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How dangerous are routine police–citizen traffic stops? A research note

Illya D. Lichtenberg^{a,*}, Alisa Smith^b

^aDepartment of Sociology, William Patterson University, Wayne, NJ 07470, USA

^bLaw and Society Program, Ramapo College of New Jersey, Mahwah, NJ 07430, USA

Abstract

This note examined the danger of routine police–citizen traffic stops. The United States Supreme Court has assumed that traffic stops are a danger to police and has relied on this assumption in its decisions pertaining to the Fourth Amendment for these stops. To examine the assumption, ten years of national data on traffic stops, police homicides, and assaults were examined. Using the danger ratio developed by Garner and Clemmer [*Danger to police in domestic disturbances*. Washington DC: National Institute of Justice, 1986] to estimate the risk of police victimization, police homicides and assaults were found to be very infrequent occurrences during traffic encounters. The results of this study cast doubt on the Court's assumption of danger during the routine police–citizen traffic encounter. © 2001 Elsevier Science Ltd. All rights reserved.

Introduction

Beliefs concerning the dangerousness of policing are firmly rooted in American culture. The media portray policing as a dangerous occupation, politicians use the killing of an officer to support “get tough on crime” campaigns, and the judiciary renders decisions about the Fourth Amendment based upon this assumption. Social science researchers also perpetuate the notion of policing as a dangerous occupation (Fridell & Pate, 1997; Lester, 1984).¹

The assumption of dangerousness has been applied to the police–citizen routine traffic stop encounter. In recent years, the United States Supreme Court has allowed police officers during routine traffic stops to order drivers (*Pennsylvania v. Mimms*, 434 U.S. 106, 1977) and passengers (*Maryland v.*

Wilson, 117 U.S. 882, 1997) from the car without suspicion to ensure police officer safety. In a similar vein, and relying on the “dangerousness” or “safety” rationale, the Iowa state legislature crafted a law to allow police officers the ability to search automobiles stopped for traffic infractions (Iowa Code 805.1, 1997). The National Association of Police Organizations, in an amicus brief to the United States Supreme Court in defense of the statute, argued the search of a traffic offender “reasonable” under the Fourth Amendment due to the inherent dangers to police officers during these encounters.

Traffic stops are inherently dangerous and risky and pose a significant threat to the physical safety of law enforcement officers. It is not uncommon for routine traffic stops to escalate into a violent situation. In fact, thousands of officers have been assaulted, and at least 300 officers have been feloniously killed by drivers or other occupants of vehicles involved in traffic stops or pursuits. Iowa Code 805.1 (4), which allows for lawful searches incident to a citation if a citation is issued in lieu of an arrest, is a legitimate and reasonable effort by the State of Iowa to reduce

* Corresponding author. PO Box 4010, Roselle Park, NJ 07204, USA.

E-mail address: lichy@pegasus.rutgers.edu (I.D. Lichtenberg).

this danger to police officers during traffic stops in a less intrusive manner than a full custodial arrest (McSpadden, 1998: 5).²

Despite anecdotal accounts that show particular instances of danger confronted by law enforcement officers, there are few research findings or statistics to support the assumption of police dangerousness during traffic encounters. Additionally, no data exist to support the proposition that greater intrusions of citizen privacy rights will ensure greater safety to police officers. In fact, during the oral argument of *Maryland v. Wilson*, Justice Scalia asked counsel whether any data existed to establish that ordering a passenger from a stopped automobile improved officer safety (*Maryland v. Wilson*, oral argument). No data were offered because none existed. In the *Maryland v. Wilson* decision, the Chief Justice made specific references to the need for empirical research on officer safety and danger in the traffic encounter: “It is, indeed, regrettable that the empirical data on a subject such as this are sparse, but we need not ignore the data which do exist simply because further refinement would be even more helpful” (*Maryland v. Wilson*, footnote 2). Most, if not all of the assertions that routine traffic stops are dangerous rely on the Federal Bureau of Investigation (FBI)’s data on police homicide and assault victimization during traffic encounters. All of these assertions share one crippling methodological flaw. They fail to appropriately account for the frequency of the police activity in the risk calculation (Garner & Clemmer, 1986). This study was designed to address this specific limitation in the Court’s use of unrefined data by examining dangerousness relative to the frequency of traffic encounters. This research sought to advance the understanding about the danger of routine police–citizen traffic stops, to examine the assumption of “danger” to police in these encounters, and to fill the empirical void identified by Justices Rhenquist and Scalia.

