



U N I V E R S I T Y O F  
**SOUTH CAROLINA**

*Department of Criminology & Criminal Justice*

# A Descriptive Analysis of Foot Pursuits in the Los Angeles County Sheriff's Department

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## INTRODUCTION<sup>1</sup>

Greater attention has been paid to the risks associated with police foot pursuits in recent years by both the law enforcement community (e.g., Bohrer, Davis & Garrity, 2000; Burke, Owen & Nilson, 2005; and the media (e.g., Graham, 2009; Pfeifer, 2007; Simpson, 2007). One of the focal concerns has been foot pursuits in which law enforcement officers discharged their firearms. An investigation by Simpson (2007) found that 12% of 33 suspects shot and killed by deputies in DeKalb County occurred during a foot pursuit. An internal review by the Philadelphia Police Department found that nearly half of police shootings from 1998 to 2003 occurred during foot a pursuit (Graham, 2009). Bobb (2003, 2005) found in the Los Angeles County Sheriff's Department (LASD) that 27% of 44 shooting incidents 2003-2004 involved foot pursuits and that 22% of 239 shootings 1997-2002 occurred during or at the termination of a foot pursuit.

Although these statistics highlight the potential for deputy-involved shootings (DISs) and fatalities during foot chases and are thus useful for motivating the development of policies and training to reduce their incidence, sampling first on fatalities or on DISs and subsequently examining how many incidents involved foot pursuits exaggerates the risks associated with this tactic (this is commonly referred to as the "base rate problem"; see, e.g., Garner and Clemmer, 1986; Kaminski and Sorensen, 1995). To accurately assess the likelihood of DISs and fatalities associated with foot pursuits, one must first sample or select all foot pursuits over some specified period of time and then examine how many involved shootings, fatalities, or other outcomes of interest.<sup>2</sup> Although sampling first on foot pursuits would almost certainly show that shootings and fatalities are statistically rare events relative the total number of pursuits, there has unfortunately been no research to date using this approach. Accurate estimates of risk would be especially informative for law enforcement executives contemplating the adoption of more or less restrictive foot pursuit policies.

DISs and fatalities, of course, are not the only potential hazards associated with foot pursuits. An arrest-based use-of-force study in one municipal agency found that pursuits increased the odds of officer use of force by 345% (Kaminski, DiGiovanni, and Downs, 2004). A limitation of this study, however, was that foot pursuits were not distinguished from motor vehicle pursuits. In other research, Brandl (1996) and Brandl and Stroshine (2003) analyzed the activities officers were involved in when they were injured accidentally or intentionally (i.e., assault-related injuries). They found that between 12 and 14 percent of injury incidents involved officers chasing suspects on foot and that the vast majority of injures were accident-related, but detailed analyses of foot pursuits were not presented. More recently, Kaminski (2007) surveyed over 250 deputies employed by the Richland (SC) County Sheriff's Department (RCSD) regarding their experiences with foot pursuits. Sixty-two of 187 responding deputies (33%) reported being injured intentionally by suspects and 80 of 186 (43%) reported being injured accidentally during

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<sup>1</sup> I thank Chief Abner, Louise Wong, Dennis Brown, Thomas McNeal and Commander Sid Heal (retired) for helping to make this research happen and Commander Osborne for his insightful comments on the draft report.

<sup>2</sup> An alternate approach, especially useful for analyzing statistically rare events and competing risk factors, is the case-control design (Schlesselman, 1982). Using this method, one selects, for example, all DISs during some period of time and compares these incidents to a matched or random sample of incidents not involving DISs. It can then be determined whether or not foot pursuits (or other factors) contribute to the likelihood of shootings.

at least one pursuit since they began working for the RCSD (career-based estimates). Although the majority of injuries were minor, intentional injuries caused deputies to miss an estimated 273 days of work and to work in a reduced capacity for 358 days. Accidental injuries caused deputies to miss an estimated 496 days of work and to work in a reduced capacity for 575 days. These estimates must be interpreted with caution, however, as respondents represented a nonrandom (59%) sample of deputies from the RCSD and recall is likely to be problematic for career-based estimates, especially for deputies with long tenures.

