of traffic enforcement messages from traffic court judges and experiences about the relative case commitment to each ticket for officers in different jurisdictions should be considered in explaining variation in traffic enforcement patterns. In other words, local judges and the relative intricacy of the local courts may have significant influence over officer decisions to initiate stops and issue tickets, independent of departmental or situational factors. Such coupling in the criminal justice system is presumably quite common, but under-emphasized in the empirical literature.

Worden finds that traffic and suspicion stops are an outcome of increases in officer discretionary time and the time of the day (after midnight). Traffic stops were predicted also by presence of a traffic artery in the area, while evening work increased the likelihood of suspicion stops. Two officer attitude measures, officer role orientation and beliefs about citizen respect positively predicted suspicion stops and traffic stops, respectively. In general Worden concludes that officer attitudes have little to no effect in

explaining patterns of traffic and suspicion stops by police, while Worden's "situational" factors (actually more akin to organizational and contextual properties of the area officers are assigned to) help explain stops.

Worden (1989) conducts discriminant analysis intended to help explain disposition decisions in traffic and suspicion stops. His analysis shows that situational factors, such as the nature of the violation (moving, equipment, DUI) and suspect characteristics, (suspect sobriety, demeanor, and gender) accounted for more than 75% of explained variance in distinguishing arrests from other stop dispositions. Worden clearly shows that officer attitudes and characteristics (such as race and gender) are of little explanatory importance in these models. With little change in outcomes, Worden and Shepard (1996) refine Worden's (1989) analysis. Worden's second study was intended to more precisely explicate the impact of different dimensions of suspect demeanor on the likelihood of more serious dispositions, such as arrest.

Among the themes that emerge from the literature is that the factors that influence police outcomes are complex and multi-faceted. Research and theory suggest that policing in general and police bias in particular is impacted by a variety of factors. These include structural and historical elements that cast certain groups in the US as threats. Threat is seen as an outcome of economic and political racial competition as well as the cultural linkage of these groups, especially Blacks, to dangerousness, whether urban riots, violent crime, or illegal drugs. Organizational characteristics of the police agencies that officers belong to, with their unique local history, structure, culture, and policies, are also important factors in the way that police do their jobs, the opportunity

for discretionary decision making, and the focus of police work. Beyond structural and organizational influences, police are of course impacted by what they see on the street, the characteristics of the people they come in contact with, and their own perspectives about what it means to be a police officer, both globally and in the context of the local area.

CHAPTER IV

THEORETICAL EXPECTATIONS AND RESEARCH PROPOSITIONS

The theoretical expectations for the research are framed by the insights of the sociology of racial inequality and the literature on factors that influence police behavior and decision making. Both the racial inequality and policing literatures offer multi-dimensional perspectives on the processes by which racially discriminatory outcomes at the hands of police are produced and maintained both at the community and individual level.

The research on structural sources of racial inequality highlights the importance of competition and threat in the context of labor struggles. Other structural mechanisms, such as racial residential segregation operate to foster economic, educational and other disadvantages in spatially concentrated areas. Informed by this research, criminologists have incorporated racial structural inequality into models of formal social control, and in the process have added elements to models, such as crime rates and control capacity, that capture the contextual sources and capacity to respond to the social threat supposedly posed by racial minority groups, especially Blacks, in the US.

At the individual level, survey and ethnographic research has shown that, while racial tolerance may have increased since the days of legal segregation, whites in the US continue to hold prejudiced beliefs about racial minorities and are increasingly opposed to policies designed to ameliorate racial disadvantage, such as Affirmative Action programs. The sociology of policing, like the social psychological race literature, is also

concerned with officer attitudes about law enforcement, race, and other dimensions of social life that might impact the ways that police see or interpret the world around them and the suspects in front of them. Certainly as important from a theoretical sense and proven even more important based upon existing empirical work on the topic is the question of how interactional status differences between parties involved in a dispute or event involving the police may frame the outcomes of police decisions.

Organizational dynamics are also important to explanations of both racial inequality and policing, although only the literature focused on the social organization of policing has been reviewed here. In studies of economic achievement, organizations are frequently the locus of sorting and sifting processes that disproportionately limit Black gains through hiring practices, shorter job ladders, and other mechanisms (Tomaskovic-Devey 1993). The policing literature also locates police behaviors within the context of organizational realities.

Across the reviews of the race and policing literatures, it is striking how compartmentalized both the work within the structural and individual approaches is. Despite the apparent empirical isolation within each of these research areas, the macro and micro level findings in both the race and policing literatures should be considered complimentary, rather than in theoretical competition. The dissertation seeks to begin to develop conceptual linkages across these levels by examining traffic stop and disposition patterns among police with the goal of testing the structural impact of racial inequality and formal control capacity at the local level while also modeling the impact of

individual or situational level legal and extra-legal characteristics thought to predict a police traffic stop and its disposition.

CONCEPTUAL EXPECTATIONS FOR STRUCTURAL CONTEXT

What is clear from the extant literature, especially the structural inequality and social control literatures, is that the meaning of racial minority status is contingent upon contextual factors, such as racial inequality and perceptions of the crime problem. Thus, threat and its associated social control by police is bounded by time and place, as racial inequality and crime vary substantially historically and at the local level. Therefore, one should expect that the salience of suspect or driver characteristics, such as age, gender and race, varies across different types of contexts, controlling for grouped average differences in illegal driving behavior. In other words, the meaning of race in particular, but also age, gender, and class, in the decision-making of police varies by the racial context of the local community.

Before elaborating further, it is important to stress the social control function of being stopped by the police while driving. Such stops are a hassle for those involved and may contribute to the social psychological aspects of *de facto* second-class citizenship for Black Americans. Further, stops provide the basis for additional police questioning and searches of person and property. Interrogation and searching of property arguably denies motorists their privacy and due process rights, protected by the Fourth Amendment to the US Constitution, although the US Supreme Court's 1996 *Whren v US* ruling holds that police discretion to conduct pre-text stops in order to pursue police suspicion of illegal

behavior is constitutionally permissible (Harris 1997). Such rulings underline the sweeping power that the police possess in contemporary society, affirm the Court's commitment to the importance of discretion in the police role, and ignore the clear potential for abuses of police power and bias in the stopping and questioning of motorists.

In order to isolate the main effects of extra legal driver characteristics on the behavior and decision-making of police officers in traffic enforcement, it is necessary to control for a number of factors that logically influence the relative chances of being pulled over by police. In particular, a complete model will control for legal factors that allow for the estimation of the legal violations of driving regulations. Research on group averaged differences in risk-taking and criminal involvement suggests that the young (Hirschi and Gottfredson 1983), the male (Steffensmeier and Allan 1996), the working class (Braithwaite 1979), and Blacks (Wolfgang, Figlio and, Sellin 1972) are more likely to engage in risk-taking behavior and criminal involvement, particularly if official measures, such as arrests, are used to determine involvement in criminal activity.⁸ At the crux of the current project is whether disparities in measures of social control, whether measured as arrests or traffic stops conducted by police, are a function of group differences in behavior that produces social control efforts, or whether police are using

⁸ A significant debate and substantial research has been dedicated to determining whether these claims reflect empirical associations between crime and status characteristics or reflect different dimensions in the application and measurement of what constitutes crime. To this end, self-report studies, largely based upon non-comparable samples of juveniles reporting on delinquency, show that these patterns are not as clear as official data suggest. The study of race-based traffic enforcement is in many ways an extension of this same empirical debate.

the characteristics of individuals (defined by age, gender, social class, and race status) as a basis for social control decisions that results in bias.

An argument that some police officers and departments may make in order to explain apparent racial disparity in traffic stop likelihood is that police are using a probabilistic decision calculus that holds that drivers with certain status characteristics are worthy of greater suspicion and thus experience higher relative levels of traffic stops.

One of the extensions of this position is to assume that individuals in these same groups are, on average, more likely to drive in ways that attract police attention due to speeding or other illegal risky driving. Indeed, recent research supports the association between risk-taking while driving and criminal involvement, suggesting that there may be some common underlying factor that helps account for both types of behaviors (Junger, West and Timman 2001). Including measures of legal factors that are theoretically related to stop likelihood and disposition is therefore warranted in order to determine whether group average differences in illegal driving behavior account for some proportion of any empirical pattern of police stop disparities for individuals who share some of these characteristics.

The context of police control should also include some aspect of the link between Black racial status and the notion of fear based upon physical threat. Empirical work on the threat hypothesis generally fails to find solid support for this variety of the threat hypothesis with analyses of data from the 1970s and 1980s. Such null findings are partly attributed to the diminishing conception of Blacks as threats in urban environments, which were increasingly temporally distant from recent rioting and declining white

populations. Following this line of reasoning, it is important to capture some measure of the level of concern about serious crime, which is likely to vary considerably across North Carolina counties. This serves two purposes. The first, of course, is to integrate a proxy of community concern about racial threats as fear of victimization. In the context of the 1990s, official measures of violent crime declined nationwide while drug crimes increased. Accompanying the shifts in crime trends during this time period was the continued rhetoric of the war on crime and the war on drugs which continued to keep public concern about crime in many communities high (Tonry 1994; Chiricos 1998). Thus, measures of drug crimes are conceptually important in order to capture the racial dimension of social threat that may be met with higher stop likelihoods for racial minorities as local contexts increase in racial inequality.

The second reason to include a measure of crime is to account for local variation in the demand for police services. Worden (1989) found that discretionary time is positively related to traffic stops. The rate of serious crime serves as an indirect measure of discretionary time. Places where there is more crime are also places where police officers should have less discretionary time and as a result a lower volume of traffic stops. Both reasons for including some measure of the crime rate can be addressed with the same measure of crime. The drug crime rate will be employed rather than alternative crime measures because of the saliency of drug crimes in the cultural imagery and social constructions of criminal and drug courier profiles.

Klinger (1997) argues for similar outcomes associated with high crime areas, but underlines another explanation for the connection between high crime areas and

depressed traffic policing activity. Drawing on Durkheim's insights about the relative elasticity of a community's moral boundaries, Klinger argues that high crime areas create normative expectations that are more tolerant of less serious violations. These local norms are reflected in police behavior which is less vigorous in districts or other patrol geographies that possess high levels of serious crime. In other words, the threshold of behavior necessary for police to invoke their authority is much greater in high crime districts. In contrast, police will act aggressively in response to less serious behaviors in low crime areas, where the moral boundaries are somewhat more circumscribed.

This suggests a theoretically grounded expectation for the likelihood of being stopped (regardless of driver race) in areas characterized by different levels of serious crime. Specifically, Klinger's ecological theory of policing vigor leads to the prediction that stops are less likely in areas marked by higher levels of serious crime. Virtually any driving violation is a relatively minor illegal act. It is useful to incorporate Klinger's (1997) insights into the group level hypotheses and test for a tolerance effect in high crime areas, which translates into a diminished likelihood of stops for all drivers. This will be accomplished by modeling the effect of the district level serious crime rate on the full individual level model predicting likelihood of being stopped. Following Worden (1989), this also serves as an officer-level check on discretionary opportunities.

Local population density is another important structural factor that may impact the local level of police stops, as well as stop dispositions. Density is likely to be correlated with the crime rate and so is an indirect measure of threat and demand for police resources as a direct response to the local problem of crime. In terms of traffic

stops, density should translate into increased automobile traffic. A density measure intended to capture the density of traffic would ideally take into account the flow of local roadways, including the highways and interstate system. The number of cars or drivers per square mile or per unit of road would help to account for volume differences in race specific opportunities for police to stop motorists. These kinds of data are available through road observation surveys.

The other part of the density equation might link the volume of traffic or the spatial breadth of traffic to the volume of police officers within the local area. The number of officers available taps the capacity of police to control the local population. This measure frequently has been used by criminologists interested in falsifying the social threat hypothesis in studies of US cities. In this case, it is more appropriate to treat the volume of police as a control to complete the salient dimensions among measures of local context. Presumably, areas with more officers per capita will have higher stop rates. More officers may mean more discretionary time across the entire department. More officers per capita may also be a response to either racial threats, or to the crime problem, often perceived by local whites as one in the same. Therefore, areas with higher levels of police per capita may actually have lower stop rates, since the greater supply of police is absorbed by the greater supply of serious crime.

GUIDING PRINCIPLES FOR CONTEXTUAL FACTORS

1) The greater the level of racial inequality, the greater the cost of Black racial status at the individual level in terms of social control efforts exercised by police. As racial

inequality increases, the likelihood of police stops of Black drivers should also increase independent of legal factors, such as speeding, predictive of increased stop likelihood. In other words, the greater the local level of racial inequality, the greater the disparity in stop likelihood for Black motorists in those contexts. Threat is interpreted here to be a threat to white racial hegemony and racial power. This is an individual or driver level implication of structural forces that serve as orienting factors for police stops.

2) The larger the proportion of Blacks in the population, the larger the increase of police control of minority citizens. One would expect that police control of minority citizens is greater in areas where Blacks compose a larger proportion of the population. This is an extension of Blalock's power/threat theory. The size of racial minority groups is generally positively related to labor competition, which represents an economic threat to the white working class. Threat is again conceived of in economic and racial terms, but it is contingent upon the presence of the catalyst of relatively high crime rates that activate white fear. Therefore, percent Black alone should not necessarily be expected to be met with increased social control of Black community members. It is the combination of a larger Black population, increased racial inequality, and a crime problem that creates contexts where Black status is especially costly for drivers. The quantity of law experienced by Black drivers increases in locations where large Black populations exist and where concern about the crime problem and its presumed association with Black persons is stronger. Thus race differences in stops are likely to be largest in these areas compared to areas with smaller Black populations, less racial inequality, and less crime.

3) The greater the size of the white population relative to the Black community, the

greater the likelihood of police control of racial minority citizens. In contrast to the first two expectations, there is some reason to believe that Black racial status may actually be more costly in contexts with larger white populations. Black's (1980) theory of the behavior of law provides support for a hypothesis that status difference is a critical cue that individual police officers utilize when deciding when to enact the law. Contrary to the racial competition/threat predictions, difference, in terms of racial status, may mean that Blacks are more likely to be stopped in areas where they "stand out" based upon racial composition. A similar negative pattern might be found as result of the benign-neglect phenomenon described by Liska and Chamlin (1992). In such contexts, police activity, and traffic stops in particular, may provide a "protection" function for majority whites concerned about who may stray into areas where they are unwelcome.

The process by which social distance manifests may be quite different for different types of police organizations. In particular, for local police the incongruence between the race of a Black driver in a white, middle class or high property value neighborhood could be very meaningful and could easily trigger increased attention ending in a stop. Whites in similar circumstances would not arouse similar suspicion, unless other status cues, such as the age or condition of the vehicle, did not fit the customary affluence of the neighborhood's residents. Here police would be acting upon a spatial mismatch between the characteristics of drivers and the characteristics of the local area. Further, local police agencies are able to rely on racial residential segregation to aid in the determination of what kinds of drivers would be expected to be driving where throughout the local community. Likewise, white motorists in Black

neighborhoods may draw police suspicion at higher rates than when in predominantly white neighborhoods, especially in light of concern about drug market activity. Still, the importance of status differences for police stop behaviors is likely to be more acute for Blacks driving in white neighborhoods where police interest in providing a protection function is most powerful.

Unlike local police, NCSHP troopers may be less privy to cues that provide information to make judgments about which drivers fail to “fit” the area. The purpose and nature of state and federal highways is to promote mobility, and thus, a variety of persons with no particular spatial connection to communities along these routes is expected to be found common for state police officers. Further, the high speed of travel along the routes that the NCSHP oversees may compromise their ability to accurately monitor, and hence rely on race or other status characteristics of drivers when deciding to initiate a stop. Nevertheless, the issue of driver status congruence with local area characteristics may still be operative, though less so than for local police. Race may operate like other cues which may increase one’s likelihood of being stopped by state police officers, such as an out-of-state license plate or the color of the vehicle.

4) Aside from race differences in police stop likelihoods contingent upon the importance of local context conditions, such as the racial composition of the local area and the relative level of racial economic inequality, there is reason to expect that these contextual factors may have main effects on stop likelihood.

5) A variety of community characteristics frequently associated with urban social organization have theoretical implications for how police may behave in terms of

automobile stop practices. Drawing on Klinger (1997) and Black (1980), communities with larger crime problems, measured by the crime rate and associated with population diversity, mobility, and density, may increase the threshold of law violating tolerance by local police. Less serious legal violations, including traffic violations, may be considered trivial in high crime contexts and may threaten to distract police efforts from more important kinds of work . Thus, the overall likelihood of a traffic stop may be decreased in such areas. This expectation may apply to state police in certain contexts where they find themselves more responsible for local law enforcement tasks. This local law enforcement work is likely to occur more frequently, however, in rural communities where large spaces are policed by very small local police and sheriff agencies.

6) More of a scope condition than a research expectation, all of these hypotheses are built upon the expectation that localities are unique contextual settings, each with its own racial history. It also expected that the components of local context will vary in degree across these structural dimensions within the geographic areas encompassed by the empirical data. This assumption about the impact of local context is likely to be of varying importance to different types of police agencies. Specifically, local police should be much more sensitive than the NCSHP to contextual factors that produce racial inequality and the potential for racial threat.

The social qualities of unique spatial areas and their meaning for local versus state police stops have important implications for the multilevel models. In modeling local police behavior, multilevel modeling approaches are superior to single level analyses because of the variety of conditions that describe local communities across

North Carolina. State police are less connected to local community conditions and operate in more amorphous spatial areas relative to local police, and should therefore be expected to be less sensitive to contextual variation in the local history or current state of race relations. Thus, a multilevel approach may be no more useful than traditional individual level statistical techniques for explaining state police stops. The multilevel approach to describing local policing better accounts for the spatial error in individual level models.

CONCEPTUAL EXPECTATIONS FOR POLICE ORGANIZATIONAL REALITIES

Beyond structural implications, Klinger's (1997) theory, with its focus on non-traffic policing intensity, has implications for different sets of expectations for officers in local police departments compared to the North Carolina State Highway Patrol. Unlike patrol officers in local police departments, the NCSHP is focused primarily on policing traffic and identifying violators of the laws that govern driving. This alone indicates that NCSHP officers should be more likely to respond to illegal driving behavior and conduct traffic stops that are *less* likely, relative to local police, to be pre-textual, or suspicion stops, in nature.

Part of this predicted pattern is a function of the types of roads each type of police patrols. Stops for moving violations aside from speeding are more likely to take place on local streets, in intersections and so-forth, where local police are more likely to be present. NCSHP officers tend to be disproportionately focused on interstate and state highway road traffic, which favors stops based upon speeding violations. Local police

are also more likely to make stops based upon non-moving violations, such as equipment failures, and registration problems.

In addition, this expectation is also based upon the theoretical expectation that local police will be more sensitive to the political and economic context of the areas they patrol than are state police. Therefore, decision-making by local police may be seen to be more reflective of local race concerns in comparison to state police. In localities where the salience of race is strong, police are likely to be more proactive in making suspicion stops based upon extra-legal factors.

In addition, the NCSHP differs overall from local police in terms of the department-level orientation toward professionalism. The NCSHP is a state-level agency, highly bureaucratic in structure and operation. The NCSHP are considered a somewhat elite, better trained, more professional police organization than the average local police or sheriff's agency. Of course, there is variation in the level of professionalism among local police as well. Some local police departments are equally as professional as the NCSHP, although many of the most professional and modern local police forces are likely to have a layer of community policing philosophy, which may cloud expectations about the relative importance of discretion in such locales.

The distinction drawn from comparing the relative professionalism of different types of police agencies is important for formulating research expectations. It contributes to our understanding about the organizational origins of a race-based profile, it helps us distinguish among department level philosophies of the police function in the community, and it helps us compare and contrast the NCSHP, a unique police agency for

a number of reasons (e.g., focus on traffic enforcement, high levels of professionalism and training), with local departments in terms of the importance of legal versus extra-legal factors in the application of discretion. A professional orientation problematizes and therefore is expected to constrain the discretionary powers embodied in the functions that the traditional role served. Discretionary power, especially manifest in the decision not to invoke police authority in resolving an apparent legal violation (see Goldstein 1960), is one way for citizens/police encounters to result in policing bias (Walker 1993).

GUIDING PRINCIPLES FOR POLICE ORGANIZATIONAL FACTORS

1) Local police are more likely to rely on extra-legal factors in making and resolving traffic stops than the NCSHP. This hypothesis is based upon a variety of factors that distinguish local police from the NCSHP. For example, differences in the organizational objectives and average professional orientation between local police and the NCSHP suggest that local police have greater opportunities for discretion. Discretion is expected to be correlated with the use of extra-legal criteria in decision-making by police.

Beyond average differences in discretion between local police and state police, local police function more frequently as crime fighters in the communities they serve. The crime fighting orientation of local police suggests that traffic stops may be used as a mechanism to pursue suspicious persons or situations. Following this line of reasoning, traffic violations are useful pretext for informal investigations by local police who have some reason to suspect persons of illegal activity. The extent to which police suspicion is influenced by the cultural connection between race, crime and illegal drugs may predict

the likelihood that the police most likely to make suspicion stops are using driver race and other status characteristics, such as gender and age, as proxies for suspiciousness. On average, local police are more likely to engage in suspicion stops and thus use status cues as proxies for suspicion.

2) Re-emphasizing the discussion above about the increased salience of context for the operation of local police agencies compared to the NCSHP, a theoretical expectation about organizational differences in the importance of racial context is warranted. Local police reflect the local conditions of communities much more than state police do. Thus, local police will operate in ways that are more consistent with the predicted logic of how racial inequality will impact police behavior, namely that race differences will be magnified in communities with higher levels of inequality. In contrast, state police have less political, economic and organizational attachment to the conditions of communities where they happen to operate, and as a result, their behavior is less reflective of local context

CONCEPTUAL EXPECTATIONS FOR INDIVIDUAL DRIVER AND DRIVING CHARACTERISTICS

At the level of the individual, theory and extant research suggest a number of hypotheses about police behavior. Fundamental to the decision making of police is the assumption that violations of the law are met by police action. Therefore, legal factors should be expected to be important predictors of police stops and ticketing patterns. In particular, police should be expected to evoke their authority in stops and ticketing

proportionate to the severity of the driving violation. This proportionality expectation reflects the normative expectations for often unlawful driving behavior as typical on many roadways and the discretionary nature of police decision making in traffic enforcement. Therefore, those legal principles are still governing decision making when police fail to stop all drivers who speed, instead opting to stop those who speed excessively. Driving speed should be positively related to stop likelihood, and among those drivers who are stopped, speed should be positively related to a formal outcome after the stop.