Prior research

The FBI has collected data on police homicides, accidental deaths, and assaults in a standardized fashion since 1972. These statistics are published in an annual publication. “Law Enforcement Officers Killed and Assaulted” (hereinafter LEOKA) is published by the Uniform Crime Reporting section of the FBI. Most research on violence against the police rely on this data. Other research has relied on several smaller studies from the 1970s or early 1980s (Cardelli, 1968; Chapman, 1986; Fyfe, 1978, 1980; Garner & Clemmer, 1986; Lester, 1978, 1984; Margarita, 1980a; Wilson, Brunk, & Meyer, 1990). To determine

whether a particular “police activity” is more dangerous than others, it is necessary to go beyond the raw homicide and assault statistics and examine the activity according to its context and frequency. In doing so, some researchers have examined the prevalence or frequency of homicides and assaults based on the “type of call” (Ellis, Choi, & Blaus, 1993; Garner & Clemmer, 1986; Hirschel, Dean, & Lumb, 1994; Uchida & Brooks, 1988). These studies used a “danger ratio” to determine the level of dangerousness of a particular police activity (Ellis et al., 1993; Garner & Clemmer, 1986; Hirschel et al., 1994; Uchida & Brooks, 1988). Garner and Clemmer (1986: 2) developed a “danger ratio” measure by calculating “the number of deaths (or other harmful incidents) divided by the number of police responses.” The calculation of the “danger,” police activity, and unit of analysis, however, varied across the studies.

The “danger ratio” was used to examine the danger of police calls to domestic disturbances relative to other police activities (Garner & Clemmer, 1986; Hirschel et al., 1994; Uchida & Brooks, 1988). Garner and Clemmer (1986) examined eight studies from the 1970s and 1980s on the violent victimization of police and the frequency of police activities; Uchida and Brooks (1988) examined the dangerousness of police calls based on the frequency of the activity from 1984 to 1986 in Baltimore; and Hirschel et al. (1994: 107) examined the “ratio of assaults to number of calls for service for each police activity category; the ratio of injuries to number of calls for service for each police activity category; and the ratio of injuries to assaults for each police activity category” from 1987 to 1989 in Charlotte, North Carolina. In another study, Ellis et al. (1993) examined the relative dangerousness of police activities based on the frequency of the occurrence and “time at risk” using data collected during 1987 in Canada. Each of the studies, with the exception of Ellis et al., included a measure for the “traffic encounter.” Each of these studies will be discussed here.

Garner and Clemmer (1986) developed a dangerousness measure to examine which police activities are the most dangerous. This study received some notoriety because it was the first to employ a measure of risk, by comparing police injury and death data to the frequency and duration of the activities in which deaths and injuries occur. They defined the dangerousness rate as: “the number of deaths (or other harmful incidents) divided by the number of police responses” (Garner & Clemmer, 1986: 2). Using data from eight studies of intentional harm and patrol activity from 1970 to 1980, Garner and Clemmer calculated the reported frequency of harm by the amount of police activity devoted to each type of