Although the above studies begin to fill the gap in research on foot pursuits, none were able to analyze fatalities or firearm discharges associated with foot pursuits because such events were too rare, at least in the jurisdictions examined. It is important to note, however, that although fatalities and firearm discharges during foot pursuits appear to be rare, such findings should not negate or minimize the importance of policies and training designed to manage foot pursuits. Serious injuries and fatalities do occur during foot pursuits and all reasonable means should be taken to minimize their occurrence. Further, as suggested by findings from Kaminski (2007), even minor injuries may substantially impact agencies in terms of work days lost.

Because few studies on foot pursuits have been conducted to date, the purpose of the present study is to provide a basic descriptive analysis of reported foot pursuits that could be linked to information contained in the Department's Personnel Performance Index database (PPI). Information on the types of force used by and against deputies during foot pursuits, the types of injuries sustained and other information is presented.

## METHOD

Summary electronic data containing records from the LASD's Foot Pursuit Viewer database was obtained. This dataset contained information about pursuits that occurred between 01/01/2000 and 07/22/2009. Excluding purely motor vehicle pursuits left 1,053 records that involved foot chases or a combination of vehicle and foot chases. The Uniform Report Numbers (URNs)<sup>3</sup> were extracted and submitted to the LASD so they could be linked to information contained in the Personnel Performance Index (PPI) database (e.g., information on suspect and deputy demographics, deputy-involved shootings, deputy use of force, suspect resistance, force-related injuries, etc.). This produced 300 linked records. However, use-of-force information for 33 records was not yet available for linking. Excluding these records left 267 foot pursuit incidents for analysis.

It is important to point out that the reported foot pursuits matched to the PPI database represent a non-random sample of all reported foot pursuits. About two-thirds of the records in the PPI database did not match records in the Foot Pursuit Viewer (FPV) database due to changes or differences in URNs across the two databases (for example, the Statistical Code in the PPI database may have been changed at a later time; in other cases data entry errors in URNs may have precluded matching). The degree to which the pursuits analyzed in this report are representative of all reported foot pursuits depends upon whether or not systematic differences

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<sup>3</sup> URNs are 15-digit case numbers in the form of, e.g., 009-12345-0533-145, where the first digit represents the length of time a report is kept on file, 09 represents the year of the event (2009), 12345 is the sequential report number for a specific Station, 05 is the Station identifier, 33 is the report District within the Station area, and 145 is the Statistical Code identifying the type of event (e.g., battery on a peace officer).

existed between the matched and unmatched incidents. If the differences in URNs between the two databases are the result of some random process, then the results of the analysis may be considered to be representative and generalizations to the population of foot pursuits is appropriate. However, if there are systematic differences between the matched and unmatched pursuits, then the results may not be representative of all reported foot pursuits. Discussions with LASD data management personnel suggest that systematic differences between the matched and unmatched records are unlikely.

An additional caveat is that estimates of the incidence of injuries and force used by deputies and suspects are likely inflated to some unknown degree. This is because there is probably a tendency for deputies to underreport uneventful pursuits (e.g., those in which there was no injury or complaints of pain). Thus, actual rates of force and injury are likely lower than reported here.<sup>4</sup>

Finally, the analysis is at the “incident” level and many pursuits involved more than one deputy and some (though far fewer) involved more than one suspect. This complicates the analysis to a certain degree and necessitates, for example, the reporting of the “average age” of the deputies involved in multiple-deputy foot pursuits, that “one or more” deputies used a blunt impact weapon, and so forth.

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<sup>4</sup> Note also that the analysis is unable to differentiate between accidental injuries sustained in the course of foot pursuits from those “intentionally-caused” (i.e., those resulting from the application of force by deputies or suspect assaults).

## SUMMARY OF FINDINGS

One of the major concerns regarding foot pursuits is their dangerousness. As noted in the introduction, several investigations began by examining officer-involved shootings and then examining the characteristics of these incidents. The investigations found generally that a substantial proportion of officer-involved shootings occurred during foot pursuits. However, the appropriate method for empirically estimating the risks associated with foot pursuits is to begin with an examination of foot pursuits and then proceed with estimates of the types of force used, the incidence and severity of injuries, and so on. The major aspects of dangerousness examined in this report are the types of force used by and against deputies and the incidence and severity of force-related injuries sustained during foot pursuits (information on accidental or injuries was not available). Note that only the 267 “matched” records are used to examine force and injuries; when describing the general characteristics of foot pursuits, all 1,053 foot pursuit records from the LASD Foot Pursuit Viewer database are utilized.

