MEASURING RACIAL DISPARITIES IN TRAFFIC TICKETING WITHIN LARGE URBAN JURISDICTIONS

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ABSTRACT: *As racial profiling has emerged as one of the most contentious and persistent issues confronting law enforcement and public officials across the nation in the last 20 years, research in this area has evolved rapidly. Although an increasing number of studies have been conducted on racial profiling in traffic enforcement, scholars have not reached a consensus on how best to estimate the driving population to compare with racial traffic ticketing data from a jurisdiction. This study combines traffic flow data for the city of Cleveland with residential census data to estimate the city's driving population. This provides a more precise estimate of the driving population than estimates obtained from traffic flow and census data used separately, as in earlier studies. This study finds that although blacks are a majority of city residents, they are not the majority of the driving population, yet are more likely to be ticketed than whites.*

KEYWORDS: *policing, public safety, racial profiling, social equity, traffic enforcement*

The issue of racial profiling has emerged as one of the most contentious political and social issues confronting city administrations, law enforcement agencies, and communities of color over the last 20 years. In a pre-9/11 context, racial profiling generally referred to the targeting and stopping of minority motorists, particularly blacks by law enforcement for traffic violations. The term DWB ("driving while black [or brown]") was coined by blacks and adopted by the media to describe law enforcement practices that primarily affected members of minority groups (Harris, 2002; Ramirez, McDevitt, & Farrell, 2000). Critics charge that with the advent of the war on drugs in the mid-1980s, law enforcement has increasingly used traffic stops as a means to search minorities' vehicles and persons for drugs, guns, and other forms of contraband (Ginsberg & Goldman, 1999; Harris, 1999a, 1999b; Smiley, 2006). Legal scholars refer to such policing practices as pretextual stops (Harris, 1999a, 1999b, 2002; Kennedy, 1997).

Advocacy groups such as the American Civil Liberties Union and the National Association for the Advancement of Colored People, along with politicians, social commentators, and some scholars, cite these practices as a violation of minorities' constitutional protections against unreasonable search and seizure without probable cause and the provision of equal protection under the law under the Fourth and Fourteenth Amendments, respectively (Harris, 1999a, 1999b, 2002; Smiley, 2006). Conversely, other scholars and some law enforcement agencies base the defense of the use of pretextual stops by law enforcement on crime statistics, which reflect a disproportionate number of blacks under the control of the criminal justice system, particularly for drug-related offenses (Fridell, 2004; Kennedy, 1997; MacDonald, 2003; Taylor & Whitney, 1999). Critics of law enforcement's use of such practices argue that the disproportionate representation of blacks in crime statistics is a reflection of the discrimination within the criminal justice system (Harris, 1999a, 1999b, 2002; Mann, 1993; Mauer, 1999, 2006; Western, 2006).

Theoretical Perspectives

The opposing views of proponents and critics of racial profiling are most clearly reflected in consensus theory and conflict theory, which provide theoretical perspectives for examining the racial disparities within the criminal justice system. Consensus theory is the principal theoretical framework that holds that equality is an essential value within the criminal justice system and societal sanctions are imposed objectively on those who break the law. In general, this theory purports that sanctions are applied to behavior irrespective of sociodemographic factors such as the race and socioeconomic characteristics of the offender. Explicit in the argument of many consensus theorists is the presupposition that the disproportionate representation of minorities in crime statistics and the criminal justice system is the result of their increased involvement in criminal behavior, not racial discrimination (Blumstein, 1993; MacDonald, 2003; Taylor & Whitney, 1999; Wilbanks, 1987).

In the original conceptualization of conflict theory, theorists used a social class perspective (Chambliss & Seidman, 1971; Quinney, 1970) to explain that the disparities faced by minorities are foundational and essential to the maintenance of the social order, while others (Bauer & Chambliss, 1997; Gordon, 1988; Hawkins, 1987; Lynch & Patterson, 1996) adapted a racial/ethnic-based perspective of conflict theory to account for the inequalities experienced by minorities within the criminal justice system in particular (DeLisi & Regoli, 1999; Weitzer, 1996). Conflict theory argues that the disparities and inequalities between social groups within the criminal justice system are the result of discrimination and that legal sanctions are applied to those groups (i.e., minorities and the poor) that are perceived as a threat to the status and interests of the elite. According to Cureton

(2000), minorities pose such a threat to the social and political order of elites due to their subordinate status, conduct, jealousy and envy, suspicion, and cultural or racial differences.

The results of a number of studies analyzing whether the disproportionate representation of blacks in the criminal justice system is the result of racial discrimination have been mixed, with compelling research and arguments supporting both consensus theory (Blumstein, 1993; Kennedy, 1994, 1997) and conflict theory (Bridges, Crutchfield, & Simpson,1987; Cole, 1995; Milovanovic & Russell, 2001). Mann stated: "The few available studies of this issue offer support to both sides of the question" (1993, p. 139).

The debate among consensus and conflict theorists regarding the racial disparities that exist within the criminal justice system is without resolution. Nonetheless, after thirty years of debate, a delicate agreement has been achieved within the field of public administration, embracing social equity as a principle to be pursued by public administrators and organizations (Collins & Gerber, 2008). Inherent within the concept of social equity are the constitutional principles of fairness, justice, and equal treatment (i.e., protection) under the law.

Shortly after young scholars in the field of public administration convened at the first Minnowbrook conference in 1968 to discuss the strength, weaknesses, and direction of the discipline in the context of the socially tumultuous period of the 1960s, H. George Frederickson identified social equity as perhaps the central characteristic of the New Public Administration (as cited in Esquith, 1998). In accordance with this view, the American Society for Public Administration, one of the field's oldest and most respected professional associations, incorporated social equity into its code of ethics as a value to be promoted by public administration professionals in their work (Brunet, 2006).

As Brunet noted, performance measurement has become "a fact of life in public organizations" (2006, p. 1). He cited criminal justice agencies as having been at the forefront of the measurement movement, beginning with the Federal Bureau of Investigation's use of the Uniform Crime Report in the mid-1930s to collect crime data from police departments across the nation. Whereas public administrators, including those in law enforcement, were traditionally primarily concerned with measuring and evaluating their agencies to ensure they are operating in a cost-efficient and effective manner, social equity is now also a strategic goal that many public organizations and administrators strive to achieve in their delivery of public services.

As Frederickson argued in stressing the need to include social equity as a performance measurement criterion for effectiveness in public administration, "It is incumbent on the public servant to be able to develop and defend criteria and measures of equity and to understand the impact of public services on the dignity and well-being of citizens" (cited in Brunet, 2006, p. 2). Collins and Gerber

pointed out, however, that accepted managerial practices such as performance measurement are not regularly applied to equity-based outcomes in public sector programs and "while most may agree that social equity is important, much less is known about practical ways to manage for improved social equity performance" (2008, p. 1128).

The need to measure social equity is particularly salient for public officials and law enforcement administrators, given the increasing prevalence of the issue of racial profiling across the nation, particularly in cities and regions of the country with large minority populations. The objective of this study is to offer public officials and local law enforcement administrators a performance measurement tool that provides a more precise estimate of the driving population within their municipalities than estimates obtained from the use of traffic flow and census data independently, as used in earlier studies on racial profiling. This study combines traffic flow data for the city of Cleveland with residential census data to estimate that city's driving population, thereby providing city leaders with an efficient method of measuring any potential racial disparities in traffic ticketing patterns within their jurisdiction.