police work. The categories for the police work included in their analysis were: domestic disturbance, other disturbances, burglary, robbery, traffic, and others. The “harm-activity” ratio was calculated by using the rate of assault, homicide, and injury from the eight studies (Bannon, 1976; Chapman, Swanson, & Meyer, 1974; FBI, 1962–1985; Geller & Karales, 1981; International Association of Chiefs of Police, 1971; Konstantin, 1984; Margarita, 1980a, 1980b) and the measures of police activity from two studies (Kansas City Police Department, 1980; Ostrom et al., 1978). After calculating the frequency of the activity and the harm to police, Garner and Clemmer determined the danger for each activity according to the likelihood of death, assaults, and injuries to the police. Contradictory results for the most dangerous activities were found across the studies analyzed. This was also true for the dangerousness of traffic encounters. One explanation for the divergent findings identified by Garner and Clemmer was the broad differences across studies of the proportion of activity devoted to traffic incidents. The harm-ratio ranking ranged from one (the most dangerous) to six (the least dangerous). Five of sixteen analyses ranked traffic incidents the least dangerous activity (six) for the police. Three analyses ranked traffic incidents next to last in dangerousness (five). Five studies ranked traffic incidents fourth in danger and two studies ranked them number two.

In two other studies, Hirschel et al. (1994) and Uchida and Brooks (1988) examined the relative danger of a variety of “calls to the police.” Uchida and Brooks, using a sample of “calls to the police” from Baltimore, found traffic calls ranked in the middle for danger to police as compared to other activities. When examining “index offenses” and assaults, they found the following four (of ten) activities to be more dangerous than responding to a traffic incident: domestics, disturbances, robbery, and sex offenses. When examining “detailed circumstances at the scene”³ and assaults, the following ten (of twenty) incidents were more dangerous than traffic stops: legal interventions, alcohol problems, domestics, weapons, disturbances, sex offenses, narcotics offenses, criminal other, medical, and robbery. Hirschel et al., in examining the ratio of assaults to calls for service, ranked traffic stops as the second least dangerous activity (nine of ten). In examining the ratio of injuries to calls for service, traffic was ranked eighth; and in examining the ratio of injuries to assaults, traffic was ranked second.

One explanation for the divergency of findings, as noted earlier, is the variation in calculating the frequency of police activity. These variations may particularly impact the ratio of danger calculation for police–citizen traffic encounters. The primary focus

of the prior studies was to examine the relative risk of responding to a “domestic disturbance” call. These studies relied on “calls for service” to measure the frequency of a particular police activity. Since most police–citizen traffic encounters are not “calls for service,” (reactive) but encounters initiated by police officers on traffic or highway patrol (proactive), it is likely that the danger of police–citizen traffic encounters is overestimated. This is the case because the calculation of danger is based on an “activity” measure that significantly underestimates the frequency of these encounters.

This study applied the Garner and Clemmer (1986) dangerousness ratio to the national data available for the number of traffic filings, assaults, and homicides of officers during routine traffic encounters. The calculation of risk using national databases is intended to improve prior research on the dangerousness of routine traffic stops, to advance the understanding of the danger in the routine police–citizen traffic stop, and to examine the assumption that routine traffic encounters are inherently dangerous.

Data sources, definitions, and methods

Definition of danger to the police

Similar to other conceptualizations, concrete measures must be used to represent “danger,” which is a subjective concept or idea. Since this study raises questions about the United States Supreme Court’s assumption of police dangerous during the traffic encounter, its decisions were looked at to identify an appropriate definition and measure for danger. The Court’s discussions of police citizen traffic stop encounters, however, have not provided a straightforward definition of “danger” to guide the operationalization of this concept. The Court has relied on the unrefined empirical data of police homicides and assaults (LEOKA) when examining the question of police danger, and it seemed appropriate to likewise rely on the same data in this analysis. In essence, danger is defined as the potential risk of a homicide or an assault victimization. In conducting this analysis, the LEOKA data are refined by viewing it in terms of a “danger ratio.”

The danger ratio provides a means to determine the likelihood that homicide or assault will occur during a particular activity. There is some level of danger in any activity for all occupations. In this research, the likelihood or frequency of a violent victimization during a particular police officer activity, i.e., the routine traffic stop, was examined. Whether this activity presents no danger, minor danger or serious danger to a police officer is ulti-

mately a jurisprudential question. This research is intended to assist the Court in making a more informed decision concerning police danger during traffic encounters by examining the frequency or likelihood of a police homicide or assault during traffic encounters.