According to Black's (1980) theory of the mobilization of law, police discrimination based upon individual level characteristics of drivers, such as race, age, gender, and class as well as certain officer status characteristics should be a basic expectation of police research. Black argues that such extra-legal factors are important to police officer decision making because they are so characteristic of society as a whole. Drawing upon recent survey and qualitative research on racial attitudes in the contemporary US, it is reasonable to expect that police attitudes reflect at least race and class biases that continue to permeate late American society. For example, Bobo (1997) and Feagin (2001) using vastly different methodologies draw similar conclusions about the changing yet persistent nature of racial prejudice among Americans. Therefore, it should be expected that police officers, even those who are conscientiously attempting to eliminate the influence of race in their decisions, would be likely to engage in some level of discriminatory decision making.

GUIDING PRINCIPLES FOR INDIVIDUAL DRIVER AND DRIVING FACTORS

1) Legal factors are important and provide the basis for police stops. The volume and normative nature of illegal driving, particularly in some local areas on some roadways, means police have ample opportunity to make stops at their discretion. Therefore, the vast majority of stops will encompass a legal justification. In short, legal factors predict police stop and ticketing decisions. The formalization of police authority to exert social control in the form of stops and tickets increases as the severity of driving infractions increases.

2) While legal factors are important, they likely are not the sole basis for police stops and ticketing decisions. Holding legal factors constant, those who possess status characteristics that are devalued are more likely to experience stops. The importance of extra-legal characteristics, such as driver race and class, suggests that these will predict traffic stops over and above legal factors. It is important to incorporate this theoretical position into the research design and statistical modeling decisions because it offers a more complete picture of the factors that police use in making decisions about automobile stops. It provides the capability to parse out the relative strength of both legal and extra-legal individual factors in stops and stop outcomes.

A MODEL OF POLICE TRAFFIC STOPS

Drawing on the theoretical expectations described above, a complete theoretical model of police stops and ticketing must account for structural, organizational and individual level variation in the factors that cause automobile stops and ticketing by

police. The likelihood of being stopped and ticketed are increased by increases in violations of the rules that govern driving on public roads. Legal factors that predict stops and tickets are likely to be correlated with the demographic characteristics of drivers, such as age, gender and race. Therefore, it is extremely important for empirical tests of the model to account for legal and extralegal sources of driver variation.

Beyond legal factors, it is expected that police operate on biases that reflect interactional status differences between themselves and the public they encounter, society-wide socialization processes, and organizational focus, training, and cultural orientations grounded in police department operation and socialization processes. Thus, extra-legal factors associated with driver characteristics, especially race, are expected to predict both stop and ticketing patterns by police. However, the salience of such extra-legal factors is mediated by the importance of the local setting. Contextual factors, such as the proportion of Black residents in an area, the level of racial inequality, the presence of catalytic structural characteristics, such as the crime rate, and the capacity of police to respond to these social forces provide a lens for police departments and individual officers when interpreting the meaning of race, or other extra-legal characteristics of drivers.

The different nature of local and state police work and their different relationship, or level of “connectedness”, to the local areas they police suggests that different models describing local police stops and state police stops should be constructed. While these two types of police organizations are both stopping drivers, and while there may be a number of common factors that help explain the likelihood of a stop for both types of

police, there are clearly a number of important differences that distinguish how these types of police operate. The development of distinct predictions about the importance of the variety of community, police organization, and driver characteristics for each type of police is necessary. The interaction effects between driver level factors and community and organizational factors operate differently for each type of police. In order to begin to explore these expectations and ultimately test the predictions, police-specific models are necessary, and this will guide the analysis that follows. Figures 1 and 2 below provide a visual representation of the local police and state police models to be tested, respectively.

FIGURE 1. CONTEXTUAL MODEL OF LOCAL POLICE STOPS

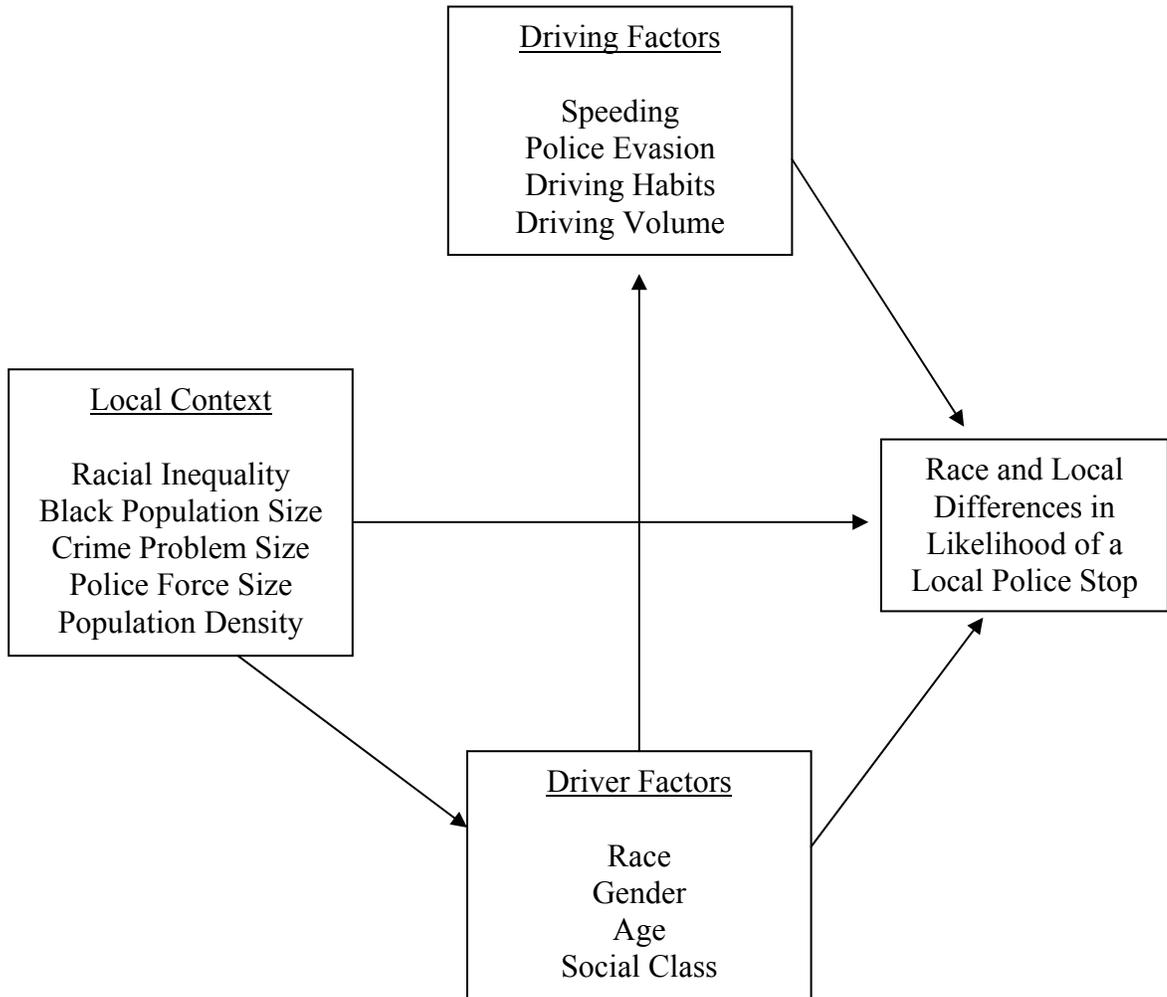
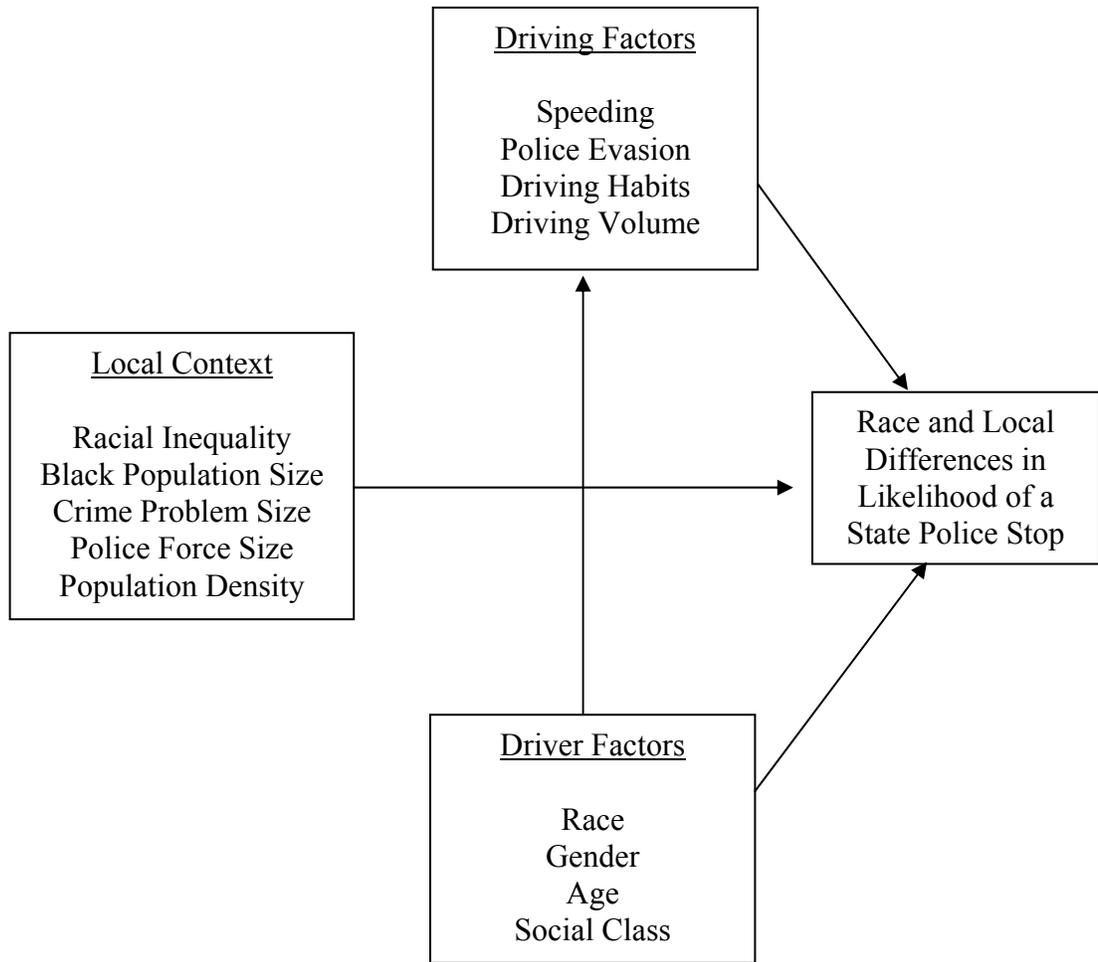


FIGURE 2. CONTEXTUAL MODEL OF STATE POLICE STOPS



CHAPTER V

RESEARCH METHODS

This chapter describes the research methodology and measures used to test the research hypotheses outlined above. The data used for analysis are drawn from a number of different sources and at different levels of analysis. Survey data summarizing individual self-reports were collected by telephone interviewing techniques and provide the bulk of the measures used in the models, including the outcome variables, being stopped and ticketed by police in North Carolina. A somewhat extended discussion of the survey data collection process is presented because this data is a fundamental element of the analytic tests that follow. An extended discussion of the survey data collection is also justified because of the personal nature of collecting self-report data about illegal behavior combined with the politically and culturally sensitive topic of racial profiling, which combined possess the potential to threaten the validity of the survey data. Further, the survey approach to the study of police bias is somewhat novel, and so it is important to explicate the underlying data collection procedures. Structural data are also drawn from 1990 and 2000 US Census sources on North Carolina's 100 counties. In addition, data are derived from the 1997 Census of Local Employment data collected by the US Census Bureau and 1998 Uniform Crime Report data compiled by the Federal Bureau of Investigation covering the same county units described by the census data. Each data source is explained and measures are defined below.

The main source of data is drawn from a telephone survey of 2,920 North Carolina licensed drivers conducted between June 2000 and March 2001. The telephone survey provides generalizable individual “driver-level” information about North Carolina driving habits, the likelihood of being stopped and ticketed, and important demographic information about North Carolina licensed drivers. The sample data are stratified by race, meaning that approximately half of the sample, or 1445 cases, is comprised of African American drivers and the remainder are White licensed drivers.⁹ This sample design strategy produces a sufficiently large sample of Black drivers to compare the race-specific likelihood of being stopped and ticketed while controlling for the impact of other characteristics associated with increased stop and ticket likelihood. Being stopped by police while driving is a relatively rare event, although national survey data show that private citizen contacts with police are more likely to be concerned with driving-related matters than any other reason (Langan et. al 2001). Because of the relative rarity of being stopped while driving by police, it is necessary to collect a large sample of telephone interviews with North Carolina drivers to ensure that there is sufficient variation in the question of whether drivers have been stopped and what happens after the

⁹ This is in contrast to the much smaller proportion of African Americans in the total population of North Carolina. According to 2000 Census data, African Americans account for 21% of all North Carolina residents as well as 21% of all North Carolinians of driving age. One would expect a a survey project designed to gather 3000 interviews to yield no more than 630 (21% of 3000) completed phone surveys with African American drivers as a result of a simple random sample design. Drawing conclusions about the nature of Black drivers and experiences with police stops in North Carolina is prone to larger sampling errors with such a small sample. Probability sampling that incorporates stratification based upon driver race increases the precision of estimates for Black drivers.

stop.

SURVEY SAMPLE DESIGN AND SAMPLING ERROR

The sample was randomly drawn from North Carolina Division of Motor Vehicle (DMV) data. Two constraints, one analytical the other strategic, were incorporated into the sample selection procedure. Analytically, stratification by race increased the representation of African American drivers in the sample and in the final survey data.¹⁰

Strategically, drivers who had renewed their driver's license with the state in the last 12 months were used in order to increase the likelihood that they were still residing (and driving) in the state. This also increased the likelihood of making a successful contact with those drivers selected into the sample since their residence location was more up-to-date, on average, than drivers who had not renewed their licenses recently.

Contacting potential respondents using their DMV records data was a multi-staged procedure. DMV maintains address information, but no telephone data for licensed drivers. That limited the mode of administration to a mail survey. However,

¹⁰ DMV keeps track of licensed driver characteristics, such as race, which do not show up on the license issued to drivers. In the case of race, drivers are asked to self-report race in the application. This information is voluntary and often left incomplete. In such cases, DMV staff make a determination of race based upon their own judgement. Despite the fact that DMV provided us with an operational race for each respondent, along with sex and age, the survey asked respondents to self-report race, sex, and age. Discrepancies in race were found, although it was limited to 124 respondents (4.2%) of the 2920 interviews completed. Those who DMV classified as Black were 2.4 times more likely than Whites to self report a race other than that in the DMV records. Blacks, based upon DMV records, were also twice as likely to refuse the race question in the telephone interview, although only 31 respondents (1.06%) refused this item. This suggests a non-trivial error rate in licensed driver race data maintained by DMV. However, one might expect a similar error rate in the judgement of driver race by state troopers and other police personnel since presumably all persons are reacting to the same appearance characteristics for any particular driver. Thus analysis of individual data are

since mail surveys of randomly drawn lists of respondents, even when administered with Dillman's (1978) total design method, generally fail to produce response rates above 40 percent, this mode was unattractive. Another alternative would have been to employ randomly generated phone numbers for residents of North Carolina, known as random digit dial or RDD sampling. However, RDD administration would have been much less efficient since we would have no race data on respondents before they received a phone contact. Significant resources would have been devoted to screening households to ensure an adequate over-sampling of African American drivers. For a substantial portion of the field period, respondent race information would have to be gathered near the outset of the phone call, which frequently creates mistrust and suspicion about the objective of the phone call and the study itself, further damaging the response rate.

An alternative to either mail survey or RDD modes of administration is a telephone survey using phone numbers matched to the street addresses of licensed drivers who were selected in the sampling procedure. The matching process, referred to as a reverse telephone directory or "telematch," returns information on listed phone numbers. Excluding sampled drivers who maintain unlisted numbers at first blush would seem to introduce a significant source of bias into the sample data. However, this conclusion is wrong for at least three reasons. The first reason is that recent research shows that problems of non-coverage appear to introduce less sampling bias than previously thought and that any differences that may have existed in the past have diminished in recent decades (see for example Kviz 1986; Keeter 1995).

based upon DMV records.

Second, in order for the non-coverage of unlisted households to introduce bias into the sample, one must have a theory that systematically links the decision to have an unlisted phone number to the driving habits of those within the household. Do those with unlisted phones drive better, the same, or worse than those with listed numbers? There is very little to suggest that these factors are correlated with likelihood to have a (un)listed phone. In other words, this selection criterion does not invalidate the sample data in tests of police bias. Further, following the arguments of Miethe and McDowall (1993), the importance of non-coverage and sample selection bias is most germane to analyses that seek to generalize to the population being estimated. The goals of this research are more focused on discerning what impact various individual and community level factors have on being stopped and ticketed by the police. This is a different analytical focus than questions designed to yield prevalence estimates of an event in the population. As such, non-coverage is less problematic.

Third, the telematch has the advantage of providing demographic information about the drivers in the sample - both those who have listed numbers and those who do not. This data makes it possible to compare the matched sample elements to the unmatched sample elements to determine how much bias, if any and of what nature, exists. Analysis shows that the matched and unmatched groups do not differ in unexpected ways or in magnitudes that would raise concern about the representative-ness of the final sample.

Administratively, the telematch design is more efficient than RDD because it also

allows the sample to be administered based upon the DMV race data.¹¹ Thus, it was not necessary to screen households for race or other eligibility factors since that information was included in the information about the sample.

The telematch returned phone numbers on 8125 of 16,723 (48.6%) of the sample frame. The telematch procedure is based upon an algorithm that compares the surname and first name, zipcode and street address data for frame elements with a national telephone database updated monthly. Two national sampling companies, Genesys, Inc. and Survey Sampling, Inc. were used in the telematch process. The return on the telematch procedure was not expected to be distributed equally across the sample. In other words, positive matches are likely to be patterned by respondent characteristics, such as race and age. This is potentially problematic because it may introduce bias into the sample since different sample members have an unequal chance to be selected by virtue of the telematch results. For example, younger and African American drivers are less likely to be successfully telematched and therefore are somewhat less likely to be included in the list of numbers to be included in the final sample data.

Concerns about bias can be assuaged by comparing the characteristics of the part of the sample that is positively matched with a phone number and those who were returned unmatched. Table 5.1 shows the race, gender and age patterns of the telematch procedures performed. Looking more closely at hit rates for groups of sample elements

¹¹ The survey was administered as a single instrument with markers for the racial groups of white and African American as the Primary Sampling Units (PSUs.) This allowed for easy tracking of the data collection progress for the entire survey project as well as race-specific progress. Survey interviewers were never openly told that the survey concerned racial profiling or that the race of the respondent was known before the survey was

in Table 5.2, we find that African Americans and women were less likely to be located through the telematch process. This pattern is perhaps indicative of greater group mobility among African Americans than whites, while for women the practice of household telephone listings being listed under the “man of the house” may explain gender differences in telematch returns.

Table 5.3 shows that the mean age of telematched individuals is about 3 years greater than for the sample frame as a whole. This pattern appears to hold relatively stable for all race and gender specific groups. Those who returned a telematch appear to be only somewhat less likely to be convicted of a driving violation than the sample frame as a whole. Table 5.4 presents the results of a logistic regression model predicting the likelihood of a telematch. As expected, race, gender, age and driving-related conviction history are all significant predictors of a successful telematch. However, the model itself, while statistically significant, is limited in the amount of variation it explains in the telematch outcome, which suggests that the amount of bias introduced into the sample by the telematch process is noteworthy, but insufficient to invalidate the sample.

Of the 8125 drivers who were successfully telematched, 7514 (.925) were fielded. Of the 7514 fielded cases, 2920 were completed, representing a response rate of 38.8%. The relatively low response rate is attributable to the large amount of aggregate error in the returned “hits” from the telematch procedure. A relatively large proportion of telematched numbers resulted in non-contacts with potential respondents. Non-contact numbers are phones that are no longer working or numbers where the sampled driver is

administered.

no longer available or unknown.

Tables 5.5, 5.6, and 5.7 examine the distribution of the three primary case resolutions (completed case, refusal, and non-contact households) along the driver characteristics of race, gender, age, and NC motor vehicle conviction history. Race differences in response are attributable to the higher level of difficulty in contacting Black sample members, likely a consequence of higher mobility rates, perhaps more intermittent phone service, and greater reliance on cellular phones among this group. Analysis of cooperation rates bears this out. Table 5.5 shows that Blacks were slightly more willing to consent to be interviewed than White respondents. As is common in survey research, response and cooperation levels are higher for women respondents. The cooperation rate, a measure of the proportion of persons contacted who completed an interview, was 59.1%. Among Whites, non-contact or “rejected” numbers accounted for nearly 26 percent of the cases fielded. The problem of rejected numbers among Black drivers is even more acute. Almost 35 percent of Black numbers telematched and fielded were ultimately rejected as non-contacts. Consistent with the pattern observed for drivers with successful telematches versus those with no telematch return, non-contact numbers tend to be associated with younger drivers as Table 5.6 shows as well as those with more convictions as Table 5.7 shows compared to refused and completed cases.

SAMPLE CHARACTERISTICS

A comparison of the sample demographics to the demographics of the North Carolina licensed drivers reveals that the sample is highly reflective of North Carolina drivers. Table 5.8, for example, shows that the sample, while somewhat older than the

population of North Carolina licensed drivers, is very similar in terms of the race, gender and age distribution of survey respondents.

While the sample design was stratified by race, no other sample constraints were in place in administration of the telephone survey. Thus, the geographic distribution of cases reflects the spatial pattern of concentrated development across the state. For example, 1190 interviews (38.7%) were completed in six of the state's 100 counties (Cumberland, Durham, Forsyth, Guilford, Mecklenburg, and Wake.) According to US Census data, these six counties comprise 32% of North Carolina's 2000 population. The larger proportion of the sample drawn from these population center counties is attributable to higher than average Black populations, which when combined with the race stratified sample produces an over-sample of communities with larger Black communities. This is important to note because it will play into the strategy employed in the multi-level analysis where it will be desirable to control for the county level chance of completing any survey and Black surveys in particular. It is also important because these six counties are all sites of interstate roadways in North Carolina, which may be of special concern to the North Carolina State Highway Patrol.