Prior Research: Traffic Enforcement and Race

To determine whether law enforcement practices racial profiling and uses traffic stops to target blacks and other minority motorists for other suspected criminal activity, an increasing number of studies have analyzed traffic ticket distribution patterns within a given jurisdiction as an indicator of racial bias in traffic enforcement (Decker, Rosenfeld, & Rojek, 2002; Farrell et al., 2003; Harris, 1999a, 1999b, 2002; Lamberth, 1996). An increasing number of states, including Connecticut, Maryland, Massachusetts, Missouri, Oregon, Rhode Island, and Texas, have begun to collect and analyze statewide traffic-stop data in response to the growing public concern and perception of racially biased traffic enforcement by state and local law enforcement agencies (Fridell, 2004).

Traffic stops are the most frequent type of interaction that citizens have with police, as reported in the Bureau of Justice Statistics' Police–Public Contact Survey. Nineteen percent of the U.S. population age 16 or older had face-to-face contact with police in 2005, 56 percent of which resulted from a traffic stop. Although the rate at which black, white, and Hispanic motorists were stopped by police were similar—8.1, 8.9, and 8.9 percent respectively—black and Hispanic drivers were searched at higher rates than whites—9.5, 8.8, and 3.6 percent respectively (Durose, Smith, & Langan, 2005). Although the Police–Public Contact Survey provides aggregate data on traffic stop rates and post-stop outcomes by racial group at the national level, these self-report data are not compared to official police records (i.e., a traffic ticket database); therefore, they provide limited insight

into racial traffic enforcement practices and patterns at the state and local levels (Engel, Calnon, & Bernard, 2002).

Central to the analysis of racial disparities in traffic ticket distribution within a specific geographic area is the definition and measurement of the relevant driving populations. The driving population is the pool of persons eligible to be ticketed within a particular jurisdiction, which is compared to the traffic ticketing data for the given jurisdiction to determine any racial disparities in traffic enforcement. In that the racial composition of the driving population in a specific geographic area or jurisdiction is not generally known, it must be estimated. The comparison of the demographic characteristics of the driving population with that of persons ticketed within the jurisdiction provides a benchmark or an estimate of the expected percentage of traffic stops of motorists of each race within the jurisdiction if there is no racial bias in traffic law enforcement (Engel & Calnon, 2004; Fridell, 2004). While various methods of defining the driving population have been used in the empirical research conducted to date, scholars have yet to reach a consensus on the optimal method of defining this population (Farrell et. al., 2003).

Lamberth's (1996) research of racial profiling along portions of Interstate 95 (I-95) in the state of New Jersey is one of the earliest and most cited empirical studies of racial profiling in a pre-9/11 context. In this study, Lamberth compared ticketing data from a database of all traffic stops and arrests made by the state police with data obtained from traffic and violator surveys conducted by his research team to determine whether blacks were being stopped in disproportion to their numbers among the driving population along stretches of I-95 in the state. In the traffic survey, members of Lamberth's research team posted at four designated sites along the interstate noted the number of black motorists and the state on the vehicles' license plates, with the exception of large trucks, tractor trailers, buses, and government vehicles, which was used to define the racial composition of the driving population (*State v. Pedro Soto*, 1996). The state vehicle registration data were compared with 1990 census data from the 11 states in which almost 90 percent of the vehicles observed were registered.[1] The percentage of motorists from each racial group observed speeding was then compared to the percentage of tickets administered to members of each racial group in the areas of the interstate under investigation. Lamberth found that blacks were disproportionately stopped and ticketed by law enforcement in the observation areas along I-95 in relation to the percentage of the driving population blacks represented in the respective geographic areas.

In the violator survey, Lamberth's (1996) research team supervisor traveled a designated stretch of the New Jersey Turnpike with the cruise control of his vehicle set at the posted 60-mph speed limit and recorded the number of vehicles that passed his vehicle, the number that he passed, and the number with black occupants (*State v. Pedro Soto*, 1996). The use of the violator survey strengthened Lamberth's

research by providing a relatively precise measure of the percentage of speeders from each racial group to compare against the actual traffic ticketing data.

Lamberth (1996) found that blacks represented 13.5 percent of the driving population along the stretch of I-95 under investigation, which was consistent with the census data from the 11 states in which the majority of the vehicles observed were registered. While blacks represented 15 percent of those observed speeding in the violator survey, they were 46.2 percent of those that received traffic citations, constituting an absolute disparity of 32.7 percentage points (46.2 − 13.5 percent). Lamberth concluded that it was highly unlikely that such a significant disparity between the percentage of blacks observed speeding and the percentage of citations administered to blacks could have occurred by chance (*State v. Pedro Soto*, 1996).

Lamberth's unpublished reports and his methodology in investigating the traffic enforcement practices of New Jersey State Police and the Maryland Highway Patrol were instrumental in formulating the empirical aspects of Harris's (2002) study of racial profiling in Akron, Dayton, Toledo, and Columbus, Ohio (personal communication with Harris, October 20, 1999). Harris used the physical descriptions included in the computerized traffic files maintained by the municipal courts to determine the race of those ticketed. His review of the traffic ticket data in Akron, Toledo, and Dayton for 1996, 1997, and 1998 and for 1996 and 1997 in Columbus/Franklin County (the only years the data were available) revealed that blacks were issued 37.6 percent, 31.0 percent, 50.0 percent, and 25.2 percent of the traffic tickets in these cities, respectively.

Harris (2002) defined the driving populations in his study by the racial composition of the driving-age population for blacks and non-blacks.[2] Using census data on population by place of residence for each city, he defined the driving age as those persons between the ages of 15 and 75.[3] Harris further refined his estimate of the driving-age population using data compiled by the U.S. Federal Highway Administration National Personal Transportation Survey. This survey reported that, nationally, 21 percent of black households did not own a motor vehicle. Accounting for the percentage of black households without access to a vehicle further reduces the percentage of blacks in the driving population, thus increasing the probability of blacks' being ticketed in each city when compared to the traffic ticketing data. The likelihood of blacks being ticketed in comparison to non-blacks increased from 2.02 in Toledo and 2.04 in Akron to more than 2.7 times in both cities and from 1.8 times in Dayton and Columbus/Franklin County to 2.5 and 2.4 times, respectively (Harris, 2002).

The methods of defining the driving population utilized by both Lamberth (1996) and Harris (2002) have limitations. While scholars tend to agree that traffic observation methods provide a relatively precise estimate of the racial composition of the motorists in specific areas under observation, observational methods

are more difficult to implement within large geographic areas such as cities, given cities' porous boundaries and their vast network of traffic arteries. Some researchers have used samples of selected subareas within cities to collect traffic observation data. Although this method can provide a relatively accurate estimate of the racial composition of the driving population within the specific observation area, the findings are not generalizable to the city as a whole in that the observation sites in studies that have employed this method were not randomly selected. Rather, traffic observation sites are often those identified by the law enforcement agency or noted within the traffic ticketing data as having high volumes of traffic, traffic citations/violations, or accidents (Engel et al., 2006; Fridell, 2004). The use of observation sites identified by the law enforcement agency or those areas where high volumes of traffic citations are written can be problematic. Reliance on these sites to collect observational data can, in essence, create a self-fulfilling prophecy (Harris, 2002). From an administrative perspective, it would be rational for police officials to direct researchers to those areas where they have traditionally allocated and expended their agency's traffic enforcement resources and the increased number of traffic tickets written in this area, which may be a function of the heightened police presence in the area and then becomes the justification for the concentration of traffic enforcement activities in this location.