***Deputy Injuries:*** Excluding complaints of pain, one or more deputies sustained at least one force-related injury in 17% of the 267 pursuits. A lone deputy was injured in 11% of the pursuits and two deputies each were injured in 6%. Only minor injuries were sustained by deputies in 11% of the pursuits, which consisted of bruises, sprains, punctures, or soft tissue damage. Injuries were more serious in 6% of the pursuits (fractures, lacerations, or human bites).

***Suspect Injuries:*** Excluding complaints of pain, one or more suspects sustained at least one force-related injury in 60% of the pursuits, while in 59% a single suspect was injured. Suspects sustained only minor injuries in 37% the pursuits (bruises, sprains, or soft tissue damage). In 20% of the pursuits, injuries were more serious (fractures, lacerations, dog bites, concussions, gunshot wounds or punctures to the head, face, or groin, including one fatality). Although the overall 60% injury rate appears high, it may not be unusual considering that by definition all pursued suspects actively resisted deputies and in 42% of pursuits suspects assaulted deputies.

***Deputy Use of Force:*** One or more deputies reported using “significant force” (which includes force associated with complaints of pain) in 81.3% of the pursuits. An examination of specific types of force used showed that soft-hand controls were used by one or more deputies in 72% of the pursuits, hard-hand techniques (any strike without a weapon) in 38%, blunt impact weapons in 25%, pepper spray in 18%, a Taser in 12%, and a canine in 9% of the pursuits (note that more than one force type may have been used in any given incident). A firearm was used by one or more deputies in 10 or 3.3% of the pursuits.<sup>5</sup>

***Suspect Force:*** A single suspect assaulted one or more deputies in 42% of the pursuits (there were no reports of more than one suspect assaulting deputies in any given incident). Suspects assaulted deputies without a weapon in 86% of the pursuits and they threatened or attacked

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<sup>5</sup> Given major concerns regarding pursuit-related deputy shootings, the pursuit-related firearm discharge rate or percentage was adjusted for 33 foot pursuit incidents that did not match to PPI data because the general force information had not yet been entered into that system. Thus, the rate was calculated as 10 shooting incidents divided by 300 foot pursuits x 100 = 3.3% or 3.3 shooting incidents per 100 foot pursuits.

deputies with a weapon in 14%. Among pursuits in which suspects assaulted deputies with a weapon, a firearm was used in 5 or 33%, a vehicle in 3 or 20%, an edged weapon in 4 or 27%, and some other type of weapon in 3 or 20%.

**Outcomes:** One or more suspects were charged with at least one felony in 85% of pursuits and one or more suspects were charged with at least one misdemeanor in 49%; 14.7% pursuits resulted in misdemeanor charges only. One or more drug-related felony charges were brought in 14% of pursuits, one or more firearm-related felony charges in 11%, assault with a deadly weapon felony charges in 10%, assault or battery felony charges in 6.2%, robbery charges in 4.2%, and one or more murder charges in 1.2% of pursuits.

**General Characteristics of Foot Pursuits:** This section describes various characteristics of foot pursuits using the 1,053 foot pursuit records from the LASD Foot Pursuit Viewer database. The majority of pursuits involved only foot chases (80%), 20% involved both a motor vehicle and a foot pursuit, and the vast majority of pursuits (71%) were initiated for a known or suspected felony. Based on counts for the years 2005-2008 only, deputies reported engaging in an average of 183 pursuits annually. The majority of foot pursuits occurred in Century Station (28%), followed by Lennox (14%) and Norwalk (10%). These districts also reported the highest rates of Part I crimes in 2008 in the same ranked order, which may in part explain the greater numbers of foot pursuits. The median duration of foot pursuits was 32 seconds. The vast majority of foot pursuits (77%) lasted about a minute (70 seconds) or less. One-fourth of the foot pursuits involved a lone deputy, while nearly half involved two deputies (48%).<sup>6</sup> Only 5% of pursuits reportedly involved more than one suspect.