Data sources for danger

The LEOKA data was collected by the FBI as part of the Uniform Crime Report (UCR) system. The FBI maintains data on the homicides and assaults committed against sworn law enforcement personnel on and off-duty in this annual report. This data provided specific information on the number of homicides and assaults of police officers that occurred during particular circumstances, including but not limited to routine traffic stops and pursuits. In a preliminary review of the homicide and assault data, year-to-year variations in the rate of homicide and assault victimization during motor vehicle stops emerged. This variation is depicted in Table 1. To reduce the effect of one-year fluctuations in the data, the rate of homicide and assault in the traffic stop situation over a ten-year period was examined. The ten-year average rate of homicides and assaults against police officers during routine traffic stops and pursuits was used in calculating the “danger ratio” for this analysis.

Definition of routine traffic stop

The routine traffic stop definition included the majority of police victims of homicide and assault during a motor vehicle stop, but not all. The routine traffic stop included stops that were traffic related, as well as those that involved a hot pursuit where the chase was prompted by an attempted traffic stop. Thus, a police officer falling victim to a homicide or assault while attempting to stop a speeding motorist

or a motorist with a broken taillight were included in the analysis. The type of traffic stop excluded from the analysis was a “felony-related” stop. For example, a police officer responds to a breaking and entering or armed robbery call and upon arriving at the scene observes a fleeing vehicle. A police officer killed or assaulted in this case was included in a separate category.

Data source for routine traffic stops

The data utilized to measure motor vehicle stop frequencies were maintained by the National Center for State Courts (the Center). The Center collects data on the number of traffic citations issued by law enforcement and filed in state courts on an annual basis. These data were used to estimate the number of “routine traffic stops” or encounters that police have with citizens in determining the “danger ratio.” The information included in this data varies by state and was thus inconsistent in many respects. This will be explained in greater detail.

Although the traffic filing estimate was an improvement from the “calls for service” estimate used in prior research, it remains imperfect. The Center collects information from forty-five of the fifty state courts on traffic filings. This estimate is subject to variation in the reporting practices of the forty-five states that submit information. Five states do not participate in submitting information for the report,⁴ and some states include the issuance of parking tickets and municipal ordinance violations in their estimates. In addition, since 1993, the reported traffic filings to the Center have declined. The Center explains that the reduction is the result of the reclassification by many states of “less serious traffic cases to executive branch agencies” (National Center for State Courts, 1996: 1). The Center attributes the decline in traffic filings observed in Figure 1 to changes in the reporting practices of administrators rather than an actual decline in police traffic stops.

It is also difficult to calculate the number of stops where police utilize their discretion and do not issue traffic tickets. Many traffic violations observed by the police are ignored or dealt with informally such as giving the motorists a verbal warning rather than a ticket (Goldstein, 1990: 136; Kennedy & Homant, 1987: 86; Pike, 1985: 66; Reiss, 1971: 89; Smith, 1949: 65). The recent proliferation of racial profiling research and litigation has provided support for a commonly assumed police practice of negotiating the waiver of constitutional rights in motor vehicle stops in exchange for the officer exercising his discretion favorably to the motorist by not issuing a summons. Since there are more traffic related stops than

Table 1
Number of police homicides and assaults during traffic stops, 1988–1997

Year	Motor vehicle stop homicides	Motor vehicle stop assaults
1988	6	6,006
1989	7	6,145
1990	6	6,754
1991	13	5,488
1992	9	7,251
1993	10	5,959
1994	11	5,762
1995	9	5,761
1996	11	4,333
1997	7	5,043
Average	8.9	5,850