Additionally, the use of a rolling survey as utilized by Lamberth (1996) with observation vehicles with their cruise control set at 60 mph is not feasible within an urban context in that the speed limit on most city streets within the United States are generally 35 mph or below, and the standard cruise control equipment on most passenger vehicles can only be set at speeds of 60 mph or above. Therefore, using direct observational methods to estimate the racial composition of a sizable city is logistically impractical, given these limitations and the considerable manpower and financial cost required to collect representative data of a city's vast network of traffic arteries.

Harris's (2002) use of the driving age refines the measurement of the residential population from which the driving population is drawn in the cities included in his study. However, as noted by Farrell et al. (2003) in their study of racial profiling in Rhode Island, Harris's use of census data for only residents of driving age within the respective cities in the study does not provide an accurate estimate of a city's driving population in that it fails to account for those drivers on the roads who live outside the city in question (Decker et al., 2002; Fridell, 2004). A considerable portion of the traffic that utilizes a city's streets are transient motorists drawn from a city's hinterlands by various push-and-pull factors such as work, shopping, entertainment, and other inducements, which are not accounted for in Harris's model (Carroll, 1955; Fridell, 2004). In addition, while adjusting for the percentage of black households that did not own or have access to a motor vehicle, Harris failed to adjust for the percentage of non-black households without access

to a motor vehicle, which included all other minorities as well as whites. By adjusting for persons within each racial group without access to a motor vehicle, the pool of drivers from each racial/ethnic group eligible to be ticketed by police is further reduced, which in turn could reduce any racial disparites noted between racial/ethic groups when compared to the actual traffic ticketing data.

In some states where statewide traffic stop data is being analyzed, researchers use Department of Motor Vehicle demographic data on licensed drivers living in a particular geographical area to define the composition of the driving population (Fridell, 2004; Zingraff et al., 2003). Although this provides a picture of persons licensed to drive on the roads within a given jurisdiction, it fails to capture the transient, out-of-state motorist population. This method also does not necessarily provide the needed racial demographic data, as the trend for states, such as Ohio, is not to include the race of motorists on driver's licenses—only their eye and hair color, height, and weight (Fridell, 2004).

Given the constant flow of persons crossing a city's boundaries and traveling its roadways, the use of a gravity model as utilized by Farrell et al. (2003) in their study of racial profiling in Rhode Island provides a more comprehensive method of estimating the racial composition of a jurisdiction's driving population than Harris's (2002) use of the target city's residential census data or Department of Motor Vehicle records to determine who is driving on a city's streets at a given point in time. The use of a gravity model is also more efficient from a cost and manpower perspective than the use of Lamberth's (1996) observational methods to obtain representative data at the city level.

Social scientists use gravity models to forecast the movement of people, commodities, and information between geographic locations (e.g., cities, counties, etc.). Gravity models are based on the notion that "the magnitude of a city's influence on its surrounding hinterland . . . will depend upon . . . the size of the city exerting the influence, and the distance of such city from the affected persons" (Carroll, 1955, p. 149). The influence of the central city is proportional to the city size and inversely related to the distance over which this influence acts.

While the use of a gravity model provides a far-reaching, regional estimate of the driving population, it does not provide the demographic precision of the driving population that Harris's (2002) use of driving-age and vehicle ownership adjustments afford. Through the use of the gravity model and driving-age and vehicle ownership-adjusted census data, this study addresses the limitations of the research methods used by Lamberth (1996), Harris, and Farrell et al. (2003). These integrated methods account for the possibility that any racial disparities found in the analysis of the traffic-ticketing data are the result of the disproportionate representation of racial/ethnic groups as residents within the target city and as drivers on the jurisdiction's roadways. They provide a more precise measure of the driving population at risk of being ticketed by police within the designated

geographic area. These combined methods provide a rather literal census count of persons of driving age with access to a motor vehicle within each racial group who are within the region or orbit of the city's gravitational pull and estimated to drive on the city's streets and thus eligible to be ticketed by police; whereas Harris's (2002) use of the driving age only to define the driving population within each racial group only accounts for persons of driving age within the city and not from the larger metropolitan region. As stated, nor does Harris account for and reduce the non-black driving population, which includes whites and other minorities, by the portion of this population that does not have access to a motor vehicle as is done for the black driving population. This can lead to an overestimation of the size of the non-black driving population and distort the magnitude of the disparities observed between racial groups once the driving population data are compared to the actual traffic ticketing data for the jurisdiction.

   This study does not, however, account for possible disparities in ticketing of motorists of a particular racial/ethnic group on roads with high levels of police traffic enforcement activity, nor does it account for the possibility that racial/ethnic groups are significantly different in their traffic law–violating behavior (Fridell, 2004). Another limitation is that this study does not account for the possibility that due to their relative lower economic status in relation to whites, blacks may drive older, less well-maintained cars and therefore draw increased attention from the police, resulting in blacks' being subjected to more traffic stops and citations (Alpert, Dunham, & Smith, 2007). Paradoxically, these types of traffic stops are by definition the pretextual stops that are at the heart of the racial profiling debate, as blacks argue that equipment violations are among the alleged minor traffic infractions used by police as a guise to effect a traffic stop to execute further investigative procedures (Harris, 2007).

   Given these limitations, findings of disproportionate ticketing of a particular racial/ethnic group cannot be taken as conclusive evidence that such disparities are the result of police specifically targeting members of a particular group for traffic citations solely based on their race/ethnicity. The aforementioned research conditions must be met before such conclusions can be reached (which is not the objective of this study). Rather, the objective of this study is to provide a more precise method of estimating the driving population than the methods used in earlier studies of racial disparities in traffic enforcement.

The Data

This study used three sets of data. The first was the Cleveland Police Department's traffic ticket database. This database contains 182,980 traffic tickets written over a two-year period, noting the motorist's race. The Cleveland Police Department began collecting data on the race of motorists ticketed in 1999 (personal commu-

nication with Cleveland Police Department database administrator, April 2003). Along with the race of the motorists, the tickets included the ticket citation number, the date and location of the traffic stop, the gender and birth date of the motorist, the year and make of the vehicle, the number of offenses the motorist was cited with (up to five violations can be noted on each ticket), the police district (or traffic unit) that issued the ticket, and whether an arrest was made. The race of the motorist, the location, and the year are the only variables on the traffic ticket that were used for analysis in this study. The racial/ethnic categories used by the Cleveland Police Department to identify the race/ethnic of motorists were: black, white, Hispanic, Arab, and unknown.[4] With the exception of black and white the racial/ethnic categories used in the ticketing data were inconsistent from year to year. Therefore, motorists belonging to all other racial/ethnic groups and those identified as unknown were categorized as other.

The second set of data used was the 2000 Compress Trip Distribution Model (a gravity model) for the City of Cleveland obtained from the Northeast Ohio Areawide Coordinating Agency (NOACA), the regional planning agency for Northeastern Ohio. The gravity model provided an estimate of Cleveland's driving population. According to the gravity model, an estimated 3,072,880 vehicle trips were made between Cleveland and areas within and outside of the agency's service area during a 24-hour period in 2000. In this study, vehicle trips include all vehicles except buses, and each vehicle trip represents one motorist.