**Deputy Demographics:** Demographic information for suspects and deputies is based on the 267 matched records. Deputy age ranged from 23 to 52 and the average age was 36 (average median age = 35). Deputy length of service ranged from a year or less to 28 years; the average length of service was 11 years (median = 11 years). The overwhelming majority of pursuits involved one or more male deputies (99%); 38% involved a lone male deputy, 35% involved two male deputies, and 26% involved three or more deputies. Only 8% of the pursuits involved one or more female deputies and two involved two female deputies each. Regarding race/ethnicity, the majority of pursuits involved either white or Hispanic deputies (75%). Specifically, 66% involved one or more white deputies, 63% involved one or more Hispanic deputies, and 67 (25%) involved one or more deputies of another race (black, Asian, etc.).

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<sup>6</sup> The percentage of pursuits involving lone deputies is inflated. The number of deputies involved in pursuits initially was calculated based on the number of unique employee IDs associated with a given pursuit, but based on the foot pursuit narratives it was apparent that in some cases these pursuits actually involved two or more deputies. When narratives clearly indicated more than one deputy was involved, the values were changed from 1 deputy to 2 deputies. (Determining precisely whether or not these pursuits involved more than 2 deputies was difficult because deputy names were redacted. Hence, they were given a value of 2.) When the narratives indicated clearly that one deputy was involved in a pursuit or when narratives were vague or otherwise lacking detail, the value of 1 deputy was retained.

***Suspect Demographics:*** Suspects were substantially younger on average than pursuing deputies. Suspect age ranged from 14 to 55 and the average suspect age was 27 (average median age = 24). The overwhelming majority (98%) of pursuits involved one or more male suspects, while 3% involved one or more female suspects. The vast majority of pursuits (94%) involved a lone male suspect and 2% involved a lone female suspect. Regarding race/ethnicity, the majority (86.4%) of foot pursuits involved one or more Hispanic and/or one or more black suspects. Specifically, 52% involved 1 to 2 Hispanic suspects, 34% involved 1 to 3 black suspects, 13% involved 1 white suspect, and 1% involved one suspect of another race.

***Additional Suspect Characteristics:*** One or more fleeing suspects were armed with a weapon in 23% of the foot pursuits and one or more suspects were impaired by drugs, alcohol or mental illness in 41%. The majority of pursuits involved one or more suspects with a criminal history (73%).