SURVEY INSTRUMENT

The survey instrument was designed to collect information about respondent driving habits, encounters with police officers in the past 12 months, friends and family contacts with police officers in the past 12 months, trust in police and other community leaders, and respondent demographics. The most important set of survey questions for this analysis are those that reveal the respondents relative legally valid risk of being

stopped by a police officer while driving in North Carolina. The factors related to legally valid stops are driving behaviors that violate the rules of the road, such as speeding, risky driving behavior, and even the amount of driving one does since this increases the chances that one will come into contact with an officer on the road. Speeding occurs in different contexts, which may have different meanings to police. For example, in communities, speeds are often limited to 35 miles per hour or lower. In rural areas, on highways and interstates, speed limits are much higher, typically 55 or 65 miles per hour. Risky driving can include somewhat dangerous or less conscientious driving, such as failure to use turn signals or seat belts regularly. It might also include approaches to driving, such as willingness to pass other cars or whether or not to slow down when approaching a yellow traffic light or stop completely at stop signs. This set of items is designed to capture habitual driving practices that may increase the likelihood of a stop by police. An additional item, which asked respondents to self-report serious accidents, those in which police were called to the scene, was also asked to capture risky driving.

Beyond speeding and risky driving, a set of questions designed to measure the level of driver effort to avoid detection by police when driving above the speed limit were asked. These items are concerned with the frequency of driver use of cruise control, radar detectors, monitoring of CB radios, and following the speed of vehicles with CB radios, such as semi trucks. Of course, among the most interesting questions concerned police stop experiences. The most basic item measures whether the person has been stopped in past 12 months by police. Among those who have been stopped, an additional set of questions asked how persons were in the car at the time of the stop, the level of

jurisdiction of the officer making the stop, the reason provided by the officer for the stop, the outcome of the stop, such as a warning or ticket, and an evaluation of the level of respect the driver was treated with by the officer.

These items can be placed into categories that summarize driving practice by individual drivers. The following question sets summarize question wording and response categories for the items assigned to these groupings:

Exposure to Stops

- Approximately how many miles do you drive in a typical week? *0-9999*
- How often do you drive on a primary interstate in North Carolina, such as interstates 26, 40, 77, 85, and 95? *1 (never) to 7 (daily) scale*

Risky Driving

- When you are driving, do you always wear your seat belt? *Yes/No*
- When you are changing lanes or turning, do you always use your turn signal? *Yes/No*
- Are you the type of driver who picks a lane and sticks with it, or are you more likely to change lanes in order to get somewhere more quickly? *Yes/No*
- How about when you are on a two lane divided highway, when you get behind a car going under the speed limit are you more likely to stay behind them or look for a chance to pass? *Yes/No*
- Do you ever roll through a stop sign, that is not come to a complete stop before you proceed? *Yes/No*
- Do you ever speed up to get through a yellow light before it turns red? *Yes/No*
- While driving in North Carolina in the past year, have you been in an accident any time where a police officer stopped at the scene of the accident? *Yes/No*

Speeding

- What speed do you tend to drive on interstate highways if the posted speed is 65 (55) (35) miles per hour? *0-99*

Evading Stops

- Do you use any of the following techniques to avoid getting speeding tickets?
1 (never uses/does) to 4 (uses/does all the time) scale
- Cruise control?
- A radar detector?
- Listen to a CB (Citizen Band) radio?
- Watch and follow the speed of tractor trailers or semi trucks to avoid getting a traffic ticket?

Stops

- Have you been pulled over by the police anywhere in North Carolina in the last year for any reason? Yes/No
- Was the officer a state trooper, a county sheriff or a local police officer?

Conceivably all of the question items drawn from the questionnaire are prone to reporting errors. While questions about police contacts may be more sensitive to respondent reporting error, all of the questions ask respondents to summarize typical driving behaviors, some of which may implicate the respondent in unlawful driving behavior. It is somewhat naïve to expect that the reporting error is likely to be random across the sample. For example, if there is one or more racial patterns to the structure of reporting errors, estimates of driving habits and behaviors, let alone police contacts by race could bias estimates of racial differences in legal factors thought to cause an increased likelihood of a police stop. The issue of measurement error is described in more detail below.

Nevertheless, these five question groups provide the capability for evaluating the legal basis for stop patterns by police in North Carolina. If it is found that respondents who self report higher levels of miles driving, interstate driving, varieties of risky driving, speeding, and evading stops are more likely to be stopped by police holding race

and other extra-legal characteristics constant, then one can conclude that racial discrimination in the stop patterns of police is not occurring. On the other hand, if we find that race and other extra-legal characteristics are predictive of police-initiated stops over and above legal factors, then there is evidence to conclude that police stop practices are discriminatory.

MEASUREMENT ERROR

Virtually all of the questions asked in the survey may be considered intrusive or sensitive questions since they ask people to potentially self-report violations of legal regulations that govern driving on public roadways as well as contacts with police that may possess some amount of personal stigma, shame, or embarrassment. As a result, the responses to these questions may be prone to response bias. Respondents may not be willing to admit to potentially embarrassing and illegal driving behaviors and experiences. Response bias that results in a tendency to under-report behaviors is called negative bias. The intensity of the negative response bias is likely to vary across respondents. Some respondents will likely see nothing wrong or harmful in reporting their own speeding behaviors or the number of times they have been stopped by police in the past 12 months. Others may be hesitant to report some of their driving experiences, such as stops by police, but not other behaviors, such as speeding. A further complication is recall failure in that some respondents may simply be unable to remember events, including a police stop or an estimate of their typical driving activities, they have experienced recently.

In contrast, there is also reason to expect that reports of police stops may be

somewhat inflated since the survey asks respondents to recall stops that have occurred within a bounded time period, within the 12 months prior to the interview. In asking questions bounded by a time frame, there is a tendency to recall the timing of the event as more recent than it actually occurred. For example, a person who was stopped 15 months ago may recall and report the stop occurring within the 12 month time frame referenced in the telephone interview. This source of reporting error, known as telescoping, is problematic because it introduces positive bias, or over-reports, to data used to establish the prevalence of stops by police. Telescoping will result in inflated estimates of the total number and rate of police stops. If telescoping is patterned by the race of the respondent then tests for race differences in stops may artificially reflect the structure of recall and reporting habits rather than empirical reality. In addition to telescoping effects, some have suggested that a political motivation exists for certain persons, especially African Americans or other minority groups, to exaggerate the extent and nature of contact with police because it increases the likelihood that police officers and agencies will experience criticism for employing (presumed) discriminatory practices

In order to address concern about response bias, a separate survey was administered that served as a reverse record check on a special sub-sample of North Carolina licensed drivers who had been convicted of a speeding violation in the 12 months prior to the survey. The second survey, known as the Reverse Record Check (Czaja and Blair 1990), was designed to provide some basis to account for error in the data drawn from the general sample of Black and White licensed adult drivers in North Carolina. The second survey employed a subset of the same questions about driving

habits, experiences with police stops, trust in police and community authorities, and demographics. In all, 605 interviews were completed using a similar race stratified survey sample design as was employed in the general survey of North Carolina adult licensed drivers. Data collected using the second survey is useful for assessing response bias because the sample of approximately 300 Black and 300 White drivers are known to have been stopped for speeding in the past 12 months. If response bias were not present, the sample, drawn from North Carolina's Administrative Office of the Courts records, should yield affirmative responses for close to 100% of the sample to the question about being stopped by a police officer in the past 12 months. To the extent that respondents under-report being stopped by police, we can gauge the level of response bias. Further, we can gauge whether the response bias is patterned according to race and other demographic factors.

Contact information for those in the Reverse Record Check was subject to the same process as described above for the general driver survey. In general the reverse record check sample echoed the patterns of response, cooperation and driver demographics associated with the general driver survey. Table 5.9 shows, for example, that the reverse record check sample was 1.25 years older on average for Whites and 2.41 years old on average for Blacks than the sample frame of recently convicted speeders. It also produced sample data that over-represents White men and under-represents Black men. Nevertheless, this sample, like the broader survey sample, is generally quite representative of the Reverse Record Check sample frame.

The primary utility of the Reverse Record Check survey is to determine whether

response bias is a part of the structure of self-reporting police stops, the extent of response bias, and to discern any race differences in under-reporting police stops. The reverse record check revealed that under-reporting of stops was common; though a substantial majority of recently convicted speeders who participated in the survey did in fact admit to being stopped by police in the past year. Table 5.10 shows white respondents were more likely than Blacks to admit a recent stop by police for speeding. Specifically, 74.7% of whites reported having been stopped in the past year compared to 66.9% of Black drivers interviewed meaning Black respondents were roughly 1.3 times more likely than Whites to fail to report a police stop in the past 12 months. Table 5.10 is presented in order for readers to better judge

Unfortunately, the utility of the reverse record check survey data is arguably limited to police stop information because validation data about respondents past driving behaviors, aside from self reported stops by police, are unavailable. Therefore, how to interpret race differences in self-reported driving practices, such as average miles driven, risky driving, and typical driving speed is less clear. Table 5.10 shows that among the reverse record check sample of drivers who have been convicted of a ticket in the past year, race differences emerge in driving practices, with Whites reporting more miles on the road, Blacks more likely to roll through stop signs, and whites self-reporting higher speeds driven in 65 mile-per-hour zones.

One might logically expect the structure of self-reports about these behaviors to mirror self-reported police stops because these items ask respondents to potentially disclose illegal driving practices. Disclosing illegal driving behavior may be prone to the

same stigma affects as reporting a police stop. However, a contrary, though equally plausible, argument about how to treat these items is that driving behavior items have very different bias structures. These items do not require respondents to admit interaction with police and appearance in a traffic court. Instead they focus on behavior that, while illegal in many cases, is often a normative, expected part of driving a car, truck, or motorcycle in contemporary North Carolina. Thus, the question of weighting the data hinges upon which line of research and reasoning one finds more convincing.

Therefore, speculating about the reasons for failure to recall a traffic stop by police in the past 12 months is tenuous. The fact that under-reporting is structured by race also complicates the picture. The higher relative level of Black recall difficulty may be attributable to the interactional stigma of self-reporting illegal behavior or punishment in the context of a phone interview that is more salient for Black respondents than for whites. Race of interviewer effects may also be operating to increase the likelihood of Black recall difficulty of police stops – a large majority of interviewers were white.

Perhaps a broader question is the source of under-reporting. That is, are respondents failing to report stops by police due to the stigma or threat to social desirability of admitting a police stop, or are respondents simply burying stop experiences in the recesses of their cognitive reach? Are those who fail to report a stop when one has occurred lying or forgetting? One literature that sheds some limited light upon issues of self-reports, recall, and social desirability is delinquency research.

Delinquency research frequently relies upon self-report data and therefore faces similar dilemmas of data validation, which has been a topic of methodological inquiry in

delinquency studies.¹² Aside from pure validation, delinquency studies have also been concerned with measuring group differences in the criterion validity of survey sample data (Elliot and Ageton 1980). Delinquency, like police stops, possesses the potential to attach stigma to those who reveal delinquent involvement. On the other hand, it may be reasonable to expect that delinquency and the questionnaires designed to measure delinquent behavior, like police stops, are focused on relatively trivial acts, and therefore less prone to under-reporting by respondents, even those otherwise concerned about not violating social desirability standards. In certain parochial contexts, admitting involvement in delinquency may confer status to the respondent. This expectation is akin to the expectation by some that racial minorities will exaggerate the frequency or tenor of their interactions with police as a claim to political status as a victim of racial profiling.

One significant difference between delinquency validation studies and the current survey is the mode of administration. Delinquency surveys tend to be administered through paper and pencil methods. More recently and in an effort to minimize response errors that may be primed by interaction with a human interviewer administering a telephone survey, Paschall, Ornstein and Flewelling (2001) have used a newer audio-assisted self administered questionnaire methodology.

Due to the ambiguous nature of recall and how to properly weight the self-report data, all analysis that follows is based upon un-weighted survey data. Following the practice of the most recent Police-Public Contact Survey supplement to the National

¹² See, for example, Hindelang, Hirschi and Weis (1979) for discussions about the validity of self-report measures relative to official sources of data on delinquency.

Crime Victimization Survey (Schmitt, Langan, and Durose 2002), no weights will be introduced to account for reporting bias that may enter into the data collection process. The Police-Public Contact Survey provides the best estimate yet of the national incidence of police stops and use of force. The Police-Public Contact Survey uses a six month recall period for respondents, half that of the North Carolina General Driver Survey, and therefore may be somewhat less open to criticism about reporting error due to recall problems among respondents. Despite this apparent questionnaire design advantage, all questions about police contact are subject to the same problems of reporting errors discussed above, including recall, forward and reverse telescoping, and social desirability issues. In addition, this approach is justified by the somewhat exploratory and descriptive nature of the study and subsequent analyses. This approach is an analytic decision that possesses a higher immunity from criticisms that any weighting scheme employed might be a less than empirical factor underlying the analytic outcomes of the study.

Since we know from the reverse record check survey that Blacks are somewhat more likely to under-report stops than whites, analysis of the un-weighted data should produce results that tend to lessen any racial disparities in stops or other driving measures. Thus, analysis of the raw or un-weighted data produces tests that will be based upon the most conservative estimates of race differences in driving behavior and stop experiences among North Carolinian drivers. From a statistical standpoint, this strategy is unattractive because it increases the risk of committing a Type II error, failing to reject the null hypothesis (of no race differences), when the null should be rejected. In other

words, the raw data may show no race differences in either driver habits, police stop experiences, or the relationship between driving and stops when in fact such differences do exist.

INDIVIDUAL LEVEL DATA

Dependent Variable Measures

The outcome of interest is police stopping behavior, which along with ticketing and searches have come to be defined as the components of racial profiling research. Of course, these acts are also what we expect our police to do as a legitimate part of the police function of encouraging public safety. The rub is how to distinguish police stops and ticketing that are legitimate from those that are outcomes of bias, whether the source of the bias resides within the driver/officer interaction, driver characteristics, officer characteristics, the department, or the community. Regardless of the mechanism that underlies stops and ticketing by police, clearly some very basic measures must be employed to determine the average likelihood of being stopped and ticketed by a police officer in North Carolina.

POLICE STOPS

The survey questionnaire asked respondents to report information about the three most recent police stops that have occurred in the past 12 months. The same set of questions was asked about each of the three most recent stops during this time period. In all, 629 reported at least one stop of which 166 drivers reported more than one stop. The validity of information is likely to be greatest among the data collected about the first stop since it is likely to be fresher in the memory of all respondents. As such, the

analysis that follows focuses on the most recent stop reported by respondents.

With this constraint established on the stop data to be employed, this research makes use of two dependent variables: data gathered in response to a question about having been stopped by police in the past 12 months, which is drawn from survey responses to the yes/no question, (*Have you been pulled over by the police anywhere in North Carolina in the last year for any reason?*). The stop event and the police decision that underlies it are what triggers all other penalties or costs associated with the police/driver interaction that ensues after the stop is initiated. Without the stop event all other outcomes are impossible. This is not to say that the stop, whether accompanied by more intrusive police actions or not, is without cost to drivers. On the contrary, police stops serve to produce social control, have the potential for social psychological costs to drivers, and may serve to embarrass or publicly shame drivers. Therefore, the stop event itself is a useful event for analysis of police behavior as social control.

The second question that contributes to the construction of the dependent variables provides self-report information about the type of police who stopped the driver – of those who reported a stop in the last 12 months. Respondents were asked whether the police who made the stop was a state highway patrol officer, a local police officer, a county sheriff, or some other kind of police. Recall of the police who made the stop was improved by describing the uniform and car of the NCSHP, to distinguish state police stops from all others. From this question, police stops were categorized into either NCSHP stops or local police stops (all other stops) that formed the basis for two separate dummy variable outcome measures (0=no NCSHP stop; 1=NCSHP stop) and (0=no local

police stop; 1=local police stop).

Independent Variable Measures

Conceptually there are three theoretical levels of explanation highlighting different exogenous factors expected to be related to social control in the form of police automobile stops and ticketing. These three conceptual levels include driver, and organizational and community level factors, all of which are expected to capture some of the most important theoretical relationships that underlie more aggressive policing in local contexts. These conceptual factors include driver level status characteristics that police officers use to gauge interactional power differences. Driver level factors also include the legal factors related to driving behaviors that are expected to explain some substantial portion of the police stop decision.

It is also critical to control for the relative supply of stop opportunities by police officers in terms of the volume or extent of drivers on the road, which is measured at the individual driver level in terms of the volume of driving distance. In addition, operational and institutional factors inherent in the social organization of different types of police departments are important to consider. For example, police departments will vary in terms of their legalistic orientation as well as their orientation toward traffic stops, both of which should impact the amount of officer-level discretion in making traffic stops. Community level factors set the context for locally grounded meanings of race, crime, and social threat, all of which are expected to provide officers with cues about how to respond to motorists with different status characteristics. The operationalization of these conceptual elements linked to policing outcomes is described

below.

Driver-Level Measures

TYPICAL DRIVING

An index that sums the responses to yes/no questions about typical driving decisions indicating the driver's self-reported risk-taking behind the wheel. The index is composed of six of the items outlined previously and abbreviated as 1) Seatbelt usage; 2) Turn signal usage; 3) Change lanes; 4) Passes slower cars; 5) Roll through stop signs; 6) Speed up to get through yellow stop lights. Therefore, the variable summarizing risky driving is an index that ranges from zero to six in value.

RECENT ACCIDENTS

A second variable is constructed from accidents occurring in the past 12 months in which a police officer responded to the scene. This information is drawn from the driver's self reported accidents of this nature in the questionnaire. Accidents in which police respond are distinctive in that police respond primarily to accidents that are relatively severe. As such, these events, on average, indicate more dangerous driving by respondents.

Both of these indicators may account for legal driving factors that could increase the likelihood of risk for a police traffic stop. To the extent that recent accidents reflect care and attention in driving behavior, a second variable is constructed from drivers' self-reported involvement in an accident over the past 12 months. The item does not possess information about whether the driver was at fault.

DRIVING CONVICTIONS

Also included in the domain of risky driving is a measure derived from Division of Motor Vehicle Records about the number of convictions for driving related incidents the respondent has on record with the state of North Carolina. This provides some additional information about the career of risky driving behavior among respondents. Because it is drawn from a secondary source (DMV) it is immune from concerns about reporting bias attributable to survey respondents. For example, a respondent may under-report his typical driving speeds, but the DMV record of past driving convictions, which should be greater for frequent and serious speeders, provides a check on this sort of measurement error.

Unfortunately, aside from the driving habits of the respondent, this measure may also reflect police practices in the past. Past driving convictions may be an outcome of respondent behavior, but may also possess elements of police bias in terms of stops decisions and outcomes that led to a conviction. If police bias regarding driver race exists, it creates a dilemma about whether to employ the measure in models predicting stop likelihood. Using a measure that taps past police bias to predict current bias will limit the explanatory power of several of the other key predictive variables in the models. Therefore, the measure will be included in some models and not in others to gauge what effect its impact may have on either the variables with an extra-legal or bias focus versus variables that measure one's frequency or degree of driving aggressiveness, traffic violations, and driving volume.

SPEEDING

Speeding is a prominent driving behavior and is likely to be among the primary

reasons for police stops. According to a recent National Institute of Justice survey of citizens' contact with police in the US, approximately half of all contacts are due to traffic stops of which approximately half are due to speeding (Langan et al. 2001).

The survey asked drivers to self report typical driving speeds in each of three common speed zones, 35, 55 and 65 miles per hour, which correspond roughly to local streets, state highway roads, and interstate highways. The speeding measure is the summed difference between the hypothetical speed limit and the typical speed reported by respondents.

Driver Level Control Variables

EXPOSURE

A subset of control variables are included to account for driver level variation in exposure to stops. Exposure to stops by police is thought to be related to a driver's relative level of road time or distance. The predicted relationship between exposure and stops at first seems to be fairly straight-forward. The amount of driving one does should logically increase one's chances of being stopped by police because it increases the potential for illegal driving as well as the potential for chance encounters with police officers on the roads. On the other hand, more experienced drivers, as measured by more time or miles driven on the road, may be better able to avoid being stopped by police since they may be more attuned to the culture of the road, including cues from other drivers about the presence of police on the road, local knowledge about where police tend to make stops on frequently traveled routes, and so forth. Time or miles on the road is measured with a self-report item asking drivers to estimate the number of miles driven in

the past year. Because the distribution of this variable is quite wide, miles driven per year is transformed using the natural logarithm.

INTERSTATE DRIVING

In addition to the volume of driving, the extent of interstate driving, especially salient perhaps for stops by certain kinds of police such as the North Carolina State Highway patrol, was asked in the driver questionnaire. The extent of interstate driving is a seven item scale ranging from never to daily.

POLICE EVASION TECHNIQUES

Another related control variable is a scale constructed from four questions designed to measure the use of stop avoidance techniques and devices. Specifically, the frequency of usage of each evasion technique or technology (measured using a four point scale ranging from does not use/do to uses/does all the time) is summed and divided by four.

$$\frac{\text{Frequency of Usage of: (Cruise Control + Radar Detector + CB Radio + Follow Traffic)}}{4}$$

Driver Level Demographics

A number of demographic characteristics that measure aspects of driver social status are also included in the empirical models, including race, gender, age, education, home owner, and age of car typically driven. These basic measures are fundamental to testing whether extra-legal characteristics of individuals are important sources of police behavior in making traffic stops and ticketing motorists.

RACE

The race measure is constructed as a dummy variable with white racial status as the reference category (0=white; 1=Black). The data are drawn from DMV data on the race of licensed drivers discussed above. Only drivers who were categorized as white or Black by DMV were eligible for inclusion in the survey sample, although a look at the self report data on respondent race suggests that drivers who self identify as members other racial and ethnic groups are certainly included in the data. However the judgment of DMV personnel in assigning a white or Black racial status to the drivers in the sample are likely to reflect the same appearance norms of race that would operate in the judgment of police. Therefore, the DMV data on race is used.

Driver race is one of the most important elements of status difference thought to be tied to social power, and hence, police behavior. Black drivers are thought to be more likely to be stopped by police than white drivers, holding other factors constant. This is in part an outcome of a number of potential processes that may be operating to produce racial bias among police. Following Black (1980), the social distance embodied in status differences between police and Black motorists provides a conceptual expectation for bias linked to driver race.

GENDER

Gender is also a dummy variable constructed with female as the reference category (0=female; 1=male). Following similar logic, the gender data are derived from DMV records about the sex of the driver. Gender is an important element of status which may impact police decision-making, and because of its connection to risk-taking behavior, it may extend to driving habits and behaviors as well. One reflection of gender

differences in driving is the use of gender by auto insurance companies in assessing the cost of insurance policies. Male drivers are generally charged higher premiums initially reflecting a greater likelihood to violate the law while driving and/or to be involved in traffic accidents.