The third set of data used was residential demographic data on race, age, and household vehicle ownership extrapolated from the 2000 U.S. Census of Population.[5] These data were used to weight the output from the gravity model data to estimate the racial composition of the driving age population with access to a motor vehicle among the estimated 3,072,880 motorists from the 13 counties in the model that contribute to Cleveland's driving population. The racial categories used to define the driving population were black, white, and other (all other racial/ethnic groups). Adjusting the census data for driving age, whites represent 53 percent (1,625,560) of Cleveland's driving population, Blacks represent 40 percent (1,242,418), and persons of other races constitute the remaining 7 percent (204,902). Further refining the driving age estimate by persons of driving age with access to a motor vehicle, whites represent an estimated 48.3 percent (1,483,815) of Cleveland's driving population, blacks represent 37.9 percent (1,163,703), and persons of other races constitute 6.1 percent (186,329). The demographics of the remaining 7.8 percent (239,034) of the driving population are unknown.[6]

Data Analysis

The traffic tickets in the computer database were used to analyze the traffic ticketing patterns in the city of Cleveland by race over the two-year period. The driving-population estimate was compared to the actual number of traffic tickets

from the database administered to members of each racial group. The estimated percentage of black motorists in Cleveland's driving population, as derived from the gravity model and census data, was then compared with the percentage of blacks that received traffic tickets to determine whether blacks were disproportionately ticketed within the city.

THE CITY

Cleveland had a population of 478,000 in 2000. It is the second largest city in the state of Ohio and is the center of the state's largest metropolitan area. The city's residential population was 51.0 percent black, 41.5 percent white, and the remaining 7.5 percent of its residents belonged to other racial groups. The city of Cleveland has the largest black population in the state of Ohio and is the third most racially segregated city in the country, with blacks primarily concentrated on the city's East side, whites concentrated on the city's West side, and Hispanics concentrated on the near West side (Salling, 2001). Sixty percent of the city's residents live in neighborhoods in which 90 percent or more of the residents are of the same race (Smith & Davis, 2002).

To provide further context, the City of Cleveland was sued by the Shield Club, a black police officers fraternal organization, in 1972 for discrimination in the hiring, promotion, and recruitment of minority police officers. The city was found guilty, and a consent decree was signed in 1977 requiring the police department to increase its minority representation to 33.3 percent, roughly reflecting the city's racial demographics at the time. The consent decree was settled in 1995, as the department met the 33.3 percent minority threshold in 1994.

As of December 2008 there were 1,654 sworn officers in the Cleveland Police Department, 64 percent of whom were white, 27 percent black, 8 percent Hispanic, and 0.09 percent of some other race/ethnicity. The police department's command staff, which consists of the chief, 4 deputy chiefs, and 11 commanders, includes one black male and one Hispanic male as deputy chiefs, and five black male and one white female commanders.[7] The remainder of the command staff is comprised of white men. The department has had two African-American chiefs of police; a man in 1994 and a woman in 2001. Despite efforts to bring the minority representation within the department in line with the demographics of the city, there is still a considerable imbalance between the internal racial demographics of the Cleveland Police Department (36 percent minority) and the external demographics of the city it serves (58.5 percent minority).

THE GRAVITY MODEL

The gravity model used in this study to estimate Cleveland's driving population covers the region's metropolitan planning organization's service area, which includes Cuyahoga, Lorain, Medina, Geauga, and Lake counties. Cleveland is

in Cuyahoga County. The city of Cleveland is identified separately from the remainder of Cuyahoga County in the model. According to the agency's chief technical advisor, the areas outside of the agency's service area that contribute to Cleveland's driving population and are included in the model are Erie, Huron, Ashland, Wayne, Summit, Portage, Trumball, Ashtabula counties and areas of the contiguous United States beyond these abutting counties.[8]

The gravity model is presented in a matrix with the districts or counties included in the model listed as both row and column heads (see Table 1). For the purposes of this study, only the trips under the first row and column, reflecting all trips to Cleveland from the contributing counties and from Cleveland to these counties, are of interest. Reading from left to right, the rows represent the number of trips made from Cleveland to the surrounding counties. The columns list the number of trips made from the respective counties to Cleveland. The city of Cleveland appears as both a row and a column head at the vertex of the matrix, and the number of trips at this row/column intersection is counted twice in the model, reflecting internal trips made from one location to another within the city.

The racial composition of metropolitan Cleveland's daily driving population of 3,072,880 was defined by weighting data from the gravity model with residential age and racial demographic data from the 2000 census for the 13 counties included in the model. Whereas defining the driving population of a city with Harris's (2002) method of using the age and racial demographic data of only the residents living within the target city does not provide a precise measure of all the drivers on the city's roadways, this method was used in conjunction with the census data on race from each contributing jurisdiction in the gravity model to account for the transient, non–city resident motorists, which further hones the driving population estimate of the target city of Cleveland.

Using the same age group parameters as Harris (2002), the driving age population was combined with data from the 2000 census detailed tables Sex by Age. These data tables were downloaded from the Census Bureau Web site for the total population and persons of both sexes within the following racial groups from the contributing counties: non-Hispanic/Latino white alone, black alone, Hispanic, American Indian Alaska Native alone, Asian alone, native Hawaiian or other Pacific Islander alone, some other race alone, and two or more races. The age cohort columns for people between the ages of 15 and 75 were compiled, and totals for each racial group were computed.[9] All racial groups except white and black were categorized as other.

As noted by Harris (2002) and reported in the National Personal Transportation Survey, the percentage of households in America without a vehicle differs by race and ethnicity. Thus, access to a motor vehicle and the likelihood of being ticketed by police is not equal for members of all racial/ethnic groups (Fridell, 2004; Harris, 2002). In general, vehicle ownership is lower among minority households than among white households.

Table 1. 2000 Compress Trip Distribution Model for All Trips to City of Cleveland in 24 Hours

Districts	City of Cleveland	Cuyahoga County-Cleveland	Lorain County	Medina	Geauga	Lake	Outside NOACA	Total Trips
City of Cleveland	960,979	448,704	24,366	10,494	8,373	32,085	40,935	1,525,936
Cuyahoga County-Cleveland	448,747	1,517,683	60,871	26,242	30,672	59,806	93,208	2,237,229
Lorain County	24,382	60,900	577,197	14,709	729	1,411	34,235	713,563
Medina	10,531	26,216	14,715	236,726	491	1,055	61,889	351,623
Geauga	8,358	30,068	738	490	129,654	20,168	15,583	205,664
Lake	32,068	59,809	1,413	1,054	20,180	472,554	14,991	602,069
Outside NOACA	61,879	160,067	45,673	56,051	23,444	25,963	101,757	474,834
Total Trips	1,546,944	2,304,052	724,973	345,766	213,543	613,042	362,598	6,110,918

Note: NOACA = Northeast Ohio Areawide Coordinating Agency.

Nationally, in 2000, a reported 24 percent of black households, 17 percent of Latino (Hispanic) households, 15 percent of Native American households, and 13 percent of Asian households did not own a vehicle in comparison to 7 percent of white households (Lui, Dixon, & Leondar-Wright, 2006). To compute the percentage of persons in each racial group without access to a motor vehicle, the number of households within each racial group without a vehicle is drawn from the census and divided by the average number of persons per household (Fridell, 2004). Using these methods, an estimated 21 percent of blacks, 7 percent of whites, and 10 percent of other minorities (including Alaskan Indian and Native American, Asian, native Hawaiian, Pacific Islanders, and people that identified as some other race and two or more races) did not own a vehicle in the state of Ohio in 2000.

However, rather than use the statewide percentage of persons from each racial group that did not own or have access to a motor vehicle in this study, the percentage of persons in each racial group without access to a motor vehicle was calculated for each county included in the gravity model. These figures were computed by compiling census data for households without a motor vehicle for each racial group within the 13-county region. These figures were then multiplied by the average number of persons within each household to estimate the number of individuals within each racial group without access to a motor vehicle. This measurement provides a refined estimate of who is driving on the city's streets—including the race of the majority of motorists of legal driving age with access to a motor vehicle who live within and outside the city.