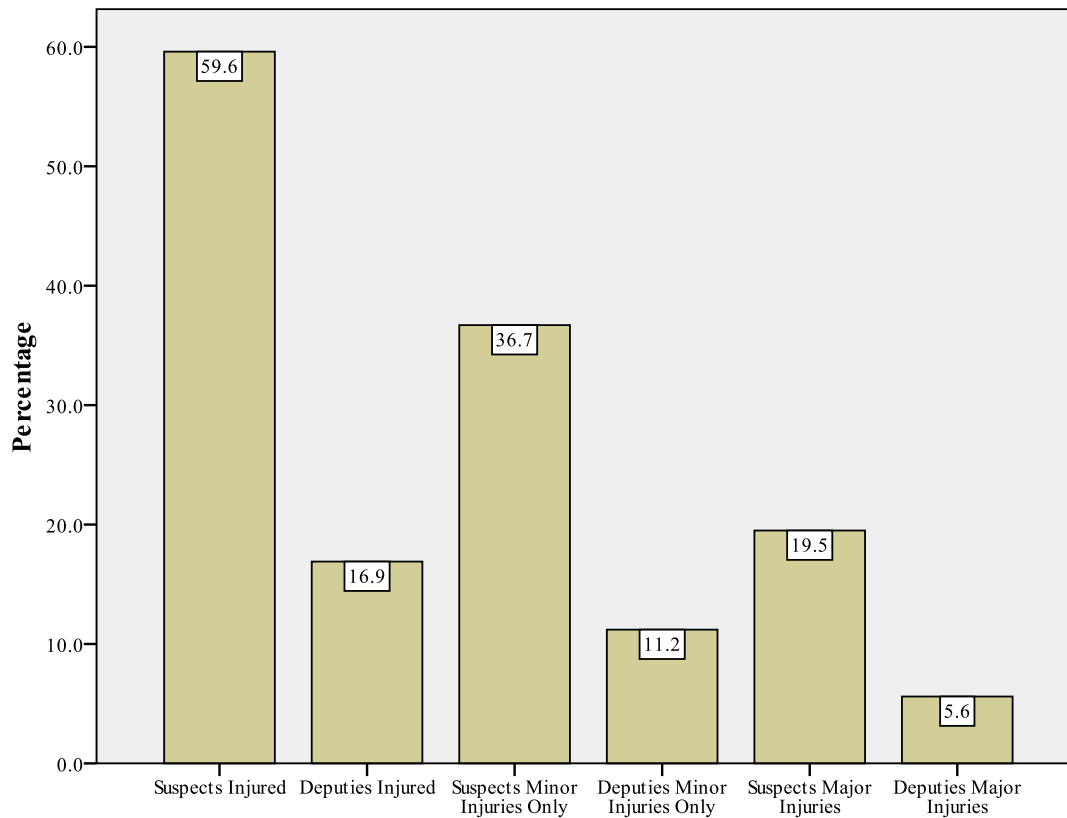
## FINDINGS

This section presents the detailed findings, beginning with information on suspect and deputy force-related injuries (information on accidental injuries was not available). This is followed by a presentation of the types of force used by and against deputies, information on pursuit-related outcomes (number of suspects apprehended and types of charges), general characteristics of foot pursuits (e.g., numbers by patrol station and year), demographic characteristics of suspects and deputies involved in foot pursuits, other characteristics of suspects (the number that were armed, impaired by drugs, alcohol or mental illness, and the number that had a criminal history).

### *Suspect and Deputy Force-related Injuries*

Excluding complaints of pain, the data indicate that one or more suspects were injured in 159 or 59.6% of pursuits (Figure 1). In 157 of the pursuits (58.8%), a single suspect was injured; in two other pursuits, 2 suspects each were injured. As shown in Panel A of Table 1, suspects sustained only minor injuries in 98 or 36.7% of the pursuits (bruises, sprains, or soft tissue damage). In 52 or 19.5% of the pursuits injuries were more serious and consisted of fractures (n = 3), lacerations (n = 21), dog bites (n = 23), concussions (n = 3), gunshot wounds (n = 2) or puncture wounds

**Figure 1. Percentage of Incidents in Which Suspects and Deputies Were Injured**



to the head, face or groin (n = 2; punctures to other parts of the body when Tasers were utilized were not counted as injuries). One gunshot wound was fatal. (Note: percentages do not sum to

100 because more than one deputy may receive more than one type of injury in any given pursuit.)

**Table 1. Incidents Involving Major and Minor Force-related Injuries**

Panel A. Suspects

		1+ Major Injuries		Total
		No	Yes	
1+ Minor Injuries	No	117	40	157
	Yes	98	12	110
Total		215	52	267

Panel B. Deputies

		1+ Major Injuries		Total
		No	Yes	
1+ Minor Injuries	No	222	5	227
	Yes	30	10	40
Total		252	15	267

One or more deputies were injured in 45 or 16.9% of pursuits (Figure 1). A lone deputy was injured in 30 pursuits (11.2%) and 2 deputies each were injured in 15 pursuits (5.6%). As shown in Panel B of Table 1, only minor injuries were sustained in 30 or 11.2% of pursuits (bruises, sprains, punctures, or soft tissue damage). Injuries were more serious in 15 or 5.6% of pursuits, consisting of fractures (n = 3), lacerations (n = 12) or human bites (n = 1). (Note: percentages do not sum to 100 because more than one deputy may receive more than one type of injury in any given pursuit.)

***Suspect Force***

A single suspect assaulted one or more deputies in 110 of 265 pursuits (41.5%; there were no reports of more than one suspect assaulting deputies in any given incident). Regarding the types of force used, the crosstab in Table 2 shows that suspects attacked deputies without a weapon in the majority of the assaults (95 of 110 or 86.4%), they threatened or attacked deputies with a weapon in 9 (8.2%), and they threatened or attacked deputies using a weapon *and* physical force in 6 incidents (5.5%). Thus, a weapon was used to threaten or attack deputies in 15 of the 110 assaults (13.6%) or in 5.7% of pursuits overall.