AGE

Age is a proxy measure for driving experience, and like gender, is used by the insurance industry to gauge collision and other driving liability risk. It is also clearly a basis for status difference, as younger persons possess less social status both formally and informally. As such, age is important as a measure of both risk for driving habits that may attract police stops and for social status differences that may theoretically increase police attention.

EDUCATION

Education is an important aspect of social achievement and reflects to a limited extent the social class, or socio-economic status of drivers. It is treated primarily as a control variable since education is not something that is visible in the sense that police can distinguish on sight between drivers of different educational levels. It is a categorical variable with seven levels of educational achievement.

HOME OWNER

Home ownership status is an indirect measure of social class. It is a dummy variable with renters treated as the reference category (0=renter; 1=owner). Like education, it is difficult to distinguish among home owners and renters from their appearance, which may seem to limit its theoretical utility as a predictor of police stops.

But because home ownership is likely to be correlated with other status indicators, such as race, age, and education, it provides a useful purpose.

AGE OF CAR

The age of the car is derived from self-reports about the car driven most frequently for those who did not experience a stop in the last year, or the car being driven when a stopped occurred. It is another proxy measure of social class, as poorer persons are more likely to have older cars. Characteristics of the vehicles people drive are thought to be important sources of information utilized by police in assessing whether to make a stop. The age of the car may also serve as a proxy measure for the condition of the car, as older cars should, on average, be in worse condition than newer automobiles. Thus, the age of the car is an important measure of driver status on the road as police may use violations associated with the poor condition of a vehicle as a reason to make a stop.

POLICE TYPE

A final stop level measure serves as the only available indicator of the influence that police organizational factors may have on stops and ticketing. Respondents were asked to identify whether the police officer who made the stop was a North Carolina State Highway Patrol officer or not. Stops conducted by officers who are not NCSHP tend to be conducted by officers from local police departments and sheriff(s) departments. Because this measure is a dummy variable (trooper stop/ticket or local stop/ticket), it is built into models that predict the likelihood of stops by NCSHP and by local police. This provides a way to test the conceptual expectation that organizational factors influence the mechanisms that underlie stops/ticketing by police. While this uni-dimensional measure

of police organization is less than ideal, it does provide a meaningful distinction between broad police categories. The measure, while somewhat coarse, is better than no information about the police organization.

Local Context Data

The foundation for the conceptual expectation that local contextual factors are important influences on traffic stop likelihood (aggressive policing) as well as racial differences in the intensity of policing experienced by Black and white drivers emanates from a variety of literatures focused on racial threat, racial competition, and social control outcomes, especially the volume and intensity of policing. The contextual measures are relatively simple structural measures constructed from 1990 and 2000 Census data at the county level. In all, five contextual measures are used in the models.

RACIAL COMPOSITION

Racial composition of the local community is measured by calculating the percentage of the 2000 population that is Black for each county. While less desirable than a dynamic measure of change over time in the size of a racial minority population, the percent Black in the community has been used by others to measure the relative impact of racial composition. Therefore, it provides a satisfactory measure of local racial threat. Its theoretical role in influencing the nature of race relations and subsequent levels of racial inequality are also important. Larger Black populations are thought to increase the level of threat perceived by local whites and to exacerbate race-based economic inequalities.

The police and social control literature provides reasons to expect that as the

percent of the Black population increases, the salience or likelihood of Black racial status for individuals within these contexts to result in police stops also increases. This is conditioned, in part, by an association between concern about public safety and the Black population in a given area, which constitutes one form of social threat racial minorities represent to whites. The counter expectation is that as percent Black becomes smaller, Black drivers may increasingly draw attention from police in the form of stops precisely because they stand out. Again, the importance of racial status differences between the local area (measured by racial composition) and the driver may be more likely to be primed in areas where concern about public safety and crime is greater.

The group level percent Black also will be used to account for variation in county level sampling probabilities. The race-stratified sample design was administered at the state level. There was little attention at the time of sample design or administration about the geographic distribution of respondents, or, even more importantly, the race-specific geographic distribution of respondents in smaller units of analysis.

RACIAL INEQUALITY

Racial Inequality is constructed using a modified GINI coefficient that compares the proportion of Black households across nine income categories to the proportion of white households in the same income groups within each county in the state. This is constructed by summing the absolute value of the difference between the race specific proportion of the population in each income group. The nine income categories (1=\$0-\$4,999; 2=\$5,000-\$9,999; 3= \$10,000-\$14,999; 4=\$15,000-\$24,999; 5=\$25,000-\$34,999; 6=\$35,000-\$49,999; 7=\$50,000-\$74,999; 8=\$75,000-\$99,999; 9=\$100,000 and up)

represent the full range of gross household incomes. Racial inequality is then computed as:

$$\text{Racial Inequality} = |((b1/B)/(w1/W))| + |((b2/B)/(w2/W))| + \dots + |((bn/B)/(wn/W))|$$

Where

- b1= Number of Black households in income category 1 (\$0-\$4,999),
- b2 = Number of Black households in income category 2 (\$5,000-\$9,999),
- bn = Number of Black households in income category n,
- B = Total Black households,
- w1 = Number of white households in income category 1 (\$0-\$4,999),
- w2 = Number of white households in income category 2 (\$5,000-\$9,999),
- wn = Number of white households in income category n,
- W = Total white households.

Higher scores indicate greater dis-similarity in the racial distribution of household income and thus racially specific inequality. The data are drawn from 1990 US Census data at the county level. The use of 1990 data is designed to allow for the potential for lagged effects in the impact of racial inequality on the structural and cultural milieu of police organizations in a given locality.

POLICE PER CAPITA

The rate of police officers is a measure designed to control for local variation in the resources dedicated to the criminal justice system and the crime problem, however conceived locally. County level data were culled from the 1997 Census of State and Local Governments conducted in 5 year intervals by the US Census Bureau. Because counties frequently have small populations, the rate is constructed per 1,000 residents.

The measure then tells us the number of officers per 1,000 residents within the county. Presumably it is safe to assume that contexts with higher police rates will also have higher stop rates, holding other factors constant.

CRIME PER CAPITA

Another measure of the crime problem in communities is the crime rate, which is constructed from data found in the 1998 Uniform Crime Reports (United States Department of Justice 2001). Specifically, the models will include the rate of drug crimes per 1,000 residents, which may be as minor as small possession to more serious drug crimes, such as drug distribution. Aside from controlling for resource demands on local police departments in areas away from traffic, the drug crime rate provides a measure of local threat, particularly when combined with larger percentage Black populations. The drug crime rate is included since conceptions of racial threat in the 1990s may be linked more to drug crimes than to serious violent crime. The origin of the term “profile” is linked to interstate drug and gun couriers, so including a local measure of drug-centered threat is attractive.

POPULATION DENSITY

Another control variable intended to measure an important community level influence on police activity is density. The density measure is based upon 2000 Census data that takes the number of persons in the county and divides by the number of square acres in the county.

POLICE DEPLOYMENT

Aside from the volume of police per capita or the demand for police resources, a

more direct measure of the spatial organization of police placement would serve as a mechanism to identify the relative importance of local racial composition compared to traffic volume, enforcement, and response by police that is elevated on certain roads, such as interstates, in predicting the likelihood of a traffic stop. For example, the roads that police patrol may be located in communities with larger racial minority populations. This may be especially important for models of stops by the NCSHP, who are more likely to patrol interstates and state highways. The racial character of residential patterns along North Carolina's interstate routes is well known and has arguably been the basis for one of North Carolina's congressional districts.

The racial residential pattern surrounding interstates and state highways suggests that models that fail to account for police deployment may show that communities with larger Black populations increase the risk of a stop for Black drivers or even for all drivers. Yet such a finding may simply reflect police deployment patterns that are tied to the relative volume and driving patterns of roadways in areas with larger populations of Black residents. Thus, a measure of police deployment is a valuable contextual measure to employ for NCSHP models. Data on NCSHP deployment patterns are derived from the citation volume for NCSHP officers within their patrol districts for 2000. The use of citations as a measure of deployment is based upon the assumption that NCSHP districts with interstate or other highways have higher traffic volume and correspondingly higher citation counts.

Table 5.11 presents a summary of the different levels of independent variables and classifies the measures according to this schema. Combined, the driver and driving

measures provide the basis to rule out group average differences in legal reasons for stops. Measuring driving behavior and experiences, particularly with self report methods, is difficult for all the reasons outlined above. However, the additional information these data provide allow for theoretical testing that is much more capable explaining whether police are acting upon driver characteristics, driving behaviors, community factors, or some combination of two or more of these factors.

ANALYTICAL PLAN

These data, drawn from individual survey responses and county level official sources of population, economic, and criminal justice data sets, will be integrated to test a multilevel model of police stops. It is possible and quite common for researchers to enter variables drawn from different levels of analysis into conventional single level linear models. However, such strategies can be improved upon in a number of ways simply by employing multilevel modeling techniques that exploit the hierarchical nature of the data (Raudenbush and Bryk 2002).

Multilevel modeling techniques are more appropriate for modeling data that have a hierarchical structure because it accounts for violations of the assumption of traditional regression techniques that the error terms of all variable measures are independent (Rountree and Land 1994). For example, with hierarchically structured data it is likely that the individuals within groups or community units are more like one another in certain characteristics than others in different group settings. This basic insight is at the core of sociology. Contextual questions concerned with the unique multiplicative effects of group life over and above the additive qualities of individuals have been a concern of

sociology since its inception as a discipline (Durkheim 1982). As such, it should not be assumed that the measurements taken from respondents in the same local area possess randomly distributed error terms.

Hierarchical linear modeling (HLM) accounts for this violation of independence of errors. In the analysis of these data, a special application of HLM techniques will be employed to account for another violation of ordinary regression data assumptions which these data possess, namely, the binary nature of the dependent variables. Being stopped by police (or not) and being ticketed (or not) are outcome measures with constrained values of 0 and 1. The appropriate regression technique would entail logistic regression, which essentially logs the outcome variable so that it approximates a linear and normal distribution as opposed to its raw non-linear form. For the current analysis, the appropriate model is a multilevel logistic regression, what is described as a hierarchical generalized linear model (HGLM) by Raudenbush and Bryk (2002).

What follows in the Analysis chapter is a summary of the HGLM models. Specifically, one set of models is presented that is concerned with explaining police stops and a separate set of models is presented which is focused on explaining stop outcomes as measured by whether a ticket was issued or not by police. This analysis separates these two events even though they are theoretically and practically linked. However, because stops are relatively rare (605 stops among 2920 driver interviews) and tickets are the result of approximately half (.509) of all stops, missing and incomplete data make it difficult to build reliable models with stop outcomes nested within stops nested within drivers nested within localities.

Another alternative is to treat the ticket as a more serious or punitive version of a police stop, which suggests an ordinal character to the outcome data. This conceptualization of the outcome variable would allow for stops and tickets to be modeled in the same equation, which is more parsimonious by limiting the number of models to be built. However, it also creates a conceptual dilemma because an ordinal outcome measure of stops and tickets presumes that the structure of stop decisions and tickets are similar and can be explained by a single model. To the contrary, the research literature on racial inequality and the literature on police bias both suggest distinctly different mechanisms for decision making for these two types of decisions. While the decision to stop and the decision to issue a ticket are both traffic related and occur in sequence, the basis for each decision is somewhat unique. This argument supports an analytic approach that builds two separate groups of models for stops and for ticketing.

UNIT OF ANALYSIS

The lowest unit of analysis is the police stop event which is nested within drivers driving experiences on the roads of North Carolina. Police stops and drivers driving are all nested within local community areas that are predicted to have contextual influence on the nature and meaning of race and social control within the given locality. A couple of design issues are evident from this conceptualization of the model hierarchy. The first of these is to acknowledge that the potential for committing an ecological fallacy (see Robinson 1950) is quite possible, even likely, when one makes the assumption that all of the police stops reported by drivers occurred within the local area or community (e.g. county) of residence without verifying the county where the stop occurred.

While official police data provide a very clear and simple way to record the location of the police stop, self report surveys are less adept at measuring the location of the stop at the county level. Questions about where the stop took place are prone to increased respondent suspicion about the purpose of the survey and are likely to result in a large proportion of missing data as many respondents would be unable to identify the county or jurisdiction where the stop occurred.

Certainly it seems reasonable to assume that most persons who are stopped in an area are likely to be residents of that area. However, the very nature of transportation is that it is mobile, and so to assume that a driver who reports a stop necessarily experienced the stop in their county of residence is unrealistic. Nevertheless, it is true that the structural similarities of social areas are a function of their spatial proximity to one another. Part of the statistical rationale for multilevel modeling derives from this spatial tendency, otherwise known as spatial auto-correlation (Doreian 1980, 1981). In statistical terms, this means that the error terms associated with geographic data are not likely to be randomly distributed, but instead tend to be linked spatially like a matrix based upon the spatial distance between the unit under consideration and the other units within the study area. The likelihood of driving, and hence, being stopped by a police officer are inversely related to the distance between the county of one's residence and the county the stop takes place in, unless there are special circumstances of habit or activities that dictate frequent driving in far-flung counties, such as work, personal relationships, etc. In general those counties closest to one's county of residence are more alike than different in social area characteristics.

The second analytical issue related to the unit of analysis is the choice of what constitutes a local area. The lowest feasible group or community level unit is the county. Counties as units are desirable for a couple of reasons. Specifically, county data on racial composition, inequality and criminal justice aspects of the local area unit are readily available. Further, counties are jurisdictions that have their own unique composition, the boundaries of which are recognized by residents and non-residents alike. While far from a natural area in the classical social ecology sense (see for example Park and Burgess 1924), counties do possess unique community attributes that function to differentiate life chances and provide the basis for local community identity.

The state of North Carolina is divided into 100 county units. The survey sample included interviews with drivers from 96 of the 100 counties in the state. Of the 96 counties that are represented in the survey sample, 17 have 5 cases or fewer, and 35 counties have 10 or fewer cases. The spatial distribution of completed cases mostly reflects county differences in population as evidenced by a correlation of .97 between the number of cases completed and the county population according to 2000 Census data. This creates problems for the multilevel analysis because the reliability of slope and coefficient estimates for the group units will be very low. Groups with very few observations provide unstable estimates. This is compounded by the nature of the outcome variable and the analytic goal of detecting group differences in the outcome within and between the group-level units. With a large proportion of counties possessing 10 or fewer observations, it makes assessing the race difference in the likelihood of a police stop somewhat tenuous. Increasing statistical power in a multilevel model can be

done by increasing either the number of group units or the number of observations per group. In order to obtain enough power to sustain cross level interactions, Hox and Maas (2002) found that 30 groups with 30 observations per group, or 60 groups with 25 observations were sufficient. Treating the county as the group unit would yield 96 groups with an average of 30 observations. However, the range of group size varies widely from one to 285 cases for the most sampled county. Ultimately this makes county groups unattractive for multilevel analysis.

An alternative group level unit of analysis would be the North Carolina State Highway Patrol troop district, which are organizational units composed of counties designed by the state police department to guide patrol areas. The NCSHP maintains 53 such troop districts within eight troops across the state. The basis of the troop districts is certainly influenced by the spatial proximity of counties to one another as all districts are cleanly defined by some combination of county boundaries. Troop districts range in size from one county large to as many as five counties. Beyond the spatial proximity of the counties defining the district, it is unclear what distinguishes one district from another. It is not evident that social characteristics, structural or demographic, served as organizing principles for troop districts. From a conceptual standpoint, troop district units are somewhat artificial localities, and therefore less desirable than counties as group units for analysis.

Troop districts are more attractive than counties as group units in the multilevel analysis because they lessen the discrepancy in observations per group unit associated with counties. For example, the troop district with the smallest number of observations

possesses nine cases. Eighty-five percent of the 53 districts have more than 20 observations. Compared to counties then, NCSHP troop districts will offer more robust and stable estimates of group level slopes and coefficients. Thus, the analysis that follows employs the troop district as the group unit.

For either group unit, the sample is geographically distributed according to the unit's population probability. In other words, counties are represented in the sample at roughly the same rate as their population proportion relative to all North Carolina adults. The geographic distribution of the sample is complicated by the spatially distributed pattern of racial composition at the county level throughout the state. For example, due to the over-sampling of Black drivers, counties and NCSHP troop districts of all sizes that have large Black populations (relative to others) are likely to have larger groups of sampled drivers in the data. One implication from this and the discussion above is that counties with larger samples will yield more precise estimates in the multilevel models. Multilevel statistical models are asymptotic relying on Bayesian iterative estimation procedures to arrive at model estimates (Raudenbush and Bryk 2002). Thus, variation in the number of observations per group-level unit is addressed by the estimation procedures of the multilevel statistical model.

RESEARCH HYPOTHESES

Before moving to the data analysis and findings, it is worth returning to the theoretical expectations previously laid out in order to integrate the measures to be used in analysis with the conceptual frameworks developed thus far. Now that the data

measures have been introduced and described it is possible to formulate more precise expectations for the models that follow.

Individual Predictions

1) *Legal factors related to unlawful driving provide the basis for police stops.* The volume and normative nature of illegal driving, particularly in some local areas on some roadways, means police have ample opportunity to make stops at their discretion. This observation suggests a categorical relationship. That is, those few drivers who follow the speed limit or other rules of the road, are less likely than others to be stopped by police. Such a prediction implies a limited ability to distinguish among persons who violate the rules of the road. However, Black (1980) provides a justification for expecting that those who more severely violate traffic laws should be more likely to be stopped by police, even compared to others who violate the law, but do so at lower levels or less frequently. *The formalization of police authority to exert social control in the form of vehicle stops increases as the severity or volume of driving infraction increases.*

2) Like legal factors those who drive more often and drive larger volumes, as measured by miles driven per annum, should increase the chances of being stopped by police simply by increasing the odds that a driver will encounter a police officer at the same time that there is some cause for making a stop. *Thus, those who drive more should be expected to be stopped more often by police of all types.* This expectation summarizes the volume of unlawful driving and captures the odds of police discovery of unlawful driving behavior. The connection between group differences in unlawful driving practices and the likelihood of experiencing a stop may be exacerbated or minimized by

one's exposure to being stopped by police. The volume of time and distance driven measures such exposure.

Organizational Predictions

3) *Local police are more likely to rely on extra-legal factors in making and resolving traffic stops than the NCSHP.* The concrete ways that local police utilize extra-legal factors are generally expected to favor those with status power and penalize drivers who are of a lower social status than others. Minority racial status, women, younger drivers, those with less education, older vehicles, and who rent as opposed to own their homes are expected to be at an increased risk of being stopped by local police compared to the NCSHP. Gender may actually be an exception to the general expectation that lower social status drivers will have an increased likelihood of being stopped. Males may be perceived to pose greater threats to local social control, and not to mention more risky drivers than females. Thus the general prediction about status distance and the connection to social power may not accurately describe the expectations for driver gender. *With the exception of gender, as a driver's social status declines, the likelihood of a stop by local police increases, controlling for legal factors.*

4) *The impact of extra-legal factors is expected to be diminished for NCSHP stops compared to local police due to the higher average level of professionalism and organizational orientation towards traffic flow.* NCSHP officers are more likely, compared to local police, to rely upon legal factors that predict a police stop, such as average speed, driving habits that are more aggressive, those with recent accidents, and

lengthier traffic conviction records. As all of these driving practices increase, the likelihood of a NCSHP stop should also increase.

The impact of employing police stop evasion techniques is uncertain. On one hand, those who use such techniques more often should decrease their chances of being stopped, assuming these techniques are effective. On the other, use of such techniques are likely to indicate higher frequency and levels of unlawful driving behaviors, which is expected to increase the likelihood of a stop. From this perspective, increasing use of evasion techniques may increase stop likelihood, especially for NCSHP stops, but only indirectly as a measure of unlawful driving.

Also somewhat uncertain is the meaning of the age of the vehicle driven. On average these vehicles are logically more likely to possess (or fail to possess) characteristics that are required for safe driving. Examples of these equipment deficiencies indirectly measured by vehicle age are things like operational tail-lights, windshields free of cracks, load mufflers, and so forth. The condition of the vehicle is clearly also a measure of the driver's economic ability to maintain the vehicle properly. So this issue anticipates a question of interpretability. That is, if we expect older vehicles to be at an increase risk for the likelihood of a police stop, does it mean that police are using legal (the condition of the car) or extra-legal information (the social economic status of the driver of older cars) as a basis for the stop.

Contextual Predictions

5) *The greater the level of racial inequality, the greater the cost of Black racial status at the individual level in terms of social control efforts exercised by police.* This

hypothesis takes the form of an interaction effect between driver race and the level of racial inequality of the local context. That is, for Black drivers, racial inequality increases the cost of one's minority racial status in terms of the risk of being stopped by police.

6) *The quantity of law experienced by Black drivers increases in locations where large Black populations exist and where concern about the crime problem and its presumed association with Black persons is stronger.* Thus race differences in stops are likely to be largest in these areas compared to areas with smaller Black populations, less racial inequality, and less crime. Again this prediction takes the form of an interaction effect between driver-level racial status for Black drivers and the factors used to measure contextual racial threats (larger Black populations and the local drug crime rate). The meaning of being Black in contexts with increased levels of racial threat predictor increased disparities in the racial distribution of police stops which penalizes Black drivers more than white drivers.

7) *In contrast to the first two hypotheses, there is reason to believe that Black racial status may actually increase the likelihood of a police stop in communities with larger white populations because of increases in the social distance embodied by the status inconsistency that Black drivers possess in whiter areas.* This, too is a prediction that implies an interaction effect between driver race and racial composition, but in the opposite direction implied by the racial threat hypothesis. In other words, support for this hypothesis would be a negative relationship between stop likelihood for Black racial status drivers in areas with higher levels of Black racial composition. This expectation is

also tied to the focus of local police departments on community-specific patrol routines. *Thus, it is a prediction that is most germane for local police stops compared to NCSHP stops.*

8) *Racial inequality and composition have main effects on stop likelihood independent of driver race or other status characteristics.* The intensity of policing may be increased in contexts marked by increased racial antagonism where social control is exercised more severely than in communities with less racial inequality.