DATA ANALYSIS

The data in the traffic ticket database were used in conjunction with the driving population derived from the gravity model and the census demographic data to analyze the citywide traffic ticketing patterns by race. First, frequencies were generated from the traffic ticket data to determine the overall percentage of blacks, whites, and motorists of other races ticketed in the city during the two-year observation period (April 1999–May 2001). The difference between the percentage of the driving population that each racial group represented and the percentage of tickets members of each group received was calculated to determine the absolute disparity between the two numbers. These percentages were then used to compute a ratio reflecting the percentage of tickets received by each group in relation to their percentage of the driving population.[10] This traffic ticket–to–driving population ratio was used to compute a ratio of the likelihood of being ticketed by the police in Cleveland if a motorist is black or a member of another racial minority group in comparison to whites. A ratio of 1 reflects the expected proportional share of tickets for each racial group in relation to the share of the driving population that group represents (Harris, 2002).

Findings

Based on the NOACA gravity model, the city of Cleveland's average daily driving population is estimated at 3,072,880. Ninety-two percent of these motorists are from within Cuyahoga County, with 63 percent coming from within the city of Cleveland and 29 percent from the remaining areas in the county. Totaling the sum of 2000 U.S. Census data for all persons of driving age (15–75 years old) by race from the 13 contributing counties in the gravity model, blacks account for 40 percent (1,242,418) of the driving age population, whites represent 53 percent (1,625,560), and persons of other races make up 7 percent (204,903).[11]

These figures are further adjusted by accounting for the percentage of persons within each racial group without access to a motor vehicle. There were 45,812 black households, 79,787 white households, and 9,640 other minority households without access to a motor vehicle in the 13-county region from which Cleveland's driving population is drawn. Multiplying the number of households within each racial group without access to a vehicle by the average number of persons per household for each racial group, an estimated 114,988 blacks, 197,073 whites, and 27,560 other minorities lack access to motor vehicles in this 13-county region.

These figures, however, include all persons within households without access to a vehicle, including youth and seniors not within the 15–75 year old driving age population parameters. Therefore, to measure only persons within the driving age population with access to a motor vehicle, the driving age population for each racial group was divided by the total population for each group, which provides the percentage of the respective population that the driving population represents. The number of individuals of each race without access to a motor vehicle was then multiplied by this percentage to estimate the number of persons of driving age without access to a motor vehicle within each racial group. This figure was then subtracted from the portion of the driving age population that each race represents in the gravity model. This provides a refined estimate of the percentage of the driving age population with access to a motor vehicle for each racial group within the 13-county region.

The percentage of blacks and other minorities of driving age who did not own or ostensibly have access to a motor vehicle within the 13 counties was slightly higher than the statewide figures, with 22.1 percent of blacks (compared to 21 percent) and 13.9 percent of other minorities (compared to 10 percent) not owning a vehicle. The percentage of whites of driving age without access to a vehicle in the region was consistent with the 7 percent statewide. Multiplying the driving age population for each racial group by the respective percentage of each group without access to a vehicle, the product of the calculation for each group is subtracted from the percentage of the driving age population each group represents. Therefore, accounting for driving age and access to a motor vehicle, blacks represent 31.17 percent (957,815), whites represent 49.29 percent (1,514,732), and

Table 2. Ticket/Driving Population

	Tickets		Driving population		Absolute disparity (percentage points)	Tickets/ driving population	Likeli-hood
						Ratios[b]	
	n	*%*	*n*	*%*			
Total	182,890	—	3,072,880	—	—	—	—
Black	105,706	58	957,815	31.17	+26.83	1.86	2.55
White	66,341	36	1,514,732	49.29	−13.29	0.73	—
Other	10,933	6	185,180	6.03	−0.03	0.99	1.36

Notes: Driving population estimates taken from Northeast Ohio Areawide Coordinating Agency (NOACA) 2000 Compress Trip Distribution Model for the City of Cleveland. Racial group data imputed from 2000 U.S. Census to NOACA gravity model. The ticket/driving population ratio reflects the percentage of tickets received for each group in comparison to their percentage of the driving population. The likelihood ratio represents the chances of non-whites being ticketed in Cleveland in comparison to whites.

other minorities represent 6.03 percent (185,180) of Cleveland's estimated driving population of 3,072,880 motorists (i.e., vehicle trips) commuting to, from, and throughout the city within a 24-hour period. The racial/ethnic demographics of the remaining 13.5 percent (415,152) of the city's driving population within the gravity model are unspecified. This indeterminate segment of the driving population is consistent with the chief technical advisor for the regional planning agency's (NOACA) explanation as stated above, that a portion of the model's trips (i.e., motorists) are from areas outside of the counties abutting the agency's service area, surrounding states, and the contiguous United States.

CITYWIDE TRAFFIC TICKETING PATTERNS

Analyzing the 182,980 traffic tickets written in the city between April 1999 and May 2001 by race reveals that blacks received 105,706 or 58 percent of the traffic citations. Whites received 66,341 (36 percent) of the traffic tickets during this period, while motorists of other races received 10,933 (6 percent) of the citations. There is an absolute disparity of +26.83 percentage points (58 percent – 31.17 percent) between the percentage of tickets that blacks received and the proportion of the driving population that is black. This is in comparison to a −13.29 percentage point disparity for whites (36 percent – 49.29 percent) and virtually no disparity for other minorities (6 percent – 6.03 percent).

In comparison to the percentage of the city's driving population each racial group comprises, blacks received a disproportionate share of the traffic tickets written citywide, while whites and other minorities received less than their proportional share of the traffic citations (see Table 2). As shown by the likelihood ratio of tickets received by each racial group in comparison to their percentage

Table 3. Likelihood of Blacks' Being Ticketed in Major Ohio Cities

		Black driving population		Likelihood ratio for blacks	
City	Tickets (%)	Driving age (%)	Driving age & vehicle ownership (%)	Driving age	Driving age & vehicle ownership
Cleveland	58.0	40.0	31.7	2.13	2.55
				(2.07)	(2.44)
Columbus/ Franklin County	25.2	16.0	12.6	1.80	2.40
Akron	37.6	22.7	17.9	2.04	2.70
Toledo	31.0	18.0	14.2	2.02	2.70
Dayton	50.0	38.0	30.0	1.80	2.50

Note: Likelihood ratio of black motorists' being ticketed using Harris's (2002) black/non-black measurement.

of the driving population in Table 2, blacks received more than one and three-fourths (1.86) of their proportional share of traffic tickets, while whites received just under three-fourths (0.73) of their proportional share, and other minorities received approximately their expected proportional share of tickets (0.99) in relation to the percentage of the driving population they represent. When compared to whites, blacks driving in the city of Cleveland are more than two and a half times as likely (2.55) to be ticketed as whites, while members of other racial groups are slightly more than one and a third times as likely (1.36) to be ticketed by police as whites. In addition, as shown in Table 3, adjusting for driving age only, the 2.13 likelihood ratio (2.07 using black/non-black measure) of being ticketed is actually greater for blacks in Cleveland than blacks in the other Ohio cities included in Harris's (2002) study (a high of 2.04 in Akron). However, after adjusting for vehicle ownership blacks in Cleveland have a 2.55 likelihood ratio of being ticketed by police in relation to white motorists. Utilizing Harris's measurement comparing blacks to non-blacks, the 2.4 likelihood ratio for blacks in Cleveland and Columbus is the lowest among the five cities, while blacks in Dayton were 2.5 times as likely as non-blacks to be ticketed, and blacks in Akron and Toledo had the highest likelihood of being ticketed by police in comparison to non-blacks, with a likelihood ratio of 2.7.