**Table 2. Type of Force Used by Suspect**

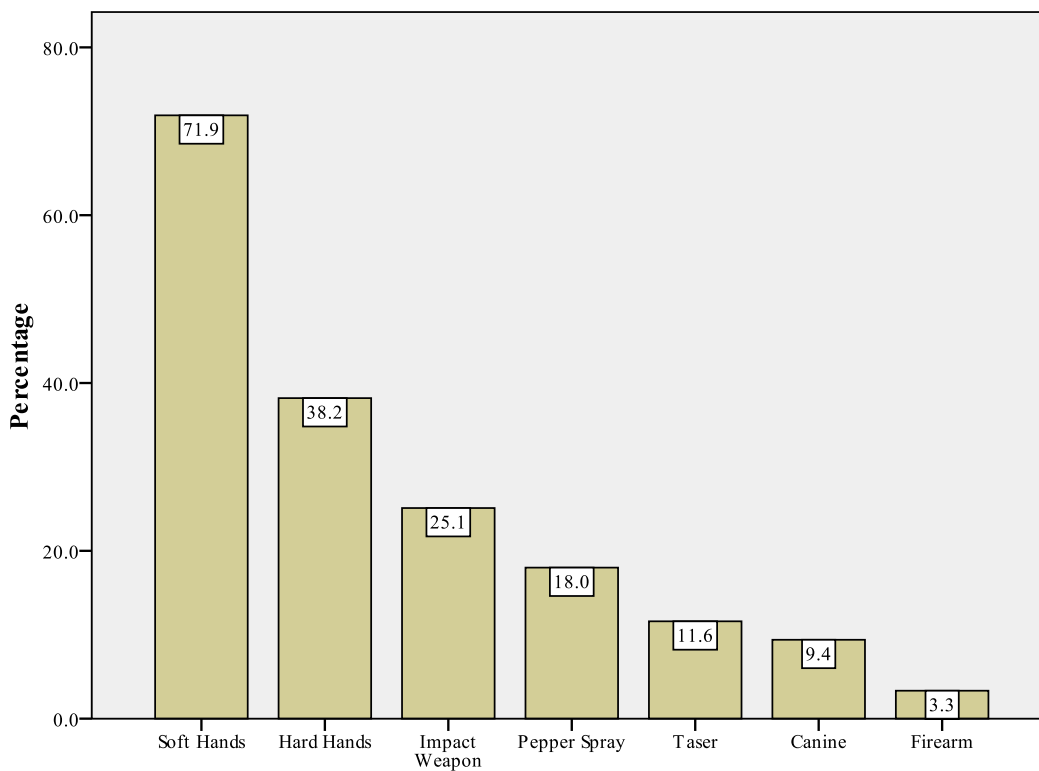
		Weapon		Total
		No	Yes	
Physical Force	No	0	9	9
	Yes	95	6	101
Total		95	15	110

Regarding the type of weapon, a suspect threatened or used a firearm to attack one or more deputies in 5 assault incidents (this includes an attempt to take a deputies sidearm), a vehicle was used in 3, an edged weapon in 4, and in 3 assault incidents a suspect threatened or attacked deputies using some other weapon.

### ***Deputy Force***

One or more deputies reported using “significant force” (which includes force associated with complaints of pain) in 217 of the pursuits (81.3%). Regarding specific types of force, the use