9) It is important to control for community characteristics, such as the demand for police resources, the ability of police to respond to such demand, and the concentration of drivers measured in terms of population density, which should be associated with the meanings of local traffic stops, and thus the likelihood of stops. Klinger (1997) and Black (1980) both build arguments that communities with larger crime problems, measured by the crime rate and associated with population diversity, mobility, and density, may increase the threshold of law violating tolerance by local police. Thus, the overall likelihood of a traffic stop may be decreased in such areas. *The increased crime problem and police focus on crime in more urban communities is expected to divert police attention away from traffic enforcement and result in a lesser likelihood of being stopped holding all other things constant.*

10) *A scope condition that is important for all of the contextual hypotheses is that all of the previous empirical expectations are built upon the assumption that localities are unique contextual settings that distinguish the social dynamics and meanings of race and policing for its residents. An extension of this is that race differences in the likelihood of*

a traffic stop by local police are more likely to be connected to community context. This assumption has important consequences for the importance of context on the behavior of different types of police agencies. Specifically, local police should be much more sensitive than the NCSHP to contextual factors that produce racial inequality and the potential for racial threat in terms of producing both racial disparities in police stops and in the overall likelihood of a police stop. Multilevel modeling approaches are expected to provide a superior analytic approach to explaining local police operating in communities across North Carolina. State police agencies such as the NCSHP do not possess the level of connection to local community conditions that local police departments possess.

These 10 hypotheses are tested in the following data analysis using the survey, population and criminal justice data sources described earlier. Preliminary individual level models are used to guide expectations for the multilevel models that follow. Multilevel analytic techniques are used to test the 10 hypotheses to determine the importance of legal versus extra-legal factors for different kinds of stopped, disaggregated by the police agency responsible for executing the stop (local police compared to state police).

Table 5.1 Sample Frame Age & Convictions for Gender and Race Specific Groups

<u>Race</u>	<u>Gender</u>	<u>Count (%)</u>	<u>Mean Age (SD)</u>	<u>Mean Convictions (SD)</u>
White	Male	3018 (.180)	44.84 (16.19)	2.34 (4.40)
	Female	3133 (.187)	44.79 (16.54)	.84 (1.94)
Black	Male	4986 (.298)	37.93 (14.77)	4.01 (5.53)
	Female	5586 (.334)	37.29 (14.43)	1.48 (2.64)
Total		16,723 (1.00)	40.23 (15.66)	2.27 (4.14)

Table 5.2 Descriptive Analysis of Telematch Results

	<u>Category</u>	<u>Matched</u>	<u>Total</u>	<u>Telematch Return</u>
Race by Gender	White Male	1896	3018	.628
	White	1877	3133	.599
	Female	2173	4986	.436
	Black Male	2179	5586	.390
	Black Female			
Age	18-29	2018	5054	.399
	30-39	1496	3668	.408
	40-49	1726	3463	.498
	50-59	1234	2132	.579
	60 plus	1650	2403	.687
Convictions	0	4068	7701	.528
	1-2	2259	4736	.477
	3 or more	1806	4316	.418
Total		8125	16,723	.486

Table 5.3 Age & Convictions for Gender and Race Specific Groups of Telematched Cases

<u>Race</u>	<u>Gender</u>	<u>Count (%)</u>	<u>Mean Age (SD)</u>	<u>Mean Convictions (SD)</u>
White	Male	1896 (.233)	47.26 (16.34)	2.00 (4.08)
	Female	1877 (.231)	46.65 (16.82)	.67 (1.65)
Black	Male	2173 (.267)	40.46 (16.17)	3.90 (5.60)
	Female	2179 (.268)	40.22 (15.92)	1.31 (2.41)
Total		8125	43.43 (16.63)	2.01 (3.99)

Table 5.4 Logistic Regression Model Predicting a Successful Telematch

	B (SE)	Log Likelihood
Constant	-.263 (.047)*	.77
Black	-.655 (.034)*	.52
Male	.219 (.034)*	1.25
Age	.234 (.012)*	1.26
Driving Convictions	-.070(.012)*	.93

Model Summary: -2 Log Likelihood = 22,019.6; Cox and Snell R² = .066

* p<.001

Table 5.5 Final Dispositions, Response and Cooperation Rates by Race and Gender

Race	Gender	Fielded	Non-Contact	Refuse	Complete	Response Rate ¹³	Cooperate Rate ¹
White	Male	1708	443	550	715	.418	.565
	Female	1699	432	507	760	.447	.599
Black	Male	2029	859	489	681	.336	.582
	Female	2078	841	473	764	.368	.618
Total		7514	2575	2019	2920	.389	.591

¹³ The Refusal Rate and the Cooperation Rate are calculated following AAPOR's formula for the most restrictive/conservative response rate, RR1, and cooperation rate COOP1, respectively.

Table 5.6 Mean Age for Final Disposition Groupings of Fielded Cases by Race & Gender

<u>Race</u>	<u>Gender</u>	<u>Mean Age (SD)</u>			
		<u>Total</u>	<u>Reject</u>	<u>Refuse</u>	<u>Complete</u>
White	Male	44.87 (16.18)	41.33 (17.38)	47.75 (15.79)	44.86 (15.28)
	Female	44.40 (16.72)	39.60 (17.70)	46.90 (15.85)	45.47 (16.16)
African American	Male	39.86 (15.78)	36.29 (3.52)	44.40 (16.41)	41.10 (15.25)
	Female	39.54 (15.63)	34.44 (13.35)	44.10 (16.31)	42.34 (15.96)

Table 5.7 Mean Motor Vehicle Convictions for Final Disposition Groupings of Fielded Cases by Race and Gender

<u>Race</u>	<u>Gender</u>	<u>Mean Convictions (SD)</u>			
		<u>Total</u>	<u>Reject</u>	<u>Refuse</u>	<u>Complete</u>
White	Male	2.00 (4.08)	2.70 (4.78)	1.93 (4.01)	1.60 (3.36)
	Female	.67 (1.65)	1.01 (2.20)	.66 (1.50)	.52 (1.25)
African American	Male	3.90 (5.60)	4.57 (6.30)	3.52 (5.47)	3.64 (5.10)
	Female	1.31 (2.41)	1.63 (2.79)	1.23 (2.17)	1.09 (1.97)

Table 5.8 Comparison of Sample & DMV Licensed Drivers Gender, Race & Age Data

Gender	Age Category	<u>Black</u>		<u>White</u>	
		Survey %	DMV%	Survey %	DMV%
Male	18-29	12.4	13.3	9.3	10.2
	30-39	9.4	11.8	8.7	10.7
	40-49	11.5	10.3	10.9	10.2
	50-59	7.2	6.2	9.1	8.1
	60+	6.6	6.0	10.4	10.3
Female	18-29	14.3	13.5	10.2	9.8
	30-39	8.6	12.6	9.1	10.4
	40-49	13.7	11.5	11.8	10.2
	50-59	8.2	7.1	8.9	8.3
	60+	9.3	7.6	11.9	11.6

Table 5.9 Race by Age and Gender Distributions Comparing Reverse Record Check Completed Cases and Sampling Frame

	Completed Cases	Sampling Frame
Black Mean Age (SD)	35.47 (13.58)	33.06 (11.98)
White Mean Age (SD)	34.55 (12.72)	33.30 (12.21)
% Black Female	19.8%	20.8%
% White Female	16.0%	15.0%
% Black Male	29.6%	34.4%
% White Male	34.5%	29.7%

Table 5.10 Race-Specific Reverse Record Check Data for Selected Survey Items*

	<u>Black</u>	<u>White</u>
Stopped by police*	66.9	74.7
Miles per week*	286.5	384.4
Roll Through Stops (yes=1)*	.45	.27
Speed (MPH) in 65 zone*	70.1	71.29

*N=605, White=304, Black= 301

Table 5.11 Summary of Independent Variable Measures by Level of Measurement

<u>Stop Level</u>	<u>Driver Level</u>	<u>Driving Level</u>	<u>Context Level</u>
Local Police Stop*	<ul style="list-style-type: none"> • Race 	<ul style="list-style-type: none"> • Miles per Year (LN) 	<ul style="list-style-type: none"> • Racial Inequality (1990)
NCSHP Stop*	<ul style="list-style-type: none"> • Gender • Age • Education • Home Owner • Age of Car 	<ul style="list-style-type: none"> • Interstate Driving • History of Driving Conviction • Speeding • Driving Habits • Recent Accident • Evade Techniques 	<ul style="list-style-type: none"> • Percent Black (2000) • 1998 Police Officers per Capita • 1997 Drug Crime Rate • Density (2000) • NCSHP Citations (2000)

* indicates dependent variable

CHAPTER VI

ANALYSIS & FINDINGS

This chapter describes the results of the hierarchical generalized linear models (HGLM) predicting police stops and stop outcomes. The measures described previously are employed to build multilevel models that account for contextual variation in the likelihood of police stops for local police and NCSHP officers. There are three characteristics of the conceptual approach and data that the statistical models must reflect: the non-linear (dichotomous) nature of the outcome measures; the potential for unexplained variation across county units, and the spatial connected-ness of individuals residing within county areas. Hierarchical linear models assume that the outcome variable (always measured at the lowest level of analysis) is linear and normally distributed. In the case of a dichotomous outcome measure, these assumptions are violated. Therefore, a series of Hierarchical Generalized Linear Models (HGLM) is employed (see McCollagh and Nelder (1989) for a discussion of standard linear regression compared to generalized linear models, and Raudenbush and Bryk (2002) for a conceptual discussion of integrating generalized linear models into the hierarchical model).

Described in the research methods chapter above, the measures used to model the outcomes are summarized in Table 6.1, which presents the unit of measurement for each variable and descriptive statistics on all measures included in the models. The outcome variables related to stops are intended to measure police social control. By breaking the

outcome variables into distinct groups, such as NCSHP trooper stops and local police stops, we are able to estimate contextual or across troop differences in police organizational characteristics (trooper compared to local stops). The individual level measures reflect a wide array of legal and extralegal factors thought to influence police decision making from the survey of North Carolina licensed drivers. A variety of legal factors are intended to measure different dimensions of police response to traffic violations, such as past driving record summarized in the driving conviction variable, typical speeding behavior, other typical driving behaviors including the frequency of driving violations or aspects of higher risk or aggressive driving practices, and behaviors intended to shield drivers from police attention, such as using cruise control or a radar detector. Another important driver level factor is the volume of miles driven in the past year, which increases the chances of being detected by police if and when one violates the law as well as the frequency one drives on interstate highways which are roads of special importance for the deployment of local police and NCSHP officers.

Extralegal factors are primarily characteristics of the driver, such as race, gender, and age, though they may also encompass the age of the car or other characteristics that describe the driver. Last are the contextual measures theorized to be important area influences on the likelihood of a stop, but more importantly on the meaning of driver race, and therefore the likelihood of a self reported traffic stop. Contextual measures are also useful indicators of police organization and tactics. Aside from differences in the meaning of driver characteristics in contexts with different levels of racial threat, the characteristics of communities may be very important influences on how police

organizations structure their resources. These decisions may be important to understanding organizational and community level variation in policing intensity measured as traffic stop likelihood. For example, communities differ in their level of traffic volume and flow, which is in part related to the types of roadways, such as interstates and highways, in a given community. The terrain and geography of community roadways as well the density of motorist destinations within communities may be important considerations for police agencies concerned with preventing automobile accidents or possessing the ability to respond quickly to accidents on community roads that have higher accident rates.

Table 6.1 presents the univariate descriptive statistics for the measures to be used in the statistical models. The descriptive data are informative in a number of respects. First, the most striking characteristic is the rarity of police stops. Combined, 22% of all respondents reported a police stop in the past 12 months. Approximately two-thirds of those who were stopped (14% of the entire sample) report that the stop was conducted by a local police department officer. The rest, or eight percent of the total sample, report a NCSHP traffic stop. As designed into the sampling strategy, roughly half (49%) of the sample is Black with the remainder white. The mean age of the sample is somewhat older than the state of North Carolina at 43.5 years. A large majority (79%) of respondents are home owners. The average vehicle age is 6.5 years.

Among the driving exposure measures, the mean number of miles respondents report driving annually is 15,000 miles. Analysis of the univariate distributions shows that skewness is not problematic for any of the variables, including the contextual

measures, with the exception of the variable measuring the number of miles driven per year by the respondent, which is highly skewed. Thus it has been transformed using the natural logarithmic transformation. The other traffic stop exposure item, interstate driving, shows a value in the middle of the possible responses, ranging from everyday interstate driving to never driving on the interstate.

The driving behavior variables present a number of interesting points. First, the mean summed difference between the posted speed limit and the actual speed respondents report driving across three speed zones (35, 55, and 65) is 6.6. This shows that respondents are willing to report that they drive faster than the speed limit. The mean value for the measure of driving habits is on the less aggressive end of the scale. One in ten respondents report involvement in an accident in the past year, and the average respondent rarely uses few if any of the traffic stop evasion techniques, such as radar detectors, cruise control, or tracking speeds of other motorists and trucks. Inspection of the univariate statistics for past traffic violations shows that most respondents have had at least one past driving conviction.

The descriptive statistics for the contextual measures show an apparently large amount of district level variation in the value ranges of percent Black, racial inequality, police per capita, drug crimes per capita, density and the volume of NCSHP citations issued in 2000.

Table 6.2 presents the bi-variate correlation matrix for all measures and the two outcome variables, local police stop and NCSHP stop. Inspection of the bi-variate correlations shows clear-cut and interesting patterns of association between those who

have experienced local police compared to NCSHP stops across the legal, extra-legal, and contextual measures. For example, drivers who have experienced local stops were more likely to be Black, male, younger, renters of their own homes, who reside in areas described as more urban, and who tend to drive older vehicles. Of the extra-legal measures, only education is un-related at the bi-variate level with the likelihood of a local police stop. Thus, the predicted association between the status characteristics, or individual level extra-legal factors and local police stop likelihood is evident at the bi-variate level. Drivers who have experienced a local police stop also tend to drive more miles annually, and drive more frequently on interstate routes than those without a local stop suggesting that at the bi-variate level exposure to local police increases the likelihood of a stop.

Turning now to legal reasons for an increased chance of experiencing a local police stop, those who drive at higher speeds, and those who self-report more aggressive driving behaviors as typical are more likely to have been stopped, which confirms that as expected it is important to have measures of both legal and extra-legal factors in order to build models that begin to sufficiently account for the variety of factors that are associated with a traffic stop conducted by local police. Increases in past traffic convictions are also associated with an increase in the likelihood of a local stop, but the meaning of this association is limited by the underlying structure of what prompted past traffic convictions (i.e., police bias, driver behaviors, or some combination). Interestingly, experiencing a recent accident is not associated with increased risk for a local police stop. Another statistically insignificant correlation worth noting is the bi-

variate association between stop evasion techniques and local stop likelihood. Such techniques appear to be ineffective in providing increased protection from being stopped by local police. On the other hand, evading techniques do not increase a driver's chances of being stopped by local police either.

The correlations between the contextual measures and changes in the likelihood of a local police stop are also evident. For example larger per capita police forces and increases in the density of a community's population increase the likelihood of a traffic stop by local police. No significant correlations are found for the likelihood of a police stop and the level of community racial inequality, the proportion of the community's population that is Black, or variation in the rate of drug crime.

Inspection of the bi-variate correlations between the likelihood of a NCSHP traffic stop and the extra-legal, legal, and contextual measures reveals some consistency with the pattern of local police stop correlations as well as some interesting, and potentially important, departures. For example, with the exception of younger drivers and home-renters, no significant correlations were found between any of the extra-legal variables and the likelihood of a traffic stop by NCSHP officers. Driver race, gender, education, ruralness of residence, and the age of the vehicle are not correlated with a NCSHP stop. Aside from age and home ownership status, extra-legal factors are not associated with a NCSHP stop at the bi-variate level. As should be expected, the correlation between age and home ownership shows a relatively large and positive association. Increases in exposure to police, measured by miles driven annually, also increases the risk of experiencing a NCSHP traffic stop.

Moving now to the legal factors associated with traffic stops, an increased likelihood of being stopped by a NCSHP officer is seen for drivers reporting more past traffic convictions, those who report driving at greater speeds, those who have been involved in a recent accident, those whose habits of driving behavior are more aggressive, and those who are more likely to employ stop evasion methods. Thus, every single measure of the legal basis for an increased likelihood of experiencing a traffic stop as well as the predicted direction of association are reflected in the pattern of bi-variate correlations for the likelihood of a NCSHP stop. Of course, the meaning of the positive correlation between past traffic convictions and stop likelihood is uncertain. Also, increases in the use of stop evasion techniques appear to penalize drivers by increasing their chances of being stopped by the NCSHP. Increasing use of evasion strategies, however, is associated with increases in miles on the road, the frequency of interstate driving, the number of past traffic convictions, speeding levels, the likelihood of having had a recent traffic accident, and driving habits that are more aggressive. Thus, as is customary, only the most cautious interpretation of the meaning of any single bi-variate correlation should be reached. However, it is clear that legal factors appear likely to be more important for predicting and explaining the likelihood of a NCSHP stop.

Contextual patterns are also evident for NCSHP stops. For example, increases in community racial inequality are associated with a decrease in the likelihood of a state police traffic stop, while increases in the population density of the local community also decreases the likelihood of a NCSHP stop. The other three measures of community context, proportion of population that is Black, the number of police per capita, and the

rate of drug crime are unrelated to the likelihood of a NCSHP stop at the bi-variate level.

Aside from the substantive interpretations of bi-variate associations, examination of the correlation matrix shows relatively large coefficients for the correlations among some of the contextual-level variables. This diagnostic is important for subsequent modeling because it provides a way to detect the possibility of multicollinearity among the measures before estimated inferential statistics. For example, the largest coefficients are found for the correlations between Police per Capita and Density (.606), followed by the correlation between Police per Capita and Drug Offenses per Capita (.49). Land, McCall, and Cohen (1990) show that high correlations between a set of independent variables may produce a higher correlation between the regressor under question and the dependent variable, an outcome Gordon (1967) has called the partialing fallacy. These correlation results suggest the potential for collinearity among the data, particularly among the structural measures of police per capita, the drug crime rate, and population density. Uncorrected, this collinearity poses the potential for inefficient, and perhaps misleading, parameter estimates.

A number of strategies are available to address collinearity issues. Among these is principal components analysis, which is employed for the present analysis. Because of the special theoretical interest in the structural variables that describe group level context, all five measures were subject to principal components analysis. Principal components analysis addresses collinearity by reducing the regressor space of the covariates (Land, McCall, and Cohen 1990.) Principal components provides a mechanism for reducing the data by identifying the underlying dimensions of relationships among the independent

variables. According to Kim and Mueller (1985,) this technique sorts independent variables to a component, which is a composite index for a particular concept. A further property of principal components is the ability to perform oblique rotation, which produces simpler and more easily interpretable factors. Identifying which factors are highly correlated is useful to building a conceptually meaningful component.

The component scores are obtained by multiplying the raw variables with weights that are proportional to their factor loadings (Kim and Mueller 1985.) The scores are calculated based on the following formula:

$$\text{Component Score} = \sum_j [(b_{ij}/\lambda_i) X_j]$$

Where,

- b_{ij} = the component loading for the j^{th} variable on i^{th} component
- λ_i = the associated eigenvalue
- X_j = the raw data for the j^{th} variable.

Overall, principal components analysis is useful in reducing the collinearity evident from the bi-variate correlation coefficients. Moreover, this statistical technique is attractive because the components that are produced are no more or less than the mathematical transformations of the raw data for the variables at hand. According to Kim and Mueller (1985), the use of component scores provides advantages over alternative data reduction techniques precisely because it provides a summary of the raw data, decreasing the level of distortion and the difficulty of interpretation associated with other techniques.

Principal components analysis was conducted using the NCSHP district-level

measures conceptualized to determine both the context of local racial threat and community level resource demand for police services, which are theoretically connected and thus all five structural measures were included in the PCA. Two primary guidelines were used to determine which factors to retain in the component outcomes: the eigenvalue-one criteria and the interpretability of component. The outcome of the principal components techniques, presented in Table 6.3, shows that indeed one component consists of three measures which were highly correlated with one another. Police, drug crime rates, and density together form a tangle of factors related to social (dis)organization in urban areas. These factors are important elements at the heart of social disorganization theory and models of community policing, both of which are derived from the influence of Chicago School urbanism. This dimension is called Urbanness. More urban areas are more densely populated and have larger police departments relative to the population of their jurisdictions, which may either be a response to higher levels of drug offenses in urban areas, or alternatively, may produce more drug offenses through a greater capacity for law enforcement. This research is unconcerned with questions that address the causal relationship between these components, though see Wilson and Boland (1978) and Sampson and Cohen (1988) for analysis of the causal relationship between police force size/activity and crime rates.

Variance inflation factors are used to determine the extent to which the standard errors associated with the regression coefficients are likely to be inflated due to the variance they share with other variables in the model (Fisher and Mason 1981). The Variance Inflation Factor (VIF) is defined as:

$$\text{VIF}_j = 1 / (1 - R_j^2)$$

where R_j^2 is the coefficient of determination obtained when X_j is regressed on the remaining predictors in the model. The value of VIF_j will be large if X_j is highly correlated with any of the other independent variables in the model. A VIF value of four or greater suggests a severe problem with multicollinearity. None of the variance inflation factors for any of the models in the analysis possess a value above 1.5. This suggests multicollinearity is limited to the contextual measures and has been addressed through principal components.¹⁴

MODELS

One of the first steps in developing a multilevel model is gaining the capability to evaluate the model and the behavior of its components across different models. It is important to become thoroughly familiar with the characteristics of the individual and group level data in order to be able to detect any oddities that may surface in the multilevel models. A useful strategy for developing a strong level of familiarity with how the data should behave in HLM is to treat the group level data as attributes of the individuals in the sample and conduct a series of individual level models that should provide a glimpse of what to expect analytically from the multilevel models.

¹⁴ A preliminary series of models not presented in the dissertation were run using ordinary least squares regression techniques. The purpose of these models was to satisfy additional concerns about multicollinearity in the regression tests. Of particular interest were the conditional index values for each model. Conditional index values greater than 30 indicate the potential for substantial collinearity among the variables in the regression model. Nearly all models tested using OLS possessed condition indexes greater than 30. Centering variables was performed by subtracting the mean from each value for all independent variables. Centering variables provides the ability to establish whether the condition index was an indicator of multicollinearity or a consequence of small slopes in the regression equation. Centering the variables produced condition index values of less than 15 for all models suggesting that the initial condition index

The binary nature of the outcome measures dictates an HGLM, or multilevel logistic model of local police stop (or not) and NCSHP trooper stop (or not). Thus, in beginning to build empirical familiarity with the characteristics and inferential relationships among the variables as predictors of local police and NCSHP traffic stops, individual-level logistic regression techniques were employed. A series of logistic regression models were run to assess the multivariate relationships among the individual-level variables predicting local police and NCSHP traffic stops. The main findings for the individual-level logistic regression models showed that the multiplicative odds of experiencing a local police stop were significantly increased for Black drivers, men, younger drivers, and drivers of older vehicles. A full contextual model at the individual level also revealed that drivers with more developed traffic conviction histories experienced a multiplicative odds increase in the likelihood of a local police stop. A somewhat surprising and likely important non-finding was that none of the measures that captured the legal basis for a police stop – speed, driving habits, recent accidents, and evasion techniques – were significant predictors of a local police traffic stop. Among the contextual measures taken at the individual-level, increasing racial inequality increased the odds of a local police stop as did the urbanness index constructed from the principal components of police per capita, rate of drug crime, and population density. No interaction effects between the contextual measures and driver race were statistically significant.