Summary, Discussion, and Conclusion

The results of this study's analysis of traffic ticket data from the city of Cleveland for a two-year period using gravity model estimates of the city's driving population adjusted for driving age and access to motor vehicles revealed that blacks were disproportionately ticketed by the Cleveland Police Department relative to their presence in the city's driving population. Blacks driving on city streets were

more than two and a half times as likely (2.55) to be ticketed by police as white motorists and received 86 percent more (1.86) than their expected proportional share of traffic tickets. Minority motorists of other races were roughly one-third more likely (1.36) to be ticketed than whites and received approximately their expected proportional share of tickets citywide (0.99). Meanwhile, whites driving in the city received considerably less than their expected share of tickets (0.73) relative to their proportion of the driving population.

DISCUSSION

As noted, while not providing conclusive evidence of racial profiling, the findings in this study do provide a compelling indication that a potential problem of racially biased policing in regard to black motorists in the city of Cleveland may exist. This possibility should pose considerable concern for public officials and law enforcement at the local and state level, as well as for city residents and others traveling on the city's streets, and could serve as the impetus for local officials to expend the necessary resources to conduct further research.

Again, further research is needed before it can be concluded that the disproportionate ticketing of black motorists observed in this study is the result of racially biased traffic enforcement or racial profiling. Specifically, research conducted at a lower or micro-level of analysis is needed. Research utilizing observational data on law-violating behavior collected within a representative sample of subareas (e.g., police district or major traffic arteries) within the city should be used to compare with the traffic ticketing data from the respective subareas, which would then be analyzed by race/ethnicity. Another possible approach is that suggested by Walker (2003, 2005) wherein internal benchmarks are used to compare the traffic ticketing data of similarly situated officers patrolling within the same subarea. This method can be used to identify specific officers who might be stopping a disproportionate number of motorists of a particular race/ethnicity relative to their peers despite the fact that the patrol area might be in a neighborhood predominantly of that race/ethnicity. This internal benchmarking, however, does not address the issue of racial profiling from an institutional-racism perspective, which would help identify patterns or practices at the police district or departmental levels as does the aforementioned method as well as the methods employed in this particular study.

This study's findings not only indicate the magnitude of the disproportionate ticketing of blacks in Cleveland, the second largest city in Ohio, but viewed in conjunction with the findings from the four Ohio cities of Columbus/Franklin County, Akron, Toledo, and Dayton included in Harris's study, they strengthen his assertion that "there could be a profiling problem in Ohio" (2002, p. 69). Before adjusting the 13-county residential census data for access to a motor vehicle and using Harris's racial categories comparing blacks and non-blacks, blacks in Cleveland have a greater likelihood of being ticketed than blacks in each of the other cities.[12]

The disproportionate ticketing patterns of blacks in the city of Cleveland observed in this study bring into question the consensus theory argument on the objective application of the law and the impartial sanctioning of those who violate the law irrespective of race, and are more in line with conflict theorists' line of reasoning. Anderson's quote, "To be White is to be seen by the police—at least superficially—as an ally, eligible for consideration and for much more deferential treatment than that accorded blacks in general" (2000, p. 320), seems to capture the essence of the conflict theorists' argument, which, it could be argued, relate to the disparities found in the ticketing of blacks and whites in this study.

Moreover, this study provides an incremental advancement to the research methods used to measure racial disparities in traffic ticketing of minorities by using traffic flow data derived from a gravity model weighted by residential census data adjusted for race, age, and vehicle ownership. This method provides a more well-defined driving population than those methods utilized in earlier studies of racial profiling within large geographic areas or urban jurisdictions utilizing traffic flow data or residential census data independently.

IMPLICATIONS

The Cleveland Police Department's traffic ticketing distribution patterns observed in this study may have various adverse consequences for the city and its population in general. However, blacks in the city are most at risk of the adverse consequences of this disproportionate ticketing in that it predisposes them to increased contact, and potentially deeper involvement, with the criminal justice system. Through disproportionate ticketing, legal situations can easily mount and create circumstances that appear overwhelming, particularly for young, low-income blacks, and often with outcomes that are less than desirable. Such was the case for Timothy Thomas, the 19-year-old African-American male shot and killed by a Cincinnati police officer while fleeing police after a warrant was issued for his arrest stemming from 14 tickets for minor traffic violations. The shooting sparked two days of rioting in that Ohio city in 2001 (Samuels, 2004).

While being disproportionately burdened with the direct cost of fines resulting from the uneven distribution of traffic citations in the city, blacks are also subjected to the potential indirect economic costs resulting from frequent traffic violations such as increased auto insurance rates and the loss of their driver's licenses. In Ohio, motorists receive either two or four points on their driving records for each moving traffic violation not involving alcohol or resulting in a felony conviction, depending on the severity of the infraction. Driver's licenses are suspended for a minimum of a year after 12 points are accumulated on a person's driving record within a two-year period. Suspension of one's driver's license can cause considerable economic hardships aside from the cost of reinstatement fees, which range from $75 for a first offense, $250 for the second offense, and $500 for each

subsequent offense (Ohio Revised Code, Sec. 4510.03.7). The loss of a driver's license would pose significant difficulties for almost anyone, but its impact would be extremely acute for many of the marginally employed, predominantly black inner-city residents, and further exacerbate the already problematic jobs-to-skill set spatial mismatch in the region, as many of the jobs that a significant portion of inner-city residents are most qualified for are located outside Cleveland's central city. Along with potentially impeding the mobility and access of inner-city residents to suburban labor markets, such conditions can also serve to further intensify the overwhelmingly black, concentrated poverty and the economic decline in the city of Cleveland, which was ranked the poorest big city in the nation in both 2004 and 2006 (Suchetka & Galbincea, 2006).

CONCLUSION

The methodology used in this study provides city officials and law enforcement administrators, particularly those within large municipal jurisdictions, with a relatively cost-efficient means of measuring the social equity performance of their city's law enforcement agency using data that should be readily available. This method enables city leaders and law enforcement officials to ensure that fairness, equity, and integrity are an integral part of the manner in which the police provide service to, and interact with, all members of the public.

However, city and law enforcement officials must first have the political will and fortitude to address such sensitive and perplexing issues as racial profiling. As Harris (2007) reported, although scholars have conducted research that intersects race and policing for a number of years, criminal justice professionals, particularly the police as a profession, have not generally welcomed such work. Citing arguments such as those put forth by proponents of racial profiling that see the practice as effective—policing based on crime statistics and the laws of probability—Harris contended that police view research that investigates issues such as racial profiling as labeling "the law enforcement profession as a whole, or an individual police department, or perhaps some particular group of officers, as racist" (2007, p. 1).

Law enforcement officials should not approach efforts to address racial and social inequities defensively but, rather, seize the opportunity to confront an issue that negatively affects a significant and growing portion of the American public and undermines the perception of legitimacy and trust in the police and the criminal justice system within certain communities. Such reform efforts can serve to improve the relationship between the police and minority communities, particularly that with the African-American community, which has historically been strained. Nor should police officials simply dismiss such work as an attack on police as being racist. What is at issue in this and similar studies are institutionalized practices that are often embodied in the informal policies that have

been unwittingly passed on through generations of law enforcement officers and are manifest in racially discriminatory outcomes.