**Figure 2. Percentage of Incidents Involving Various Types of Force**



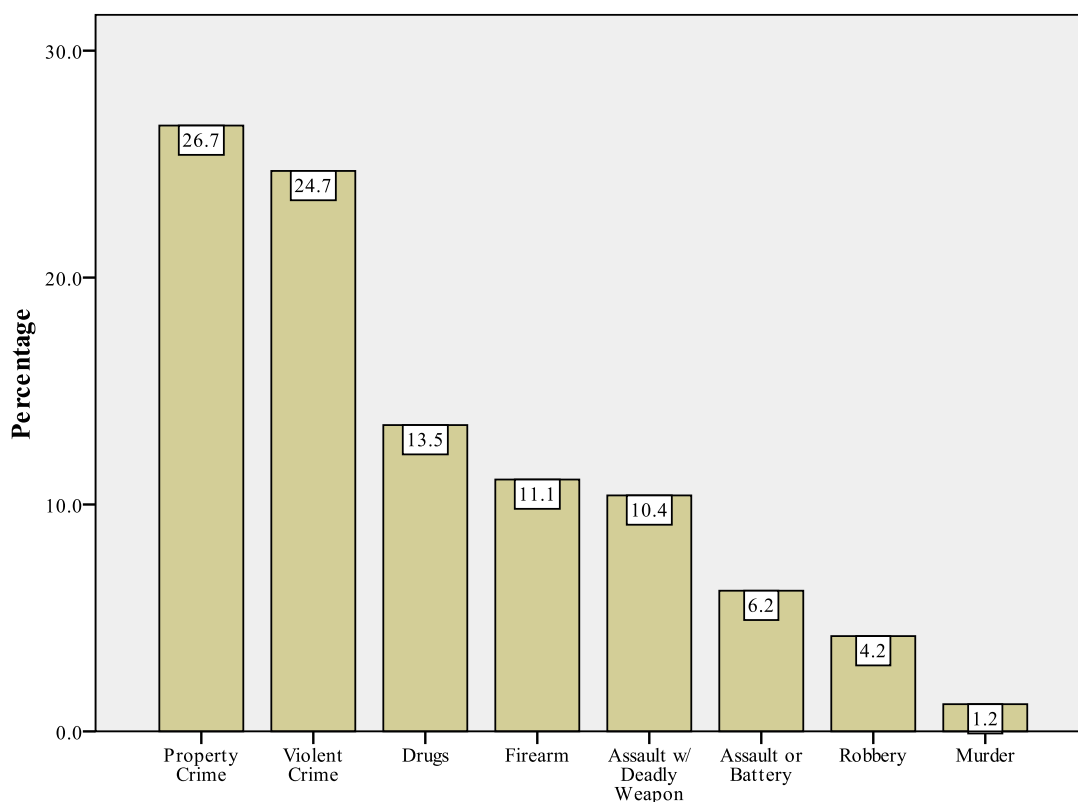
Note: Percentages do not sum to 100 because more than one type of force may have been used in any given pursuit.

of soft-hand controls (any type of physical control technique not involving strikes) by deputies was most common, used by one or more deputies in 192 or 71.9% of pursuits (Figure 2). Hard-hand techniques (any strike without a weapon) were used in 102 pursuits (38.2%), blunt impact weapons (batons, saps, flashlights, etc.) were used in 67 pursuits (25.1%), pepper spray in 48 (18.0%), a Taser in 31 (11.6%), and a canine in 25 (9.4%). A firearm was used by 12 deputies in 10 pursuit-related incidents (3.3%).<sup>7</sup> In 8 of these incidents a lone deputy used a firearm and in two other incidents two deputies each used a firearm.

### Outcomes

One or more suspects were charged with at least one felony in 219 of 259 pursuits (84.6%) and one or more suspects were charged with at least one misdemeanor in 127 of 259 pursuits (49%). Thirty-eight (14.7%) pursuits resulted in misdemeanor charges only.

**Figure 3. Pursuit-Related Felony Charges**



Note: Percentages do not sum to 100 because more than one charge may have been brought against one or more suspects in any given pursuit.

<sup>7</sup> Given major concerns regarding pursuit-related deputy shootings, the pursuit-related firearm discharge rate or percentage was adjusted for 33 foot pursuit incidents that did not match to PPI data. Thus, the rate was calculated as 10 shootings divided by 300 foot pursuits x 100 = 3.3% or 3.3 shooting incidents per 100 foot pursuits.

Figure 3 shows that one or more drug-related felony charges were brought in 35 pursuits (13.5%), one or more firearm-related felony charges in 29 (11.1%), assault with a deadly weapon felony charges in 27 (10.4%), assault or battery felony charges in 16 (6.2%), robbery charges in 11 (4.2%), and one or more murder charges in 3 pursuits (1.2%).

### ***Characteristics of Foot Pursuits***

Table 3 indicates the number and percentage of chases that involved foot pursuits only and those that involved a combination of vehicle and foot pursuit. Panel A presents information on all 1,053 reported foot pursuits contained in the foot pursuit database that occurred between 1/21/00 and 7/15/09, while Panel B presents information on 267 pursuits matched to PPI data that occurred between 1/18/01 and 3/8/09. As shown in Panel A, the majority involved only a foot pursuit (839 or 79.6%), while 215 or 20.4% involved a combination of vehicle and foot pursuit. A similar distribution is observed for the matched data (Panel B).