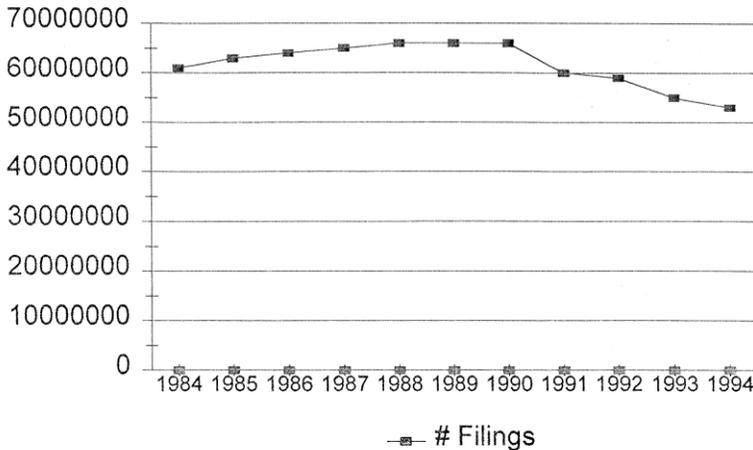


Fig. 1. Number of traffic filings.

recorded traffic tickets, it is necessary that some estimate of unrecorded stops be undertaken. One researcher estimated that only one-third of motorists stopped for a moving violation actually receive a ticket (Brown, 1981: 227), and another researcher estimated that approximately one in two stops results in a ticket (Bayley, 1994:30).⁵

Although potential and serious validity threats exist by using an estimate of the Center's report, the number of traffic filings is so high that inaccuracies of five or ten million stops will not severely impact the findings. As a result of the variations in the reporting practices to the Center over the years studied and the simple enormity in the number of traffic filings, a number roughly representing the mean of traffic filings for the ten years studied was selected.⁶ The practice after 1993 was to provide detailed information on each state with many qualifying notes. Undertaking a computation of these data to provide an overall estimate, while controlling for the qualifying notes of the data collected would doubtfully produce a better estimate than the sixty million from 1991. This is further supported by the earlier acknowledgment that many minor traffic infractions have been removed from the courts to administrative agencies (National Center of State Courts, 1996). In addition, the data from the NCSC surrounding the 1991 figure are nearly identical, the data have not varied substantially (with changes of only one or two million filings). Thus, the sixty million filings estimate represents the number for 1991, and is representative of the number of filings of other years where data is available. Finally, the use of the 1991 aggregate data will avoid the artificial reduction in traffic tickets after 1993 based on a change in administrative reporting rather than a

reduction in the number of police–citizen traffic encounters as the NCSC noted (National Center of State Courts, 1996).

Second, to reduce the effect of “missing” data (stops without a recorded summons) from the analyses, three traffic stop frequency estimates were calculated. The Center's report of sixty million traffic filings in 1991 was used as a low-end estimate for the frequency of routine police–citizen traffic encounters. Based on the research estimates on police discretion in issuing traffic tickets, two other estimates were calculated. A mid-range frequency estimate of 120 million traffic stops was calculated based on Bayley's (1994) estimate, and a high-end frequency estimate of 180 million traffic stops was calculated based on Brown's (1981) estimate. Each of these estimates was used separately to calculate the “danger ratio.” The low-end estimate reflects a minimum number police officer initiated traffic stops. The mid-range and high-end estimates reflect an estimate that accounts for the many police–citizen traffic encounters that do not result in the issuance of a summons and therefore not recorded by the Center (Bayley, 1994; Brown, 1981). Three estimates for the danger ratio were calculated by the number of homicides and assaults divided by the number of routine traffic stops (Garner & Clemmer, 1986).

Results

The base numbers and the ten-year aggregated average percentage of police homicides and assaults that occurred during routine traffic stops for the years 1988–1997 as reported in LEOKA were displayed earlier in Table 1. A total of 688 police

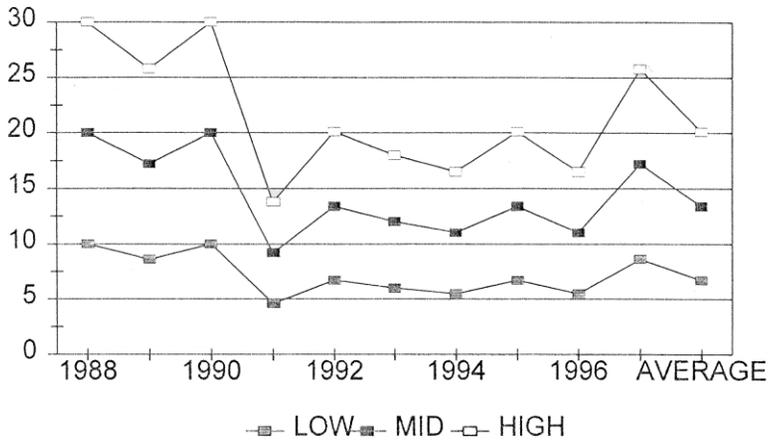


Fig. 2. The ratio of homicides to traffic stops (in millions).