Citing research from the field of cognitive psychology (Devine, 1989; Greenwald & Banaji, 1995; Sommers & Ellsworth, 2000, 2001). Harris (2007, p. 8) explained that "most people harbor racial and ethnic biases on the unconscious level" and "these unconsciously held biases operate independent of any consciously held beliefs and outside the awareness of those who hold them." In research examining the influence of implicit biases on a police officer's decision to shoot a person perceived to be potentially threatening the officer with a deadly weapon, Correll et al. Park, Judd, and Wittenbrink (as cited in Harris, 2007) found that the decision to shoot was made more quickly if the suspect was black and the decision not to shoot was made more quickly if the suspect was white. This study also found a strong shooter bias for those subjects that believed there is a pervasive racial stereotype in America of African Americans as aggressive and violent, which held regardless of the race of the subject. Thus, these studies indicate that most people in the United States, including police officers regardless of their race, are influenced by unconscious racial and ethnic biases.

Despite the seemingly discouraging implications of these studies' findings in regard to reducing racial bias in policing, Sommers and Ellsworth found that "by making racial issues salient" subjects were likely to act in a more nonbiased manner (as cited in Harris, 2007, p. 13), and Devine found that "by consciously directing one's thought processes, one can overcome the influence of the automatically engaged biases and stereotypes that inhabit the unconscious" (as cited in Harris, 2007, p. 13).

Therefore, it is imperative that research such as this be used to illuminate the social and racial inequalities that exist within policing and the criminal justice system as whole and make the decision makers within these institutions cognizant of the unconscious biases that lay dormant in the mind. Although no individual is responsible for creating the circumstances from which racially biased outcomes such as those found in this study emanate, administrators at the top of these institutions and organizations must take responsibility and the lead in reifying them.

POLICY RECOMMENDATIONS

There are a number of initiatives the city leaders and law enforcement administrators can implement to help address the racial disparities found in this study. Although the Cleveland Police Department does collect racial demographic data on traffic tickets, legislation has not been enacted to govern the collection of this data. City officials should pass legislation prohibiting the use of racial profiling and requiring the collection and regular reporting of racial demographic data on every traffic stop made in the city, not just those resulting in tickets. Passing such legislation will help ensure uniform data collection procedures and standards and

provide oversight and the necessary financial resources to effectively carry out this initiative. Enactment of municipal legislation will also help the city promote social equity in the delivery of its police services by establishing sanctions for noncompliance with the legislation.

In addition, technology can be utilized to reduce the level of subjectivity or the potential bias of the individual police officer in the administering of traffic tickets by equipping police cruisers with video cameras and installing cameras at stoplights on the busiest thoroughfares or those with the highest incidences of moving traffic violations (Dunn, 2004). This will not only ward off racially biased traffic enforcement, it will also protect police against questionable charges of racial profiling or abuse by providing an objective record of events. And lastly, such studies can be used to provide cultural sensitivity and diversity training both to new police recruits in the academy and to veteran officers as a part of their annual in-service training.

Notes

1. This research was cited during Lamberth's testimony as an expert witness in the case, *State v. Pedro Soto*, 1996. The 11 states from which the driving population data were drawn were not cited in the testimony.

2. Harris (2002) grouped all non-black minorities into the category with whites, thereby further increasing the conservativeness of his findings on the racial disparity between the ticketing of blacks and non-blacks in these four metropolitan areas.

3. Fifteen is the youngest age at which a person can legally drive in Ohio and most states with a driver's permit, and 75 is the age at which there is a significant decline in the number of people driving observed.

4. Information was gathered from discussion with the Cleveland Police Department traffic ticket database administrator.

5. The racial categories used from the 2000 Census were people who are white alone, black or African American alone, American Indian or Alaska Native alone, Asian alone, native Hawaiian or other Pacific Islander alone, some other race alone, and two or more races. People who are Hispanic or Latino were not included because, according to the 2000 census, race and Hispanic origin are two separate concepts, and people who are Hispanic may be of any race.

6. The gravity model data weighted by race and vehicle ownership/access accounts for 92.3 percent of the motorists in the model. This is consistent with the statement made by the NOACA chief technical advisor that the remaining drivers (7.8 percent) in the model for which demographic information is unknown are from areas of the contiguous United States beyond the abutting counties in the model.

7. The racial demographics of the Cleveland Police Department are of limited relevance in this analysis of racial disparities in traffic ticketing in that this study examines the aggregate traffic citation distribution patterns by race at the city level rather than at the individual police officer level. The study examines the resulting disparities as a reflection of institutional racism instead of the manifestation of individual police officer bias, which is the inference of the latter model, the traditional framework within which the topic of racial profiling is generally discussed.

8. NOACA chief technical advisor David E. Owens suggested that the number of drivers contributing to the gravity model from the contiguous United States was negligible and, therefore, could be disregarded in estimating the racial composition of Cleveland's driving population (personal communication, April 2003).

9. Approximately 73 percent of Ohio's population fell within the driving age parameters (15–75 years old) in 2000.

10. The percentage of tickets received by each group was divided by the percentage of the driving population they represent.

11. This use of racial demographic data to determine the racial composition of the driving population assumes that the driving behavior of each racial group is relatively the same. However, other factors that could considerably influence driving behavior are the amount of driving for work, entertainment/recreation, shopping, and so on. It has been consistently noted in research literature that the black unemployment rate is generally twice that of white population, and there is little empirical evidence to suggest a significant difference in travel for entertainment/recreation and shopping among racial groups. Therefore, the use of these factors would further reduce the estimate of the black driving population below that derived from the integrated gravity model and census data.

12. Harris (2002) compared blacks in the driving population with non-black motorists, combining the percentages of white and other minority motorists in the driving population. Using this measure, non-blacks in Cleveland represented 60 percent of the driving age population and 55.32 percent of the driving age population with access to a vehicle. Non-blacks received 42 percent of the tickets in the city, resulting in ticketing-to-driving population ratios of 0.70 (0.42/0.60) and 0.76 (0.42/0.5532) for each respective measure of the driving population. Blacks were 58 percent of those ticketed and 40 percent of the driving age population and 31.17 percent of the driving age population with access to a vehicle, reflecting ticketing-to-driving population ratios of 1.45 and 1.86, respectively. The likelihood ratios for blacks in Cleveland in relation to non-blacks are 2.07 (1.45/.70) and 2.44 (1.86/.76).

References

Alpert, G.P., Dunham, R.G., & Smith, M.R. (2007). Investigating racial profiling by the Miami-Dade Police Department: A multimethod approach. *Criminology & Public Policy, 6*(1), 25–55.

Anderson, E. (2000). *Code of the street: Decency, violence, and the moral life of the inner city.* New York: Norton.

Bauer, J., & Chambliss, W. (1997). Generating fear: The politics of crime reporting. *Crime, Law, and Social Change, 27*(2), 87–107.

Blumstein, A. (1993). Racial disproportionality of U.S. prison populations revisited. *University of Colorado Law Review, 64*(3), 743–760.

Bridges, G., Crutchfield, R., & Simpson, E. (1987). Crime, social structure and criminal punishment: White and non-white rates of imprisonment. *Social Problems, 34*(4), 345–361.

Brunet, J.R. (2006, February). *Measuring social equity performance in the criminal justice system.* Paper presented at the Fifth Social Equity Leadership Conference, National Academy of Public Administration, Omaha.

Carroll, J.D. (1955). Spatial interactions and the urban-metropolitan description. *Traffic Quarterly, 45*(2), 149–161.

Chambliss, W., & Seidman, R. (1971). *Law, order, and power.* Reading, MA: Addison-Wesley.

Cole, D. (1995). The paradox of race and crime: A comment on Randall Kennedy's "Politics of distinction." *Georgetown Law Journal, 83,* 2568–2569.