The logistic regression models predicting the log odds of a traffic stop by the

values were an artifact of small regression slopes rather than multicollinearity.

North Carolina State Highway Patrol showed that increases in driver age decrease the log odds of being stopped and that renter status significantly increases the log odds of being stopped. All other driver characteristics associated with extra-legal decision factors were insignificant, including driver race. Increases in the stop exposure measure of miles driven annually increase the odds of a NCSHP stop. Two driving measures, increases in speed and increases in the use of stop evasion techniques increase the log odds of a self-reported NCSHP stop. Also, increases in the extent of a driver's traffic conviction history were, like the local police stop model, predictive of increases in the log odds of a NCSHP stop. All three measures of community context were significant predictors of increases in the log odds of experiencing a NCSHP stop. Holding all else constant, decreases in racial inequality, increases in the proportion of the population that is Black, and decreases in the Urbanness index are all independently associated with increases in the log odds of a NCSHP traffic stop. A higher rate of stops appears to be associated with communities that possess larger Black populations and some measure of economic success among those in the Black community. Perhaps NCSHP traffic stops provide a modicum of control in areas where the traditional structure of race relations is eroding. In so doing, the NCSHP tends to stop younger drivers and renters as well as those who travel greater distances and at higher speeds. Again tests for interaction effects among the contextual measures and driver race failed to yield any significant results at the individual level.

Recall from hypothesis 10 in the previous chapter, that interaction effects of this sort were expected to be less likely for NCSHP stops, though the preliminary logistics

regression models showed that interaction effects were not present for either type of police stop. However, the logistic regression models fail to account for correlated error terms for individuals within similar contexts. And this flaw in the assumptions that underlie individual level regression tests may account for the lack of significant interaction terms for driver race and community characteristics. In light of these findings, it is time to turn to the multilevel models.

HIERARCHICAL LINEAR MODELS

The HGLM model possesses three components: a sampling model, a link function and a structural model (Raudenbush and Bryk 2002). The sampling model is the individual-level model, which assumes that the outcome measure, given the predicted value of an explanatory variable, is normally and independently distributed with a constant variance. A link function is a transformation that is applied to the predicted value in order to ensure that its values lie within a given interval or range. The link function that is most appropriate for binomial sampling models is the logit link function, which expresses the individual-level outcome as the log-odds of a successful trial. In this case, a success is defined as a police stop. Two primary sets of models are presented in the analysis. The “success” or included category in each of these binomial measures is a self reported police stop. The first set of models describes the structure of a self reported local police stop and the second set is concerned with modeling self-reported North Carolina State Highway Patrol stops.

Estimating the models requires that notation be used to represent observations

from the total sample of $i=1, \dots, n$ individual drivers who have some probability of reporting a police stop separately in the prior 12 months. These individuals are nested within a set of $j=1, \dots, J$ group units (NCSHP troop districts where J represents the 52 NCSHP districts) with n_j denoting the number of sample observations within the j th group. We assume that the outcome responses are distributed independently as Bernoulli random variables, defining P_{ij} the probability that the i th individual will report a stop. This allows the definition of the logit of a police stop for individual i in spatial context j as:

$$\text{logit}(\text{STOP}_{ij}) = \log[P_{ij} / (1 - P_{ij})]$$

Specifying a multilevel model that is theoretically grounded and stable can be a difficult challenge. It is necessary to specify two models: the first at the micro or individual driver level, which is intended to define the within county model; the second at the macro, group, or NCSHP troop district level, intended to model the between district factors thought to influence or condition the group level intercept and coefficients.

In essence, the micro model is the equivalent of estimating a number of individual-level county-specific logistic models equal to the number of groups in the sample of group units. A simple example of a such a model is represented by the following equation:

$$\text{logit}(\text{STOP}_{ij}) = \beta_{0ij} + \beta_{1ij}(\text{BLACK}_{1ij}) + \beta_{2ij}(\text{SPEED}_{2ij})$$

This equation represents a simple within group, individual level model in which two individual level variables, a race dummy variable and the self reported miles per hour

difference in driving speed averaged across three different speed zones (35, 55, 65 miles per hour), defines a constant or intercept (β_{0ij}) and the β s associated with the explanatory variables represent coefficients, where $i=1, \dots, n$ are observations of individuals within troop districts, $j=1, \dots, n$.

To extend the example to the group level model, suppose the percentage of Black residents in the troop district is thought to be a potential determinant of β_{0ij} , β_{1ij} , β_{2ij} , which leads to the following between or across group model:

$$\beta_{0ij} = \beta_{00} + \beta_{01} (\text{BLACK}\%_j) + u_{0j}$$

$$\beta_{1ij} = \beta_{10} + \beta_{11} (\text{BLACK}\%_j) + u_{1j}$$

$$\beta_{2ij} = \beta_{20} + \beta_{21} (\text{BLACK}\%_j) + u_{2j}$$

In this between group model, the u 's are assumed to be group level error terms with independent and normal distributions. The four equations that compose the micro and macro level model can be expressed as a single equation by combining terms, so that the algebraic expression of the multilevel model becomes:

$$\begin{aligned} \text{logit}(\text{STOP}_{ij}) = & \beta_{00} + \beta_{01}(\text{BLACK}\%_j) + \beta_{10}(\text{BLACK}_{ij}) + \beta_{20}(\text{SPEED}_{ij}) + \\ & \beta_{11}(\text{BLACK}\%_j)(\text{BLACK}_{ij}) + \beta_{21}(\text{BLACK}\%_j)(\text{SPEED}_{ij}) + \\ & u_{0j} + u_{1j}(\text{BLACK}_{ij}) + u_{2j}(\text{SPEED}_{ij}) \end{aligned}$$

where $\beta_{11}(\text{BLACK}\%_j)(\text{BLACK}_{ij})$ and $\beta_{21}(\text{BLACK}\%_j)(\text{SPEED}_{ij})$ represent cross level interaction terms. This equation treats the logit or probability of being stopped by the police in the past 12 months as a function of the main effects of group-level racial composition, driver race, and driver speed as well as the interactions between group-level racial composition and driver race and driver speed plus error terms drawn from the

group units. It is these error terms, u_{0j} , u_{1j} , and u_{2j} which are dependent and associated with each i th observation within the j th troop unit.

The HGLM models that follow are organized in terms of the police outcome being explained by the model. The two sets of models describe self-reported police stops conducted by officers of local police agencies, and self-reported stops by troopers in the NCSHP.

The initial approach in building a multilevel model is to specify a fixed effect model that serves as a base model for evaluating the impact of introducing group-level or contextual variation into the model. A fixed effect model is equivalent to an individual-level model in which individual level predictors and their error terms are assumed have a value of zero across the group units, in this case NCSHP troop districts. By fixing the errors at zero, the model incorporates the same assumptions as OLS or individual-level logistic regression about the presence of uncorrelated or random error terms.

The initial fixed effects model equation is as follows:

$$\begin{aligned} \text{logit}(\text{LOCALSTOP}_{ij}) = & \beta_{0j} + \beta_{1j}(\text{BLACK}_{ij}) + \beta_{2j}(\text{MALE}_{ij}) + \beta_{3j}(\text{AGE}_{ij}) + \beta_{4j}(\text{EDUC}_{ij}) + \\ & \beta_{5j}(\text{OWNSHOME}_{ij}) + \beta_{6j}(\text{RURAL}_{ij}) + \beta_{7j}(\text{CARYEAR}_{ij}) + \beta_{8j}(\text{MILES}_{ij}) + \\ & \beta_{9j}(\text{INTERSTATE}_{ij}) + \beta_{10j}(\text{SPEED}_{ij}) + \beta_{11j}(\text{RISKY}_{ij}) + \beta_{12j}(\text{ACCIDENTS}_{ij}) + \\ & \beta_{13j}(\text{EVADE}_{ij}) \end{aligned}$$

The group level equation is written to express the random coefficient model which specifies the intercept and regression coefficients of the 13 predictors consisting of the mean values of the counties (1's). The level-one or individual level terms in the models that follow are group mean centered, which makes the interpretation of the level-one

coefficients a bit simpler as they represent comparisons to the group-specific mean values. Level-two terms are grand-mean centered, designed to simplify the interpretation of contextual effects, and are interpreted relative to the grand or population level mean value for any given measure. According to Raudenbush and Bryk (2002) grand-mean centering the variables in a model treats the intercept β_{0j} as the expected value for an observation whose value for some explanatory variable is equal to the grand mean for that measure.

Model 1 in Table 6.4 shows the results of the fixed effect model predicting the logit of experiencing a local police stop. The pattern of significant predictors of an increase in the log odds of a local police stop is consistent with the preliminary individual level logistic models. The pattern of effects found in the base model provides a base model with which to assess subsequent models. It is also the equivalent of the average logistic model across the 53 NCSHP districts and thus contains important substantive results as well. First, the intercept is significant, negative, and quite large. This reflects the relative rarity of police stops in general, and especially local police stops. Also, a number of extra-legal driver characteristics predict the log odds of experiencing a local police stop. For example, drivers who are Black are significantly more likely than whites to report a traffic stop by local police, controlling for individual level exposure to police stops and driving behavior. Likewise, men are significantly more likely to experience a local police traffic stop. In addition, two age variables are significant predictors of the likelihood of a local police stop. As drivers increase in age, the log odds of a local traffic stop decrease. In contrast, as the age of the vehicle one drives increases, the log odds of

a local traffic stop are increased significantly. Among the exposure and driving behavior or legal measures that may trigger a stop, only interstate driving frequency is a significant predictor of a local stop. Increases in the frequency of interstate driving increases the log odds of a local police stop.

Model 2 in Table 6.4 accounts for cross district variation in the odds of experiencing a local police stop by allowing the intercept to vary across NCSHP troop districts. Thus, Model 2 allows for variation in the absolute level of local police stop odds, what might be thought of as the intensity of local policing efforts expressed as traffic stops. The model equation is expressed as Model 1 with the addition of a random error term associated with the intercept:

$$\begin{aligned} \text{logit}(\text{LOCALSTOP}_{ij}) = & \beta_{0j} + \beta_{1j}(\text{BLACK}_{ij}) + \beta_{2j}(\text{MALE}_{ij}) + \beta_{3j}(\text{AGE}_{ij}) + \beta_{4j}(\text{EDUC}_{ij}) + \\ & \beta_{5j}(\text{OWNSHOME}_{ij}) + \beta_{6j}(\text{RURAL}_{ij}) + \beta_{7j}(\text{CARYEAR}_{ij}) + \beta_{8j}(\text{MILES}_{ij}) + \\ & \beta_{9j}(\text{INTERSTATE}_{ij}) + \beta_{10j}(\text{SPEED}_{ij}) + \beta_{11j}(\text{RISKY}_{ij}) + \beta_{12j}(\text{ACCIDENTS}_{ij}) + \\ & \beta_{13j}(\text{EVADE}_{ij}) + \upsilon_{0j} \end{aligned}$$

Model 2 in Table 6.4 shows that the variance component associated with the log odds of a traffic stop by local police is statistically significant ($p < .001$). This suggests that there is significant cross district variation in the odds of local police stops. In other words the behavior of local police in traffic stop behavior varies substantially across local context. Substantively, the pattern of significant logistic coefficients remains very similar, with the exception of interstate driving, which drops to insignificance.

Model 3 in Table 6.4 introduces additional cross district variation by allowing the driver race term to vary rather than stay fixed as in the previous models. The results of

Model 3 show that very little substantive change occurs by introducing an error term at the group level for the driver race estimate. Allowing driver race to vary across the groups does not produce a statistically significant variance component, suggesting that there is not enough initial empirical evidence to support the expectation that the effect of driver race on the logit of local police stops varies across contexts. Interpretation of the covariates in Model 3 suggests that the pattern of Black drivers increased log odds in local police stop likelihood is essentially stable across the level two units. In other words, Black drivers appear to experience no contextually specific disadvantage associated with Black racial status across the NCSHP districts.

Note that the variance component, written as τ_{qq} , is used to indicate whether the amount of individual-level variation across group contexts is large enough to warrant random specification of individual-level predictors once level-2 explanatory factors are integrated into the models. Normally, statistically insignificant variance components signal an empirical dead-end for additional multilevel tests associated with the measures with zero variance. However, in certain circumstances, additional contextual models may be justified. For example, Raudenbush and Bryk (2002) state that in certain cases while “the inferential and descriptive statistics may indicate that some τ_{qq} is zero or close to zero, this does not preclude the possibility of a non-randomly varying specification for the corresponding β_{qj} . If theoretical arguments suggest that such effects might be present, the analyst should proceed with posing level-2 models for β_{qj} ” (p. 258). Because much of the theoretical development and research hypotheses of this project is concerned with the impact of context on race differences, and especially increases in the cost of Black racial

status in terms of experiencing a traffic stop by police, additional level-2 models for driver race are justified. Therefore driver race will remain in the model as contextual effects are introduced.

Model 4 in Table 6.4 contains the results of the full multilevel model which introduces the district or context specific properties, racial inequality, racial composition, and the urban index constructed from police, drug crimes, and population density measures, to explain cross district variation that are not specifically included in Model 3. Inspection of the changes in the variance components shows that the Model 4 value of $\tau_{00} = .063$, meaning that the district level variables account for more than 36 percent of the variation in the district or level-2 intercepts ($.099 - .063 / .099$). Of the three level-2 measures introduced in Model 4, the urban index measure increases the log odds of a local police stop. Communities with larger per capita police forces, higher drug crime rates, and more concentrated populations increase the log odds of a local police traffic stop, holding all else constant. This appears to run counter to Klinger's (1997) prediction that local police in higher crime areas will triage the factors that draw their time and attention, focusing on more serious crimes and tolerating trivial offenses, such as traffic infractions.

The variance component is statistically insignificant in Models 3, 4, and 5. As might be anticipated from the statistically insignificant variance component for driver race, Models 4 and 5 fail to find any cross-level interactions between the contextual measures and driver race. In addition, adding more information to the models increases the constant term in the models. Model 5 adds a single individual-level control variable

intended to capture any additional unmeasured variation in illegal driving practices. Introducing a measure of past traffic convictions has limited effects on the overall pattern of results of the HGLM equation. For example, the pattern of significant coefficients for Model 5 is identical to those found in Model 4. However, the introduction of the past traffic violations measure turns out to be the only driving-related measure that is a significant predictor of a self-reported local police stop. Those with more past traffic convictions are more likely to report having experienced a recent local stop. It is important to consider whether this driving measure captures unmeasured variation in driving practices, introduces a residual measure of past police bias, or both. Some might even consider a measure of convictions for past traffic violations like something of a lagged police stop variable akin to the dependent variable gathered in the self-report survey. Thus, including the measure of past traffic convictions provides a way to soak up unmeasured variation or measurement error in driving behaviors contained in the driving behavior survey items. Inclusion of this measure in the final hierarchical model provides some reason to be more confident about the results found in the local police stop models and the fact that there is something about a driver's behavior that leads to the stop.

Aside from the contextual effects, the consistency and patterns of the fixed effects are noteworthy. With the exception of the traffic violations coefficient, none of the legal factors associated with driving behavior, habits and exposure were significant predictors of changes in the log odds of experiencing a local police stop. In contrast, Black drivers, men, younger drivers, and drivers of older vehicles are all significantly more likely to experience a local traffic stop than whites, women, older drivers, and motorists in newer

cars. Race, gender, and age combine to create a portrait of more “dangerous” or threatening drivers. Like traffic violations, the effects for the age of the vehicle are open to a certain amount of speculation. An argument can be made that vehicle age is a proxy for social class status, which has a familiar feel in combination with race, gender, and age. However, the age of one’s automobile is also likely to be correlated with the condition of the car. Vehicles in need of repair are more likely to be in violation of a number of regulations governing the operation and upkeep of automobiles on North Carolina roads. Thus, the age of the car may also be conceived of as a legal (rather than extra-legal) element in the decision to make a stop. Perhaps the condition of a vehicle is more likely to be used as pretext for a traffic stop. If so, vehicle age should be considered as both an extra-legal and a legal factor in the stop.

Despite the fact that legal factors associated with driving behavior and practice appear to be less important than a driver’s extra-legal characteristics or the environmental conditions associated with the local troop district context, it should not be concluded that legal factors are irrelevant. One potential explanation for this pattern is that the legal measures are sufficiently precise to capture the full range of variation in driving practices and habits among North Carolina drivers. This interpretation is buoyed by the results of similar models predicting the log odds of the probability of a NCSHP traffic stop, in which legal factors associated with driving habits of North Carolina motorists are the central individual level effects.

On the other hand, this pattern fits with the research expectations that legal factors would be less important for local police, in part because of what communities and local

police officers themselves expect local police agencies to do (i.e., to fight crime). As a result, the proxy cues for crime that are available to local police in evaluating traffic and the legitimacy of initiating a traffic stop may be more sensitive to characteristics rather than driving behavior. Such a scenario highlights the importance of criminal suspicion as a legal pretext for executing a traffic stop. However, if this is the mechanism that explains the results of the local stop models, it appears to come with a cost, which is felt disproportionately by certain types of drivers and seems to be a mechanism that is evident across all district areas in North Carolina. Race, gender, age and socio-economic status all contribute to increases in the log odds in self reporting a local police stop.

Turning now to Table 6.5, a similar process is employed to build the contextual models of NCSHP traffic stops. Model 1, again, is a fixed effects model that serves as a baseline to evaluate the presence of cross district variation in the log odds of a trooper stop and the odds of a race-specific trooper stop for Black drivers. What stands out in Model 1, aside from a significant, negative, and even larger constant compared to local police stops is the relative importance of legal factors in predicting the log odds of a NCSHP stop. Before moving to a full discussion of the multilevel models, it is worth discussing the fixed effects models (Model 1) in both Tables 6.4 and 6.5. For example, Table 6.5 shows that increases in the stop exposure measure, miles driven annually, increases the log odds of the log odds of a NCSHP traffic stop as do increases in the typical speed driven as well as increases in the use of stop evasion methods. Driver race and gender are not statistically significant, though younger drivers and drivers who rent their homes possess a higher log odds of reporting a stop conducted by the NCSHP.

Thus, it appears that the individual-level research hypothesis (1) predicting greater stop likelihood as the degree of traffic violation increases is confirmed for NCSHP stops and speeding. Likewise, increases in driving volume increase the log odds for a NCSHP stop. Thus Hypothesis 2 appears to be supported, at least for the NCSHP.

In comparing the organizational features of local and state police agencies and their connection to stop patterns, Hypotheses 3 and 4 also appear to be supported by the models. Driver race (Blacks), gender (men), age, and vehicle age increase the chances of a local police stop, age, and renting one's home are extra-legal variables that increase the odds of a state police stop. In contrast to local police, the log odds of a state police stop are predicted by driving more miles, driving faster, and attempting to evade police stops, all of which are conceived of as measures of some legal behavioral basis for performing a traffic stop. Thus the constrained, and hence less discretionary, focus of the NCSHP appears to emanate from the organizational mission of the agency and results in patterns of policing traffic that end in relatively less disparate outcomes at the individual level.

Model 2 in Table 6.5 displays the results of allowing the model intercept to vary across the NCSHP districts. The variance component associated with the intercept, or cross district variation, is equal to .077 and significant at the $p < .10$ level. Thus, the odds of experiencing a NCSHP stop appear to significantly vary across the troop districts of the NCSHP, although caution should be used in drawing this conclusion as the statistical support for this interpretation is relatively weak. In Model 3, the intercept and coefficient for driver race are allowed to vary across the troop districts. Substantively, the intercepts and slopes experience little or no change by this addition of level-2

information to the model, with the exception of the variance component, τ_{00} , which becomes insignificant when it is allowed to vary randomly. The variance component for driver race, τ_{11} , equals zero meaning that differences in odds of a stop for Black compared to white drivers does not vary across troop districts. However, we again have a theoretical rationale for specifying additional level-2 effects on both the stop intercept and the race intercept as was done in Model 4 in Table 6.5 for local police stops.

Model 4 in Table 6.5 shows that certain characteristics associated with the context of the troop districts increase the log odds of both NCSHP stops in general as well as race-specific stops. That is, NCSHP policing intensity increases in communities with larger Black populations as a proportion of the community and in districts with characteristics of less urban communities, such as the size of local law enforcement relative to the population of the community, the rate of drug crime, and the level of population density. The level of community level racial inequality does not impact the log odds of a NCSHP stop. In less urban communities, the NCSHP may play a larger role in assisting local law enforcement and thus an increased NCSHP presence in these areas increases the likelihood of NCSHP driver stops, all else being equal. This may also signal the location and other geographic characteristics associated with the roads the NCSHP patrols. If interstates and highways are the domain of NCSHP patrol, then one plausible interpretation of the Urban Index effects is that these routes are more frequently found in less urban communities throughout the state. The interstate system is a hub system that connects metropolitan areas with one another across long expanses that traverse often rural communities. For a variety of practical reasons as well as issues of

division of labor, NCSHP may avoid working in dense areas, where their mobility may be compromised by traffic density. The usefulness and demand for the NCSHP is also diminished in urban centers where larger local police forces are adequately resourced to handle increased traffic flow compared to less urban areas.

Interpreting the contextual effects on the stop intercept is clear cut. Model 4 shows that NCSHP troopers make more stops of all drivers in contexts where a larger percentage of the local population is Black. Hypothesis 8 laid out the expectation that contextual-level racial antagonism would result in increased levels of policing, the expectation was that increases in both inequality and population composition would result in increases in policing as measured by stops.

While the racial inequality measure is not a significant predictor of the log odds of a NCSHP stop, the proportion Black population coefficient is positive and significant across all models. This means that as a driver moves from a lower proportion Black district to a larger proportion Black district, the log odds of experiencing a NCSHP stop increase for all drivers. For example, the exponentiated value of the interquartile range shows that a driver in a district that possesses a proportion Black population in the 75th percentile (31% Black) is 1.23 times more likely to experience a NCSHP stop than a driver in a district in the 25th percentile (16% Black).