officers were killed during this ten-year period. Eighty-nine (12.9 percent) of these killings occurred during routine traffic stops. A total of 621,244 assaults were committed against police officers during this ten-year period, 58,502 (9.4 percent) were committed during traffic stops.

The danger ratio for police homicides and assaults during traffic stops

Based on a “danger ratio” of police homicides and assaults per traffic encounter (estimated at 60, 120, and 180 million/year), the chance of an intentional fatal contact or assault with a citizen was clearly infrequent. Figure 2 shows the ratio of homicides to traffic stops for all three estimations, and Figure 3 presents the ratio of assaults to traffic stops for all three estimations.

Low-end estimate of traffic stops (sixty million)

Based on the low-end estimate of traffic encounters, the risk of homicide during a traffic stop ranged from a low of one in ten million in 1988 and 1990 to a high of one in 4.6 million in 1991. On average, over a ten-year period, the risk of homicide to a police officer during a traffic encounter was one in 6.7 million.

The “danger ratio” of police assaults in traffic stop situations ranged from a low of one police officer assault in 13,847 stops in 1996 to a high of one police officer assault in 8,274 stops in 1992. On average, over a ten-year period, the risk of assault to a police officer during a traffic encounter was one in 10,256 stops.

Mid-range estimate of traffic stops (120 million)

Based on the mid-range estimate of traffic stops, the risk of homicide during a traffic stop ranged from

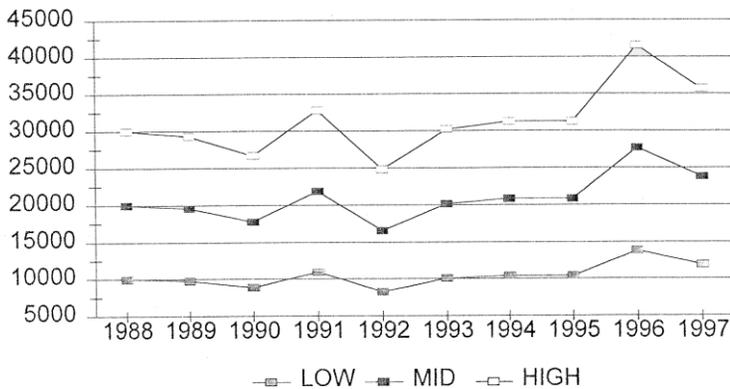


Fig. 3. The ratio of assaults to traffic stops.

a low of one in twenty million in 1988 and 1990 to a high of one homicide in 9.2 million stops in 1991. On average, over a ten-year period, the risk of homicide to a police officer during a traffic encounter was one in 13.4 million stops.

The “danger ratio” of police assaults in traffic stop situations ranged from a low of one police officer assault in 27,694 stops in 1996 to a high of one police officer assault in 16,548 stops in 1992. On average, over a ten-year period, the risk of assault to a police officer during a traffic encounter was one in 20,512 stops.

High-end estimate of traffic stops (180 million)

Based on the high-end estimate of traffic stops, the risk of homicide during a traffic stop ranged from a low of one in thirty million in 1988 and 1990 to a high of one homicide in 13.8 million stops in 1991. On average, over a ten-year period, the risk of homicide to a police officer during a traffic encounter was one in 20.1 million stops. Figure 1 shows the low-, mid-, and high-range ratio of homicides to traffic stops over a ten-year period from 1988 to 1997.