Collins, B.K., & Gerber, B.J. (2008). Taken for granted? Managing for social equity in grant programs. *Public Administration Review, 68*(6), 1128–1141.

Cureton, S.R. (2000). Justifiable arrests or discretionary justice: Predictors of racial arrest differentials. *Journal of Black Studies, 30*(5), 703–719.

Decker, S.H., Rosenfeld, R., & Rojek, J. (2002). *Annual report on 2001 Missouri traffic stops.* http://ago.mo.gov/racialprofiling/2001/racialprofiling2001.htm, accessed March 12, 2009.

DeLisi, M., & Regoli, B. (1999). Race, conventional crime, and criminal justice: The declining importance of skin color. *Journal of Criminal Justice, 27*(6), 549–557.

Devine, P.G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology, 56*(1), 5–18.

Devine, P.G. (2001). Implicit prejudice and stereotyping: How automatic are they? *Journal of Personality and Social Psychology, 81*(5), 757–759.

Dunn, R.A. (2004). *Spatial profiling: To what extent do the Cleveland Police Department's traffic ticketing patterns disproportionately target blacks?* Ph.D. dissertation, Cleveland State University.

Durose, M.R., Smith, E.L., & Langan, P. (2005). *Contacts between police and the public.* Washington, DC: Bureau of Justice Statistics, U.S. Department of Justice, Office of Justice Programs.

Engel, R. S., & Calnon, J. M. (2004). Examining the Influence of Drivers' Characteristics During Traffic Stops with Police: Results from a National Study. *Justice Quarterly, 21*(1), 49–90.

Engel, R.S., Calnon, J.M., & Bernard, T.J. (2002). Theory and racial profiling: Shortcomings and future directions in research. *Justice Quarterly, 19*(2), 249–273.

Engel, R.S., Frank, J., Tillyer, R., & Klahm, C. (2006). *Cleveland Division of Police traffic stop data study: Final report.* Cincinnati: University of Cincinnati, Division of Criminal Justice.

Esquith, S.L. (1998). John Rawls and public administration. In T.D. Lynch & T.J. Dicker (Eds.), *Handbook of organization theory and management* (pp. 339–355). New York: Marcel Dekker.

Farrell, A., McDevitt, J., Cronin, S., & Pierce, E. (2003). *Rhode Island Traffic Stop Statistics Act final report.* Boston: Northeastern University Institute of Race and Justice.

Fridell, L.A. (2004). By the numbers: A guide for analyzing race data from vehicle stops. Washington, DC: Police Executive Research Forum.

Ginsberg, T., & Goldman, H. (1999, March 2). Firing of N.J. police superintendent. Knight Ridder/Tribune News Service.

Gordon, P. (1988). Black people and the criminal law: Rhetoric and reality. *International Journal of the Sociology of Law, 16,* 295–313.

Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem and stereotypes. *Psychological Review, 102,* 4–27.

Harris, D.A. (1999a). *Driving while black: Racial profiling on our nation's highways.* New York: ACLU Department of Public Education.

Harris, D.A. (1999b). The stories, the statistics, and the law: Measuring "driving while black." *Minnesota Law Review, 84*(2), 265–326.

Harris, D.A. (2002). *Profiles in injustice: Why racial profiling cannot work.* New York: New Press.

Harris, D.A. (2007). The importance of research on race and policing: Making race salient to individuals and institutions within criminal justice. *Criminology & Public Policy, 6*(1), 5–23.

Hawkins, D. (1987). Beyond anomalies: Rethinking the conflict perspective on race and criminal punishment. *Social Forces, 65*(3), 719–745.

Kennedy, R. (1994). The state, criminal law, and racial discrimination: A comment. *Harvard Law Review, 107,* 1255–1278.

Kennedy, R. (1997). *Race, crime, and the law.* New York: Pantheon Books.

Lamberth, J. (1996). *State of New Jersey vs. Pedro Soto,* 324 N. J. Super.66; 734 A.2d 350; 1996 N. J. Super. Lexis 554.

Lui, M., Dixon, E., & Leondar-Wright, B. (2006). *State of the dream 2006.* Boston: United for a Fair Economy.

Lynch, M., & Patterson, E. (1996). *Justice with prejudice.* Guilderland, NY: Harrow and Heston.

MacDonald, H. (2003). *Are cops racist? How the war against the police harms black Americans.* Chicago: Ivan R. Dee.

Mann, C. (1993). *Unequal justice: A question of color.* Bloomington: Indiana University Press.

Mauer, M. (1999). *The crisis of the young African American male and the criminal justice system.* Washington, DC: Sentencing Project.

Mauer, M. (2006). *Race to incarcerate.* New York: New Press.

Milovanovic, D., & Russell, K. (Eds.). (2001). *Petit apartheid in the U.S. criminal justice system.* Durham, NC: Carolina Academic Press.

Ohio Revised Code Title XLV Motor Vehicles, Aeronautics, Watercraft. Driver's License Suspension, Cancellation, Revocation. Chapter 4510, Sec.0.3.07.

Quinney, R. (1970). *The social reality of crime.* Boston: Little, Brown.

Ramirez, D., McDevitt, J., & Farrell, A. (2000). *A resource guide on racial profiling data collection systems.* Boston: Northeastern University Press.

Salling, M. (2001). *Cleveland neighborhood conditions and trends.* Cleveland: Maxine Goodman-Levin College of Urban Affairs.

Samuels, J. (Producer). (2004, April 9). *A pattern of suspicion: Dateline investigates claims of racial profiling* [Television broadcast]. NBC.

Smiley, T. (2006). *The covenant with black America.* Chicago: Third World Press.

Smith, R.L., & Davis, D. (2002, December 30). Migration patterns hold back Cleveland: Segregation takes economic toll, analysts say. *Plain Dealer,* pp. A1–A8.

Sommers, S.R., & Ellsworth, P.C. (2000). Race in the courtroom: Perceptions of guilt and dispositional attributions. *Personality and Social Psychology Bulletin, 26*(11), 1367–1379.

Sommers, S.R., & Ellsworth, P.C. (2001). White juror bias: An investigation of prejudice against black defendants in the American courtroom. *Psychology, Public Policy, and Law, 7*(2), 201–229.

Suchetka, D., & Galbincea, B. (2006, August 30). Cleveland: Poorest big city in the U.S., Census shows. *Plain Dealer,* p. A1.

State v. Pedro Soto, 734 A.2d 350 (N.J. Super. Ct. Law. Div. 1996)

Taylor, J., & Whitney, G. (1999). Crime and racial profiling by U.S. police. *Journal of Criminal Justice, 29*(4), 295–305.

Walker, S. (2003, March). *Internal benchmarking for traffic stop data: An early intervention system approach.* Paper presented at the Confronting Racial Profiling in the 21st Century: New Challenges and Implications for Racial Justice Conference, Boston.

Walker, S. (2005). *The new world of police accountability.* Thousand Oaks, CA.: Sage.

Weitzer, R. (1996). Racial discrimination in the criminal justice system: Findings and problems in the literature. *Journal of Criminal Justice, 24*(4), 309–322.

Western, B. (2006). *Punishment and inequality in America.* New York: Sage.

Wilbanks, W. (1987). *Myth of a racist criminal justice system.* Monterrey, CA: Brooks/ Cole.

Zingraff, M., Smith, W., Tomoaskovic-Devey, D., Mason, H.M., Warren, P.Y., Wright, C.P. et al. (2003). *The North Carolina highway study: Final report to the National Institute of Justice, U.S. Department of Justice.* Washington: U.S. Department of Justice.

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