What is it about districts with larger Black populations that increases the likelihood of a state police traffic stop for all drivers? Certain spatial or ecological factors should be considered before interpreting such a finding as evidence of racial disparity. The spatial pattern of highway and interstate road construction development

and the racial composition of the population concentrated along these routes may help explain this finding. If the areas where Black residents tend to be geographically concentrated in the state are also the places where the NCSHP identifies the interstates, highways, and local roads as their agency domain, then one might actually expect contextual main effects for state police. This situation is best understood as a spatial correlation between racial composition and NCSHP trooper deployment. To test the possibility of a relationship between racial context and organizational deployment policies, a number of alternative contextual measures were employed to capture aspects of the spatial patterns of NCSHP patrolling.

These alternatives are found in models 4, 5, 6, and 7 as the measure of local police concentration, drug crimes, and population density captured in the urban index, which was also included in the local police models. In addition to this measure which straddles the conceptual meaning of police capacity and racial fear or threat, two other measures are used to control for NCSHP deployment patterns. Density is the simply the population per 100 square acres. At best, this is an indirect measure of NCSHP deployment, but it provides a cleaner measure of spatial context that has meaning for the way that the NCSHP as opposed to local police define their geographic domain or turf. The second new measure is a more direct way of capturing the deployment patterns of the NCSHP. The number of citations issued within the district in 2000 is used as a measure of traffic volume in the district, which is presumed to be positively correlated with deployment decisions, policies, and practice. Looking at models 5, 6, and 7 in Table 6.5 shows that higher values of all three alternative measures of NCSHP deployment are

consistent predictors of a lowered likelihood of a traffic stop. In fact, the predicted effects or exponentiated values associated with the difference in the interquartile range for density, NCSHP citations, and the urban index in high density, high citation and urban districts (as measured at the 75th percentile of the sample distribution) are all about .66 times those of districts in the 25th percentile of values for these measures of deployment. At first glance model 4 and 7 appear to be identical in construction, but models 5, 6, and 7 differ from the previous models in Table 6.5 by including the measure of driver-level traffic violations in the models.

Adding specific characteristics of the districts to the driver race intercept results in the variance component, τ_{11} , becoming statistically significant in Model 4, a shift from non-significance in the previous model. The race difference in NCSHP traffic stop odds varies across district contexts when the district characteristics of racial inequality, racial composition, and some measure of urban index and police deployment are specified. Like the intercept effects, the driver race coefficients provide evidence of racial disparity in the odds of a NCSHP stop in districts with larger Black populations as a percentage of the total population. In other words, the likelihood of a NCSHP stop varies across the districts according to the size of the district's Black population. The underlying process that accounts for this pattern appears to be unrelated to both district level racial inequality and police deployment strategies. In addition to racial inequality, all three measures of police deployment are not statistically significant. While interpreting non-significant findings is generally frowned upon, it is worth noting that the sign of the driver race coefficients reverses from positive (meaning Black drivers) in models 1 through 3 to

negative (meaning white drivers) in models 4 through 7.

The multilevel analysis supports a variety of conclusions. First, the individual level structure of local police and NCSHP stops is quite different, though both types of police stops are predicted by extra-legal and legal factors: legal factors appear to be more important for NCSHP traffic stops, and extra-legal factors somewhat more important for local police stops at the individual level. Among the extra-legal measures that increase the chances of experiencing a stop by both types of police is driver age. Younger drivers are at a greater risk for police stops, regardless of the type of police. Some evidence of a social class pattern to stops is also shared by both types of police, with increases in vehicle age increasing the chances of a local police stop and renter status increasing the chances of a state police stop, though vehicle age may also be a measure of legal compliance with vehicle equipment and maintenance regulations. An argument can be made that such regulations are class biased. Increasing levels of exposure to stops is important for the odds of a NCSHP stop, but not for local police. Likewise, two measures of legal factors, driving speed and evasion methods, showed predicted patterns in explaining NCSHP stops, but not local police stops.

At the contextual level, the patterns are a bit less consistent with the theoretical expectations and research hypotheses. Local police appear to be more aggressive in community contexts where, from the police vantage point, there is reason to be more concerned with achieving social control. Drivers in districts that contain a higher police officer quotient, possess higher rates of drug crime, and that are more densely populated have a significantly greater likelihood of experiencing a local traffic stop. The pattern of

contextual findings for NCSHP traffic stops are a bit of a corollary to this. Where local police activity seems to stop, the likelihood of a traffic stop encounter with the NCSHP picks up. Racial composition is also important for NCSHP stops, although evidence for a cross-level interaction is not found.

In all, several expectations are confirmed, especially those that focus on the driver characteristics and behaviors as well as the organizational expectations for differences in the patterns of effects for local compared to state police. Less fruitful perhaps are the research hypotheses concerned with the contextual importance of racial context and threat. These findings suggest that environmental factors are important resources and constraints for different types of police agencies. The relatively limited contextual effects may be a reflection of empirical reality, or they may be a result of data lacking the requisite level of robustness to test contextual expectations of the sort described here. The following chapter reviews some of the findings in light of the research methodology in an effort to account for and learn from them.

Table 6.1 Descriptive Statistics for All Variables in the Analysis^a

Variable	Metric	Mean	SD	Range	Interquartile Range ^b
Local Police Traffic Stop	(0=no, 1=yes)	.14	.34	0-1	1.0
NCSHP Traffic Stop	(0=no, 1=yes)	.08	.27	0-1	1.0
Race	1=Black	.49	.50	0-1	1.0
Gender	1=Male	.47	.50	0-1	1.0
Age	Years	43.48	15.78	18-92	24.0
Education	1=LT HS... 7=Grad School	3.90	1.92	1-7	4.0
Home Owner	1=Owner	.79	.41	0-1	1.0
Rural Resident	1=City...4=Country	2.28	1.28	1-4	3.0
Vehicle Age	Number of Years	6.50	5.14	0-35	8.0
Miles per Year (LN)	Natural Log of Miles Driven	8.79	1.52	1-13.82	1.79
Interstate Driving	1=Everyday; 7=Never	4.76	1.88	1-7	3.0
Speeding Index of summed departure from 35, 55 & 65 zones	Larger Values= Greater Speeds	6.63	9.32	-40-45	4.0
Typical Driving Behavior	0=Least Aggressive	1.83	1.23	0-6	2.0
Accident in past 12 mos.	1=Yes	.10	.29	0-1	0.0
Evade Techniques	1=Least Evasive	1.36	.40	1-4	.50
Traffic Convictions	0=none, 1=1-2, 2=3 or more	.64	.77	0-2	1.0
Percent Black (2000)		24.19	12.16	1.00-58.00	15.00
Household Racial Inequality (1990)		.45	.08	.23-.80	.51
1997 Police Officers / 1,000 population		2.45	.45	1.42-3.89	.70
1998 Drug Crime Rate / 1,000 population		6.25	3.76	.47-16.24	3.33
Density (2000 Population per 100 square acres)		17.20	13.90	1.74-50.91	23.09
NCSHP Citations Issued		12.95	50.95	3.79-23.45	7.62

^a Sample size ranges from 2863 to 2920 due to missing data.

^b The interquartile range is the difference between values that fall at the 25th and 75th percentiles for each univariate distribution.

Table 6.2 Correlation Matrix of all Variables to be Employed in Models of Police Stops*

	1	2	3	4	5	6	7	8	9	10	11
1 Black	1.000										
2 Male	-.014	1.000									
3 Age	-.108**	-.025	1.000								
4 Educ	-.119**	-.042*	-.112**	1.000							
5 Owns home	-.182**	.030	.250**	.057**	1.000						
6 Rural	-.196**	.027	.092**	-.136**	.202**	1.000					
7 Car year	.092**	.131**	.068**	-.197**	-.033	.031	1.000				
8 Miles/year LN	-.223**	.275**	-.113**	.241**	.066**	.073**	-.173**	1.000			
9 Interstate	-.074**	.132**	-.189**	.198**	.006	-.109**	-.122**	.328**	1.000		
10 Conviction	.227**	.262**	-.156**	-.033	-.106**	-.054**	.082**	.120**	.090**	1.000	
11 Speed	-.107**	.071**	-.358**	.214**	-.070**	-.083**	-.137**	.256**	.200**	.090**	1.000
12 Accident	.038*	.019	-.120**	-.021	-.039*	-.034	-.016	.016	.011	.073**	.013
13 Driving habits	-.144**	.076**	-.262**	.142**	-.055**	-.037*	-.015	.191**	.174**	.095**	.363**
14 Evasion	-.054**	.172**	-.047*	-.005	.024	.032	-.043*	.172**	.097**	.096**	.105**
15 Racial Inequality	.025	-.004	.024	.054**	-.038*	-.049**	-.026	.007	-.065**	.041*	.012
16 % Black	.339**	.008	-.028	-.030	-.056**	-.110**	.058**	-.095**	-.127**	.092**	-.047*
17 Police per Capita	.104**	.052**	-.036	.128**	-.076**	-.354**	-.059**	.026	.120**	-.008	.046*
18 Drug Crimes	.093**	-.066**	-.042*	.091**	-.075**	-.290**	-.039*	-.003	.171**	-.001	.046*
19 Density	.079**	-.034	-.051**	.180**	-.065**	-.429**	-.073**	.020	.263**	.011	.075**
20 NCSHP Citations	.092**	-.022	-.065**	.164**	-.057**	-.306**	-.081**	.022	.253**	.053**	.082**
21 Local Stop	.098**	.068**	-.167**	.034	-.070**	-.051**	.062**	.031*	.071**	.129**	.075**
22 NCSHP Stop	.016	.030	-.100**	.019	-.061**	.023	.010	.101**	.031	.102**	.107**

	12	13	14	15	16	17	18	19	20	21	22
1 Black											
2 Male											
3 Age											
4 Educ											
5 Owns home											
6 Rural											
7 Car year											
8 Miles/year LN											
9 Interstate											
10 Conviction											
11 Speed											
12 Accident	1.000										
13 Driving habits	.005	1.000									
14 Evasion	.039*	.043*	1.000								
15 Racial Inequality	-.030	-.020	-.008	1.000							
16 % Black	.014	-.112**	.001	.157**	1.000						
17 Police per Capita	.003	-.003	-.053**	.161**	.296**	1.000					
18 Drug Crimes	-.003	.041*	-.035	-.094**	.164**	.497**	1.000				
19 Density	.031	.058**	-.064**	.142**	-.075**	.606**	.396**	1.000			
20 NCSHP Citations	.017	.057**	-.041*	.057**	.037*	.282**	.286**	.609**	1.000		
21 Local Stop	.028	.055*	.016	.024	.017	.037*	.034	.049**	.077**	1.000	
22 NCSHP Stop	.045**	.084**	.090**	-.037*	.027	-.026	-.006	-.043*	-.050**	-.116**	1.000

*Note: ** Correlation is significant at the .01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Table 6.3 Maximum Likelihood Factor Pattern Matrices after Oblique Rotation

Variables	Component
Police Officers per Capita 1997	.897
Drug Crimes per Capita 1998	.701
Density	.781
Eigenvalue	2.16

Table 6.4 Hierarchical Generalized Linear Models of Local Police Stops*

Independent Variables	Models				
	(1)	(2)	(3)	(4)	(5)
<i>Intercept</i>	-1.97*** (.098) .139	-2.07*** (.084) .126	-2.06*** (.081) .128	-2.26*** (.093) .116	-2.27*** (.090) .104
Racial Inequality	--	--	--	.857 (.895) .437	.851 (.899) .434
Percent Black	--	--	--	.006 (.006) .009	.006 (.006) .009
Urban Index	--	--	--	.015* (.007) .114	.015* (.007) .114
<i>Driver Race</i> (1=Black)	.519*** (.108) 1.68	.507*** (.115) 1.66	.486*** (.111) 1.63	.497** (.178) 1.57	.390* (.166) 1.46
Cross-level Interactions:					
<i>Race</i> *Racial Inequality	--	--	--	1.846 (1.395) .942	1.658 (1.447) .846
<i>Race</i> *Percent Black	--	--	--	-.014 (.013) .210	-.013 (.012) .195
<i>Race</i> *Urban Index	--	--	--	.009 (.008) .068	.009 (.008) .068
<i>Driver Gender</i> (1=Male)	.297** (.102) 1.35	.293** (.110) 1.34	.295*** (.106) 1.34	.334** (.111) 1.36	.242* (.115) 1.27
<i>Driver Age</i>	-.030*** (.004) .49	-.030*** (.004) .49	-.030*** (.004) .49	-.031*** (.003) .49	-.031*** (.003) .49
<i>Driver Education</i>	.173 (.030) 1.99	.019 (.032) 1.07	.019 (.030) 1.07	.045 (.033) 1.09	.048 (.032) 1.18
<i>Driver Owns Home</i> (1=Yes)	-.109 (.137) .90	-.105 (.146) .90	-.104 (.142) .90	-.126 (.135) .91	-.097 (.129) .92
<i>Rural Resident</i>	.022 (.046) 1.07	.024 (.049) 1.07	.024 (.047) 1.07	.025 (.050) 1.07	.022 (.050) 1.10
<i>Vehicle Age</i>	.040*** (.011) 1.38	.040*** (.012) 1.38	.040*** (.011) 1.38	.045*** (.012) 1.38	.042*** (.012) 1.42
<i>Miles (LN)</i>	.052 (.047) 1.10	.053 (.050) 1.10	.053 (.048) 1.10	.023 (.048) 1.11	.013 (.048) 1.05

<i>Interstate Driving</i>	.066* (.033) <i>1.22</i>	.065 (.036) <i>1.22</i>	.064 (.034) <i>1.21</i>	.056 (.038) <i>1.14</i>	.049 (.036) <i>1.19</i>
<i>Driving Speed</i>	.007 (.019) <i>1.03</i>	.006 (.021) <i>1.02</i>	.006 (.020) <i>1.02</i>	.015 (.018) <i>1.03</i>	.014 (.019) <i>1.04</i>
<i>Driving Behaviors</i>	.020 (.042) <i>1.04</i>	.022 (.045) <i>1.04</i>	.022 (.043) <i>1.04</i>	.042 (.043) <i>1.05</i>	.030 (.045) <i>1.20</i>
<i>Recent Accident (1=Yes)</i>	.051 (.171) <i>1.05</i>	.045 (.181) <i>1.04</i>	.048 (.175) <i>1.05</i>	.079 (.168) <i>1.04</i>	.035 (.162) <i>1.04</i>
<i>Evasion Methods (High=Yes)</i>	-.067 (.107) <i>.97</i>	-.061 (.114) <i>.97</i>	-.0619 (.110) <i>.97</i>	.011 (.117) <i>.98</i>	-.018 (.121) <i>.98</i>
<i>Traffic Convictions</i>					.260** (.080) <i>1.35</i>
<i>Variance Comp:</i>					
Intercept	--	.099***	.097**	.063**	.065*
Driver Race	--	--	.072	.002	.003

*Note: Figures represent coefficients of the log-odds of the probability of a police stop.

Standard errors are reported in parentheses.

Exponentiated values are reported in italics. The figures represent the log-odds probability change for respondent values falling at the 25th compared to the 75th percentile of the distribution.

L1 N=2562; .L2 N=53

+p<.10 *p<.05 **p<.01 ***p<.001

Table 6.5 Hierarchical Generalized Linear Models of NCSHP Stops*

Independent Variables	Models						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Intercept</i>	-2.65*** (.094) .07	-2.62*** (.091) .07	-2.61*** (.087) .07	-2.72*** (.100) .07	-2.73*** (.101) .07	-2.71*** (.096) .07	-2.73*** (.103) .07
Racial Inequality	--	--	--	-1.443 (1.093) .41	-1.406 (1.052) .54	-1.531 (1.017) .48	-1.486 (1.106) .49
Percent Black	--	--	--	.015** (.006) 1.23	.015* (.006) 1.22	.016** (.006) 1.24	.015* (.006) 1.23
Density	--	--	--	--	-.014** (.005) .66	--	--
NCSHP Cites	--	--	--	--	--	-.050*** (.006) .66	--
Urban Index	--	--	--	-.015* (.006) .66	--	--	-.015** (.005) .66
<i>Driver Race</i> (1=Black)	.207 (.160) 1.22	.212 (.155) 1.24	.156 (.157) 1.17	-.183 (.278) 1.10	-.243 (.281) .78	-.294 (.256) .71	-.288 (.274) .77
Cross-level Interactions: <i>Race* Racial Inequality</i>	--	--	--	-2.846 (2.472) .28	-2.943 (2.543) .20	-3.113 (2.516) .16	-3.017 (2.513) .19
<i>Race* Percent Black</i>	--	--	--	.046* (.019) 1.87	.047* (.020) 2.04	.049* (.020) 2.16	.047* (.019) 2.05
<i>Race* Density</i>	--	--	--	--	.008 (.011) .95	--	--
<i>Race* NCSHP Cites</i>	--	--	--	--	--	.026 (.037) 1.16	--
<i>Race* Urban Index</i>	--	--	--	.011 (.011) 6.04	--	--	.010 (.012) 1.01
<i>Driver Gender</i> (1=Male)	-.104 (.132) .90	-.102 (.123) .90	-.098 (.121) .90	-.054 (.137) .90	-.145 (.129) .77	-.145 (.133) .78	-.144 (.128) .78
<i>Driver Age</i>	-.011* (.005) .77	-.010* (.005) .77	-.010* (.004) .77	-.011* (.005) .77	-.010* (.005) .75	-.010* (.005) .75	-.010* (.005) .75
<i>Driver Education</i>	.019 (.044) 1.08	.020 (.043) 1.08	.021 (.040) 1.09	.018 (.045) 1.11	.021 (.044) 1.06	.020 (.045) 1.06	.022 (.044) 1.07

<i>Driver Owns Home (I=Yes)</i>	<i>-.455**</i> (.169) <i>.63</i>	<i>-.456**</i> (.163) <i>.63</i>	<i>-.456**</i> (.155) <i>.63</i>	<i>-.479**</i> (.153) <i>.63</i>	<i>-.463**</i> (.151) <i>.63</i>	<i>-.468**</i> (.151) <i>.63</i>	<i>-.461**</i> (.151) <i>.63</i>
<i>Rural Resident</i>	.070 (.070) <i>1.23</i>	.070 (.068) <i>1.23</i>	.070 (.063) <i>1.23</i>	.045 (.072) <i>1.21</i>	.046 (.071) <i>1.16</i>	.046 (.072) <i>1.16</i>	.046 (.071) <i>1.16</i>
<i>Vehicle Age</i>	.025+ (.014) <i>1.22</i>	.024+ (.013) <i>1.21</i>	.025+ (.013) <i>1.22</i>	.028+ (.016) <i>1.24</i>	.025 (.016) <i>1.22</i>	.025 (.016) <i>1.22</i>	.025 (.016) <i>1.22</i>
<i>Miles (LN)</i>	<i>.234**</i> (.078) <i>1.52</i>	<i>.230**</i> (.075) <i>1.51</i>	<i>.228**</i> (.071) <i>1.50</i>	<i>.254**</i> (.073) <i>1.54</i>	<i>.239***</i> (.072) <i>1.70</i>	<i>.234***</i> (.072) <i>1.70</i>	<i>.239***</i> (.071) <i>1.70</i>
<i>Interstate Driving</i>	.061 (.053) <i>1.20</i>	.061 (.051) <i>1.20</i>	.059 (.048) <i>1.19</i>	.074 (.052) <i>1.00</i>	.066 (.052) <i>1.22</i>	.066 (.054) <i>1.21</i>	.066 (.053) <i>1.21</i>
<i>Driving Speed</i>	.068* (.030) <i>1.31</i>	.070* (.029) <i>1.32</i>	.070* (.027) <i>1.32</i>	.083** (.027) <i>1.32</i>	.082** (.027) <i>1.37</i>	.082** (.028) <i>1.36</i>	.082** (.027) <i>1.36</i>
<i>Driving Behaviors</i>	.116 (.077) <i>1.26</i>	.114 (.075) <i>1.26</i>	.115+ (.070) <i>1.26</i>	.122 (.081) <i>1.29</i>	.110 (.080) <i>1.30</i>	.110 (.081) <i>1.30</i>	.109 (.080) <i>1.30</i>
<i>Recent Accident (I=Yes)</i>	.330 (.275) <i>1.39</i>	.338 (.137) <i>1.40</i>	.331 (.256) <i>1.39</i>	.312 (.281) <i>1.39</i>	.290 (.278) <i>1.11</i>	.288 (.284) <i>1.10</i>	.286 (.278) <i>1.11</i>
<i>Evasion Methods (High=Yes)</i>	<i>.475***</i> (.141) <i>1.27</i>	<i>.477***</i> (.137) <i>1.27</i>	<i>.480***</i> (.132) <i>1.27</i>	<i>.453**</i> (.144) <i>1.30</i>	<i>.431**</i> (.143) <i>1.19</i>	<i>.427**</i> (.142) <i>1.19</i>	<i>.430**</i> (.143) <i>1.19</i>
<i>Traffic Violations</i>	--	--	--	--	<i>.280**</i> (.112) <i>1.34</i>	<i>.280**</i> (.112) <i>1.34</i>	<i>.280**</i> (.112) <i>1.35</i>
<i>Variance Comp. Intercept</i>	--	.077+	.095	.051+	.051	.035	.054
<i>Driver Race</i>	--	--	.079	.134*	.192*	.183*	.180*

*Note: Figures represent coefficients of the log-odds of the probability of a police stop.

Standard errors are reported in parentheses.

Exponentiated values are reported in italics. The figures represent the log-odds probability change for respondent values falling at the 25th compared to the 75th percentile of the distribution.

L1 N=2562; L2 N=53

+p<.10 *p<.05 **p<.01 ***p<.001

CHAPTER VII

CONCLUSION

The dissertation research is important and should make a variety of contributions to the increasing number of empirical studies on racial profiling. As is advocated by Engel, Calnon and Bernard (2002), the dissertation also makes use of existing theoretical lenses on the behavior of criminal justice organizations as well as societal level patterns of social control and applies them to the an empirical analysis of police traffic stop outcomes. Thus, the research makes an empirical contribution to a growing literature in this area and provides a model from which to draw lessons that can be helpful in designing and conducting original research on police bias in traffic enforcement in the future.

The conclusion covers a series of topics addressed by the dissertation. First, a brief recap of the research project and analytical design are offered followed by a summary of the major empirical findings. The review of outcomes provides a bridge to discuss the shortcomings of the research and to speculate about why some of the empirical results did not square with the research expectations. This discussion provides a brief laundry list of research issues, which should be addressed in any large scale survey research project concerned with collecting self report data on police traffic stops, particularly if there is a research or theoretical interest in modeling the impact of contextual measures on police outcomes. For a variety of reasons, the survey approach is ultimately likely to be a very useful tool for local communities in studying police decision-making. The remainder of the chapter begins to develop a sense of the policy

implications that can be drawn from the dissertation.