The “danger ratio” of police assaults in traffic stop situations ranged from a low of one police officer assault in 41,541 stops in 1996 to a high of one police officer assault in 24,822 stops in 1992. On average, over a ten-year period, the risk of assault to a police officer during a traffic encounter was one in 30,768 stops.

Discussion

The findings from this study implicate judicial decision making. Officer safety is an overriding concern in the area of Fourth Amendment jurisprudence. This research provided a more refined analysis as requested by the United States Supreme Court to aid in its attempt to balance the privacy interests of citizens and police officer safety during traffic encounters. Justices Rhenquist and Scalia particularly asked for empirical research to assess the dangerousness of routine traffic stops for police officers (*Maryland v. Wilson*). Based on the findings, the United States Supreme Court decisions that rely on the assumption that police–citizen traffic encounters were inherently dangerous might be misguided.

Although there were a number of limitations to this research, discussed earlier, one implication of these findings was that the police–citizen traffic encounter might be not as dangerous as the Court’s interpretation of the data had suggested. More particularly, these results demonstrated that it is

important to consider the number of police encounters or calls when evaluating the “danger” of a police activity such as routine traffic stops. Without using the number of traffic stops by the police in the ratio of danger, an average of 12.9 percent of police homicides and 9.4 percent of police assaults occurred during traffic stops from 1988 to 1997. These unrefined numbers appear to be high when compared to the numerous other classifications of violence directed against the police in LEOKA.⁷ When the data are analyzed using the danger ratio (Garner & Clemmer, 1986), traffic stops and pursuits do not have the appearance of being so dangerous. These national findings were consistent with some of the findings from several smaller studies that showed “routine traffic stops” might not be a particularly dangerous activity undertaken by the police (Garner & Clemmer, 1986). More important than the relative risk of police homicides and assaults was the simple fact that so few encounters resulted in an assault and only one in many millions resulted in a homicide. The Court’s balance to reduce citizens’ rights based on a presumption of danger in the traffic encounter might unnecessarily infringe upon the rights of millions of innocent nondangerous motorists.

One potential weakness in this analysis was that law enforcement officers were allowed to order drivers and passengers from their automobiles during these encounters (*Maryland v. Wilson*; *Pennsylvania v. Mimms*). It might be argued that this procedure, if used, reduced the number of officers killed and assaulted during traffic stops. This weakness and argument were beyond the scope of this research. As a criticism, it raised a valid point. To date, there was no empirical evidence that demonstrates how often the police actually ordered passengers out of their vehicles, and there was no evidence to show that the Court’s ruling, which had provided the police the discretion to order millions of citizens from their cars, had reduced police homicides or assaults. To examine the potential reduction of danger, one must examine the individual instances of police killings and assaults to determine whether these incidents occurred while the driver and/or passenger were still in their cars or outside their vehicles. Future research should address this specific point.

Homicide

It was conceded that the research findings were based on several “rough estimates” for the number of traffic stops. Using any of the estimates (low, mid, or high), the chance of a police officer homicide victimization during a routine traffic stop was quite minimal

— between one in 6.7 million and 20.1 million motor vehicle stops. There are limitations inherent in the conclusion that traffic stops do not present a high risk of homicide victimization for the police. Police officers take numerous precautions to prevent homicide and other victimizations. They engage in extensive training to learn techniques to save their lives and to handle dangerous situations. The Supreme Court also provides police with discretionary authority when it allows officers to order drivers and passengers from their cars during traffic stops. Since 1977 and 1996, respectively, the police may order drivers and passengers from their cars. As noted previously, this study was unable to capture the potential effects that this court created discretion might have on police safety and the prevention of violence against the police in routine traffic encounters. How effective police training to combat and prevent officer victimization fits into the Fourth Amendment balancing equation was at best muddy.

Assault

Assault was a much more frequent crime than homicide. As expected, the rate of police officer assault victimization during traffic stops was much higher than police officer homicide victimization. This was an expected finding. Assault measures were less accurate and might be subject to artificial inflation. Assaults might represent drastically different injuries to police officers. Assault charges might range from a mild threat (or misapprehension of a threat) to an attempted homicide of a police officer. It was not possible in this research to account for the different degrees of injury or the amount of inflation in the assaults against police officers. Since these potential threats to the validity of assault statistics would result in an overreporting of this offense, the statistics actually favored the assumption that traffic stops were dangerous. The finding that assaults during traffic stops were a rather infrequent occurrence appeared to contradict the dangerousness assumption relied on by the Court. Using every traffic encounter estimation (60, 120, and 180 million stops), an assault was very unlikely. In the most liberal calculations, the highest rate for an assault occurred only once in every 8,274 stops.

Conclusion

This study was a first attempt to refine the current understanding of the perceived dangers to police officers during motor vehicle stops. Rather than simply tabulating the number of officers killed and assaulted during traffic encounters, this research

examined the danger of this activity in reference to its frequency.⁸ Although the ultimate interpretation and legal implication of these findings were left to the Court's discretion, using these refined measures, some doubt was cast on the United States Supreme Court's reliance on an assumption of danger during the routine police–citizen traffic encounter.

Despite the improvement in methodology, certain limitations remain due to flaws that plague data collection. As identified earlier, the information concerning the number of police–citizen traffic encounters was incomplete and underestimated. In light of this limitation, the danger confronted by police might actually be less than that reported here. There was also variation in the definition and degree of assaults. This inconsistency prevented an accurate snapshot of the true danger faced by police officers during traffic encounters. Improved methods of collecting information on traffic encounters and assaults against police will enable future research to refine the assessment of danger to police in these situations. Essentially, improvement in assessing danger would assist in preventing or reducing the incidence of police homicides and assaults, as well as aiding the Courts in striking the proper balance of the Fourth Amendment privacy protections of citizens while in their automobiles. Framed in another fashion, it is hoped that improvements in the knowledge about police danger will reduce the Court's reliance on an "assumption" of danger and improve its assessed balance between citizens rights to Fourth Amendment protections and police officer safety. It is important to use informed decisions in striking this balance.

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Notes

1. Perceptions about the dangerousness of police may be attributed to the use of one-person cars or the unpredictability of these encounters.

2. This statute was invalidated by the United States Supreme Court in *Knowles v. Iowa* (525 U.S. 113, 1999). In *Knowles v. Iowa*, the Court did not discount the concern for officer safety in a routine traffic stop. The Court found, however, that "the concern for officer safety [in the traffic stop] may justify the 'minimal' additional intrusion of ordering a driver and passengers out of the car, it does not by itself justify the often considerably greater intrusion attending a full field-type search."

3. These categories consisted of more specific information about the calls, e.g., narcotics offenses, fraud/misuse, or weapons.

4. The five states that do not participate are: Tennessee, Mississippi, Nevada, Rhode Island, and Montana.

5. In a recent study relied on by a New Jersey Superior Court and reported in *State v. Soto* (734 A.2d 350, NJ, 1996), it was found that tickets were not issued for almost 60 percent of all traffic stops. Sixty percent is roughly the midpoint between the two estimates used.

6. The estimated number was sixty million. This was the number of traffic filings reported by the Center in 1991. This figure was a rough estimate of the mean for the ten-year period. Figure 1 (National Center of State Courts, 1996) shows that there was very little change in police stops until the reporting changes noted by the Center in 1993. An exact mean could be calculated, but the validity threats to reporting mitigate doing so. Using 1991 as an estimate might actually be a more accurate reflection of police–citizen traffic stop encounters than an average in light of the threats to the validity of the post-1993 data. Moreover, the findings would not be modified greatly using this figure, and the calculation of the mean with all its qualifiers would simply distract the reader from the purpose of this note.

7. Influencing the opinion that the unrefined assault and homicide rates appeared high was that many other classifications by LEOKA included multiple activities, while this classification included routine traffic stops and pursuits.

8. As noted previously, comparing across police activity from 1988 to 1997, it has been estimated that 12.9 percent of police homicides and 9.4 percent of police assaults occurred during traffic stops. This number was significantly reduced, in this research, when the frequency of the traffic stops were included in the analysis.

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