RESEARCH DESIGN

The dissertation is but one empirical product of an important and innovative research design geared towards investigating the impact of legal and extra-legal characteristics on the stop experiences of licensed drivers in North Carolina (Smith et al 2002). A telephone survey provides an established mechanism for gathering data from drivers by asking questions related to typical driving behaviors and practices. The control that researchers have in designing a sample that is optimized for empirical tests of group differences in behaviors and experiences has shown it has a great deal of power in collecting a variety of information, relatively quickly and inexpensively. Traditional survey research methods continue to show their worth, even in the study of politically explosive and policy relevant issues. However, because of the power of political context, survey research approaches will need to be very careful about the research design decisions that precede the data collection process in order to increase the validity of the data to be analyzed. Nevertheless, this approach is likely to be very important for local governments concerned with police-community relations, including racial profiling or other bias issues.

The data gathered by the survey provide an array of measures that allow the ability to test the importance of legal and extra-legal factors on a variety of police outcomes. Among the unique strengths of the survey approach is the variety of measures that can be developed to gauge respondent-level driving practices. These driving behaviors shape the legal factors thought to be related to the relative likelihood of a

police encounter. The data employed in the dissertation are a unique set of data for that reason alone. In essence this allows for the calculation of a base line expectation for what the demographic distribution of police outcomes should look like if it is an unbiased process. This gets the research closer to being able to test for racial bias rather than merely documenting racial differences in outcomes. As such, the survey data are a substantial improvement over the nature of other available survey data sources concerned with police-citizen encounters (Schmitt, Langan and Durose 2002; Langan, Greenfeld, Smith and Durose 2001). Integrating these data with other data sources that capture the influences of external or environmental conditions that may impact police outcomes provides a way to build and test theoretical models that factor in context influences, organizational characteristics of law enforcement agencies, characteristics of respondent's driving habits, situational factors that may impact the application of discretion by police, and extra-legal sources of information that may factor into police decision-making in traffic enforcement.

EMPIRICAL CONCLUSIONS

Before reviewing the study outcomes, it is useful to return to the research hypotheses that the models were designed to address. Recall that there were ten research hypotheses broken into three categories based upon the analytical level or conceptual focus of the predictions. These three are individual level predictions, organizational predictions and expectations for contextual outcomes. In general, the models described in Tables 6.4 and 6.5 provide the most support for the individual and organization level hypotheses. As has already been noted, the contextual predictions were supported in

only limited ways, and often the models failed to yield the empirical relationships that were expected.

The individual level hypotheses can be assessed from the slope coefficients in Model 1 in Table 6.4 and Table 6.5. The first hypothesis was that unlawful driving behaviors, measured by driving speed, driving habits, recent accidents, police stop evasion methods, and conviction history, provide the basis for police stops. Police social control in the form of vehicle stops increases as the severity or volume of illegal driving increases. The second hypothesis was that more time on the road is expected to increase the likelihood of experiencing a police stop. Thus, those who drive more should be expected to be stopped more often by police of all types.

The first model in Tables 6.4 and 6.5 show that drivers who self-report driving activity that includes higher speeds and who employ evasion methods are more likely to experience a state police stop, but are at no greater risk of being stopped by local police compared to motorists who drive at slower speeds or who do not use evasion techniques. Consistency for both types of police is found in the lack of statistical significance for recent accidents and driving habits, such as wearing a seat belt, turn signal usage, passing cars in traffic, rolling through stops, passing on divided highways, speeding up through intersections with yellow traffic lights, in predicting a self reported police stop. Consistency was also found for the measure of traffic conviction history for both types of police. Specifically, motorists who had longer traffic conviction records were more likely to be stopped by NCSHP and local police in the past year. For local police stops,

this measure was the only clear-cut legally-oriented variable to significantly predict stops.

The likelihood of NCSHP stops appear to be more sensitive to driving volume. Across all NCSHP models, those who reported driving more miles in the past year were also more likely to report a NCSHP stop. This pattern was not evident for local police stops. In contrast, differences in the frequency of interstate driving were not associated with differences in the likelihood of a NCSHP stop. However, the same interstate measure increased the likelihood of reporting a local police stop, but only in the fixed effects model (1). Higher levels of driving volume are likely to be completed on highways and interstates where motorists are more likely to confront NCSHP officers compared to local police. Motorists who are piling up miles on the road apparently are somewhat less likely to be driving in areas or on road types where local police are patrolling traffic. The interstate frequency effects may also be a reflection of traffic patrol patterns for the different police agency types. Local police may be assigned to areas within their jurisdictions that are proximate to interstates, and thus their stop patterns reflect the spatial dimension of their patrols. This may be a reflection of the traffic patterns in their communities, or it may be associated with the neighborhoods that interstates traverse and the neighborhood features (such as the local crime rate) that might underlie the logic of patrol assignments. However, caution should be exercised in interpreting this effect since it is found only in the fixed effects model for local police.

The differences between state police and local police in the apparent differential reliance on legal factors starts to suggest that organizational differences between state

and local police agencies are critical to building research expectations as well as theories of police behavior that help explain racial profiling. Two organizational hypotheses were developed and both appear to be supported by analysis. These hypotheses, that local police are more likely to rely on extra-legal factors in making and resolving traffic stops than the NCSHP, and the impact of extra-legal factors is expected to be diminished for NCSHP stops compared to local police due to the higher average level of professionalism and organizational orientation towards traffic flow, are based upon assumptions about the organizational realities that distinguish local police from the NCSHP. In other words, these expectations were not observed in the data or captured in any of the measures, with the important exception of the police stop measures. Thus, evaluating the tenability of these hypotheses is a deductive process.

Nevertheless, the distinctiveness of the structure of local police stops compared to NCSHP stops provides fairly strong support for the organizational hypotheses. For example, the models in Tables 6.4 and 6.5 show that extra legal characteristics as predictors of traffic stops appear to be more important for the structure of local police stops compared to NCSHP stops. Increases in the likelihood of local police stops are found for Black drivers, male drivers, and younger drivers as well as drivers of older vehicles. Two extra legal factors, age in the form of younger drivers and home-renters, possess an increased likelihood of reporting a NCSHP stop. The pattern that emerges is that local police rely more heavily on more driver, as opposed to driving, factors. Only driver age (younger drivers) is found to be a predictor across the police organizational

types, although the effects for educational achievement and rural/urban residence are similarly non-significant as well.

These patterns suggest that local police and state police play very different roles and provide very different services to the constituencies they serve. The importance of organizational distinctions among departments has been made in prior police research comparing rural and urban departments (Crank 1990) and more or less professional and bureaucratized departments (Ostrom et al. 1978). Recently, police stop research in Riverside, CA, has suggested that these organizational distinctions are important for understanding patterns of stops within the same police agency (Parker 2001). That is, regular beat officers, those most concerned with call for service and crime control are more likely than other police units, for example traffic units, to show racial disparity in stops and stop outcomes. The stops conducted by beat officers would seem to be more investigatory in nature, while traffic units would be more likely to make stops based upon driving behaviors alone. Thus, organizational distinctions can be found within as well as across police agencies. A similar pattern appears to be evident in the survey data in comparing local police and state police patterns of traffic stops. This underscores the importance of organizational factors in guiding theory and research expectations for police bias in traffic stops.

Moving now to the contextual results, the results of the multilevel models are much less supportive of the contextual hypotheses. To review, a number of hypotheses were laid out about how contextual factors would affect stop likelihoods directly or in cross level interactions with driver level measures, especially driver race. These

hypotheses included the expectation that stops would be more likely for Blacks in communities with larger levels of racial inequality. A similar hypothesis posited the expectation for a cross level interaction effect for Black drivers in communities with larger Black populations resulting in an increased likelihood of police stops. In contrast to the first two hypotheses, a counter hypothesis was that Black racial status should increase the likelihood of a police stop in communities with larger white populations because of increases in the social distance embodied by the status inconsistency that Black drivers possess in whiter areas. Combining the first three contextual hypotheses suggests a curvilinear form, such that Black status is activated in communities where larger local Black communities represent a racial threat as well as in communities where smaller Black populations increase the status differences that race represents. In general, the predictions of these hypotheses were further refined by their focus on local police stop patterns. NCSHP were expected to be less attached to the local economic and racial conditions of the areas they patrol, while local police are much more frequently members of their communities, and thus reflect the dynamics of the community more closely.

In addition to the cross level interactions, racial inequality and racial composition were expected to have main effects on stop likelihood independent of driver race or other status characteristics. In other words, places with more racial inequality or larger Black populations as a proportion of the community were expected to increase the likelihood or rate of police traffic stops. Another main effect hypothesis posed that more urban communities presented larger drains on police resources and higher tolerance thresholds

for traffic violations. Thus, more urban districts should have lower stop rates as measured by local police stops.

The results of the contextual models show that no strong pattern of cross level interactions between driver race and the racial context inequality or population composition were found. One cross level interaction, Black drivers in communities with larger Black populations, were more likely to report a NCSHP traffic stop, suggesting that there may be some support for the notion that Black North Carolinians bear a larger racial burden or cost as measured by NCSHP stops in contexts with larger Black communities. However, the magnitude of this effect is relatively small. Further, the contextual effect is found for NCSHP stops and no contextual effects were found for local police stops, precisely the opposite of the hypothesized organizational connection of local police to community conditions.

A number of main effects findings were evident in the models and provide some support for the hypotheses that were focused on the intensity of policing, independent of driver or driving factors. For example, Models 4 and 5 in Table 6.4 show that more urban areas, those that have more police per capita, higher drug crime rates, and are more densely populated, have higher stop rates for local police. No other contextual effects are found for the local police models. Models 4, 5, 6, and 7 in Table 6.5 shows that the main effects of increases in the percent of the community that is Black increases the stop rates for the NCSHP. In order to test the possibility that this finding is a spurious outcome attributable to the spatial connection between the racial distribution of North Carolina's population and the geographic pattern of North Carolina's major roadways, such as

interstates and highways where the NCSHP tends to do most of its work, a variety of measures of the urbanness of the district were entered into the series of models. The urban index, population density alone and the volume of NCSHP citations issued in 2000 were all modeled to provide alternative measures of traffic flow, demand for NCSHP services, and ultimately deployment decisions by the NCSHP. The spatial concentration of NCSHP deployment, like local police patrol patterns, are critical factors to any effort to separate the organizational influences they may help us understand stop patterns and likelihoods from community population and economic forces that define the community environments police work in. A consistent pattern for each of these organizational deployment measures was found on NCSHP stops. All were possessed significant and negative main effects on NCSHP stops, the opposite of the local police pattern.

A number of important empirical conclusions can be drawn from the models presented in Chapter 6. Among the most noteworthy findings is the pattern of individual and organizational outcomes that appear to distinguish local and state police as unique entities. It is quite clear from the differences in the outcomes across these two types of police stops that the meaning of a traffic stop is different for local police and the NCSHP. beyond the meaning of the stops. In addition, several themes emerge from the multilevel models that provide a better sense of the importance of contextual characteristics in explaining stops by different types of police. The distinctive patterns that emerge from police-specific models suggest that focusing on the organizational characteristics of the different police is among the more important factors in developing theoretically informed expectations about their decision-making behavior. Individual status characteristics are

much more important to the behavior of local police than state police. Which organizational features of local police departments and their impact on the routine decision-making of police officers is speculative, since the survey data do not provide the ability to distinguish among local police stops conducted by different types of police agencies. But some general differences between local police as a group and the North Carolina State Highway Patrol, while somewhat speculative, possess enough validity to merit some cautious discussion.

A fundamental distinction between state and local police is their organizational mission. The NCSHP is expected to assist in maintaining the safe movement of public traffic. Their mission is better defined and much more narrowly constrained to primary traffic enforcement. This organizational imperative is reflected in the NCSHP models in which driving behavior is much more important to predicting a stop than it is for local police traffic stops. The important driver-level factors of driver age and home-renter status may also be interpreted to be reflections of driving habits.

Surprisingly, NCSHP stops appear to be more sensitive to community context than local police stops. This pattern is generally the opposite of the theoretical expectations. Among the possible explanations for this pattern is that the troop district unit is a more valid approximation of a contextual unit for the NCSHP than for local police who only operate within their own distinct jurisdictions within much larger troop district areas. Another explanation is that the spatial distribution of patrol for the NCSHP coincides with the spatial distribution of race and inequality in North Carolina. Unlike most states where Blacks tend to be disproportionately concentrated in urban areas, the

spatial pattern of the Black population in North Carolina is substantial in both urban and rural areas. The geography of the public highway system may overlap substantially with the distribution of Black North Carolinians, which may help explain the finding that residing in counties with higher proportions of Black residents increases the likelihood of experiencing a NCSHP stop, regardless of driver characteristics. In other words, the spatial distribution of NCSHP patrol is very important to understanding the likelihood of experiencing a stop by the NCSHP. A similar speculative explanation is consistent with the finding that NCSHP stops increase as the “urbanness” of the county declines.

In contrast to the NCSHP, local police are saddled with a broad spectrum of frequently competing organizational goals. Within this diversity of goals, several likely patterns in the mission of local police can be identified, at least in contrast to the NCSHP. Among the more important organizational goals of local police is the mission to control crime. The imperative to control crime has very different implications for the basis of police decision-making of all kinds, including traffic stops. Controlling crime may encourage local police to make decisions based less upon concrete evidence of law violation and more on suspicion or the *appearance of potential* for violation of law.

The crime control mission and concern about factors correlated with potential for crime, most notably race, but also age and the age of the car being driven, are clearly important indicators of local police suspicion of additional (and presumably more severe) wrongdoing. Beyond these driver factors, little else except a conviction history for traffic offenses reliably predicts local stops. Traffic conviction history may be interpreted as either an indirect measure of unlawful driving history, which would seem to predict

subsequent driving behavior and may be the basis of a traffic stop. Another, somewhat more speculative interpretation of what driving conviction history represents to local police is the dangerousness or reason for suspicion of the given driver. Police communications technology provides many local police with the capability to be aware of some portion of the criminal record, if any exists, of a driver before a stop is initiated. This technological facet of local police work combined with empirical evidence linking traffic accidents with police criminal records suggests that a driving conviction may be sufficiently correlated with criminal activity that police have some concrete evidence to form suspicion which may trigger a greater likelihood for a traffic stop (Meehan and Ponder 2001).

Among the more puzzling outcomes of the empirical analysis was the relatively weak evidence for a contextual dimension to local police decision-making in traffic stops. A number of plausible explanations for this non-finding are worth mentioning. I offer five including: 1) local police decision making is not a contextual process, 2) the data are insufficient for contextual tests, 3) the unit of analysis at the group level is inappropriate for detecting contextual effects, especially for local police stops, 4) the impact of committing an ecological fallacy, and 5) the consciously conservative analytical approach undertaken. A brief discussion of each of these follows:

- 1) The simplest and most parsimonious explanation is that police stops are not a contextual process. Perhaps police are much more sensitive to the given circumstances of the situation they find themselves in and make decisions that reflect these immediate realities. This tends to wash out contextual factors and

elevate the importance of individual and legal characteristics in police decision-making. One important finding is that different police groups respond to different aspects of the situation in deciding to initiate a traffic stop. State police seem much more sensitive to traffic-related reasons for stops, while local police are more sensitive to driver properties, such as race, age, and the age or condition of the car. Stated differently, contextual factors may be important in the ways that they are manifest in the organizational properties of different types of police units.

- 2) The survey data are insufficient to produce robust estimates across contextual units. In other words, there are simply not enough observations per group unit to produce estimates of sufficient weight across the diversity of group units. Many of the smaller counties would have been eliminated in an HGLM analysis because they had too few surveys. This had the effect of limiting the variation among the counties included in the HGLM tests since many of the smallest counties were located toward the tails of the univariate distributions of the contextual measures.
- 3) Another issue that may explain the relative lack of findings for the contextual unit of analysis is that the unit is too large to capture the effect of group level variation on police stops or other factors. The group unit should be tied to distinct geographical and jurisdictional boundaries, such as cities and towns, or communities within the same city served by the same police force. This study employed the county as the group unit. Clearly counties are diverse places often marked by their own distinct communities. Many counties are far too diverse to

expect that county measures would capture the contextual nature of the distinctive communities that compose the county. In other words, county data averages toward the mean all the contextual forces that may be important within smaller geographies. The result is that the contextual analysis is more likely to produce null outcomes.

- 4) A further complication is the reality of ecological error in the assumption that police stops and contextual features tied to the same respondent occurred in the same social space. Perhaps the strength of correlation between the county of residence and the county where the stop occurred is lower than expected. Police are trained to identify things that are out of place. Anecdotal evidence suggests that police are especially cognizant of out-of-state license plates, which may increase the likelihood of a stop. These data do not allow a calculation of the correlation between county stops and county of residence. Other research that is focused specifically on state police in Pennsylvania suggests that a large proportion of all traffic stops are of cars from counties other than the county where the stop occurs (Calnon and Engel 2002).
- 5) The research reflects the intentionally conservative approach that was structured into some of the decisions concerning how to analyze the data. For example, the use of unweighted data may very well diminish race differences or other factors that are operating in the field. While race differences and other evidence of disparity in police traffic stops were found in a number of tests, such an approach may understate the magnitude of these differences. A similar process may under-

estimate the analytical importance of the contextual measures as well.

All five of these explanations provide a viable explanation for the relative lack of contextual effects in the local police stop models. Also, each of the five provide some ideas about how a research project might be designed to more effectively test the importance of contextual factors as direct and indirect influences on police decision-making in traffic stops. These improvements include paying greater attention to the police unit under scrutiny and the organizational realities that impact the focus and behaviors of those operating within the organization. This includes being aware of the division of labor and related responsibilities between units within the same police organization. Also important would be to develop a sample design that is more appropriate for hierarchical analytic techniques. These suggestions would generally entail larger samples in smaller units, which translates into more expensive research projects.

Trying to limit the potential of ecological problems is likely to prove extremely challenging. The nature of traffic patterns is that the drivers that compose the patterns are quite dynamic. Mobility in and out of given geographies could be accounted for by collecting information from drivers about the community context of the stop, rather than making the assumption that the community of driver residence and the community where the stop occurred are the same community. The meaning of race, for example, theoretically changes as one moves from one community context to the next. Pinning down the context of the stop could be done with official records, or through additional input from drivers in a survey format, though such input would be prone to recall and

other error. Relying on official records may compromise the respondent's perception of confidentiality and re-centers the police account of traffic stops in an analysis of the police.

The last issue also is concerned with respondent recall and how to properly minimize response bias in either direction, detect response bias for both outcome measures but also baseline measures, such as typical driving behaviors, and how to construct weights that best approximate the empirical reality of driver behaviors and police stop experiences.

DRAWING LESSONS THAT CONTRIBUTE TO ONGOING POLICE RESEARCH

The dissertation research has a contribution to make to the discussion about police policy and practice in traffic patrol and crime control. The dissertation shows, for example, that certain kinds of police organizations and social contexts possess elevated patterns of racial and other extra-legal bias in traffic stops.

The dissertation also makes a large contribution to the evolving research area of race bias in police traffic stops. Across the United States a wide variety of studies are being conducted that attempt to describe the extent of racial disparity in police stopping practices. These are taking place at the national, state, and local level. A large majority of these studies is relying on official sources of information drawn mostly from police records about traffic stops or tickets for data. This is somewhat problematic in light of the highly charged political atmosphere that surrounds racial profiling and police community relations in the contemporary United States. Police agencies have

collectively wrung their hands over the increased time, effort, and oversight burden in participating in these research efforts. Yet the public, political and legal pressure to cooperate has been powerful in overcoming police resistance to such data collection projects. Nevertheless, there is good reason to suspect that police officers may continue to harbor some resistance to the data collection efforts of their agencies, and that this resistance may impact the accuracy of official records about police traffic stops and ticket events.

Beyond concern about the validity of official sources of data, the ability to empirically examine questions about discrimination rather than disparity are quite limited. These limitations largely boil down to questions about the composition of the driving population in a given geography as well as group average differences in driving behaviors that should increase the likelihood of a traffic stop by the police. Unfortunately, official police sources of traffic stop and ticket data do not contain these types of exogenous data, and are thus somewhat limited. These two primary limitations of research using official police data frame the void that empirical survey research approaches may help to fill.

While not an explicit part of this research, part of the contribution of the dissertation is to begin to build knowledge about alternative methodological approaches for studying racial discrimination by police departments, especially racial profiling. Surveys provide the capability for communities to begin to assess the nature of race and traffic stops by police, independent of police cooperation, and thus may be used as a reckoning for official data on police stops. Perhaps even more importantly, survey

research can easily be used to collect a wide range of behavioral data. Behavioral data on drivers' activity provides the capability to begin to link police traffic outcomes with individual and community driver characteristics. While falling short of establishing a true driver population baseline, survey methods come closer to this goal than the most common approaches, which rely on official police data and sometimes census data on population. Thus, surveys possess the potential to be a valuable scientific tool when applied to questions of police behavior and citizen contact. This position is supported to some extent by the official sanction of the United States Department of Justice decision to add in the 1990s a police-public contact module in the National Crime Victimization Survey.¹⁵

In addition to the substantive research strengths of surveys in the study of police traffic outcomes, all the traditional advantages of surveys are also applicable. For example, survey sampling makes survey methods efficient in administration time and cost. This is an important consideration for public agencies interested in examining police/community issues. Beyond the efficiency of data collection, surveys also provide an opportunity for citizens and police to become a part of the research process thereby providing opportunities to develop positive police-citizen relationships. Police and community input have the potential to be important sources of cooperation. As such, the role that police play in local communities may become somewhat more democratic.

¹⁵ Despite the use of survey techniques, the NCVS module on police-public contact does not exploit the full potential of the survey method. It does not ask questions about citizen driving practices that were presumably antecedents to the encounter, more than half of which were traffic related in 1999 (Langan et al. 2001).

The use of surveys by police to gauge community trust, police image and demand for services has been an important part of the development of professional police departments that are sensitive to public opinion. Identifying contexts in which race-based policing occurs provides opportunities for local and state police professionals to target areas for training programs to increase racial sensitivity among police personnel. One by-product of training is that police personnel may be better able to provide police services to members of minority and other disadvantaged communities. Another outcome of directed training may be the enhancement of both real and perceived levels of social and criminal justice among citizens within the communities police serve.

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