**Table 3. Pursuit Type**

Panel A. All Pursuits

	Frequency	Percent	Valid Percent	Cumulative Percent
Vehicle & Foot	215	20.4	20.4	20.4
Foot Only	838	79.6	79.6	100.0
Total	1053	100.0	100.0	

Panel B. Matched Pursuits

	Frequency	Percent	Valid Percent	Cumulative Percent
Vehicle & Foot	47	17.6	17.6	17.6
Foot Only	220	82.4	82.4	100.0
Total	267	100.0	100.0	

As displayed in Panel A in Table 4, most pursuits were initiated by deputies in response to a known or suspected felony (490 or 71.4%), while 196 pursuits (28.6%) were initiated for a known or suspected misdemeanor or lesser offense. The matched data show a similar distribution (Panel B).

**Table 4. Pursuit Initiated for Misdemeanor or Felony\***

Panel A. All Pursuits

	Frequency	Percent	Valid Percent	Cumulative Percent
Misdemeanor	196	18.6	28.6	28.6
Felony	490	46.5	71.4	100.0
Total	686	65.1	100.0	
Missing	367	34.9		
Total	1053	100.0		

Panel B. Matched Pursuits

	Frequency	Percent	Valid Percent	Cumulative Percent
Misdemeanor	53	19.9	31.2	31.2
Felony	117	43.8	68.8	100.0
Total	170	63.7	100.0	
Missing	97	36.3		
Total	267	100.0		

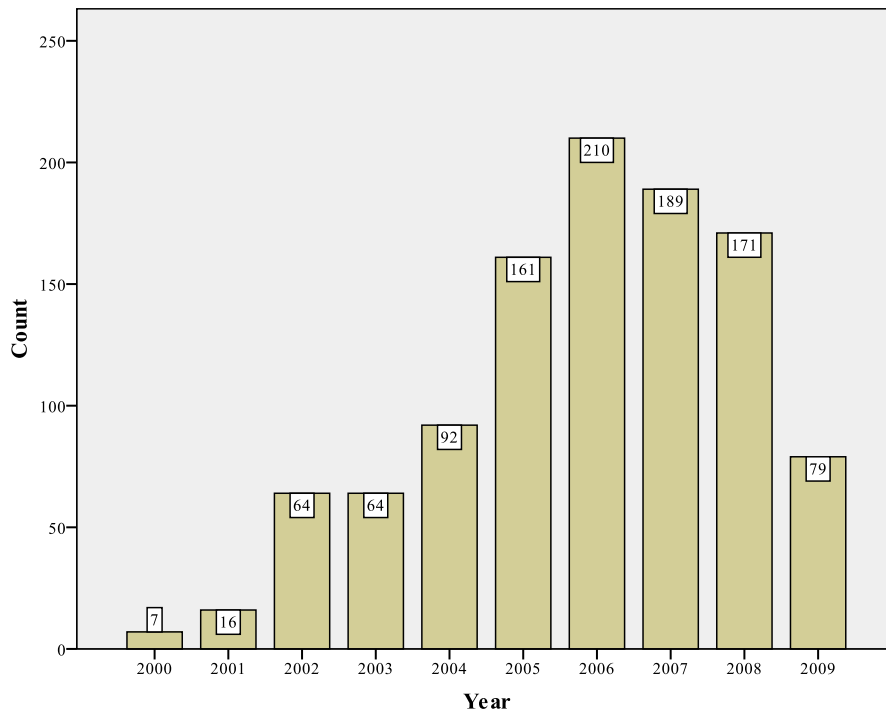
\*Includes known and suspected misdemeanors and felonies; 15 infractions and 2 infractions are included with “misdemeanors” in Panel A and Panel B, respectively. Information was missing for over one-third of cases.

Figure 4 indicates the number of foot pursuits per year for the two data sets. Examining the number of pursuits 2005-2008 contained in the foot pursuit database (because mandatory reporting began in November 2004) suggests deputies engaged in at least 182.8 pursuits annually. The distribution for the matched data in Panel B is similar to that shown in Panel A.<sup>8</sup>

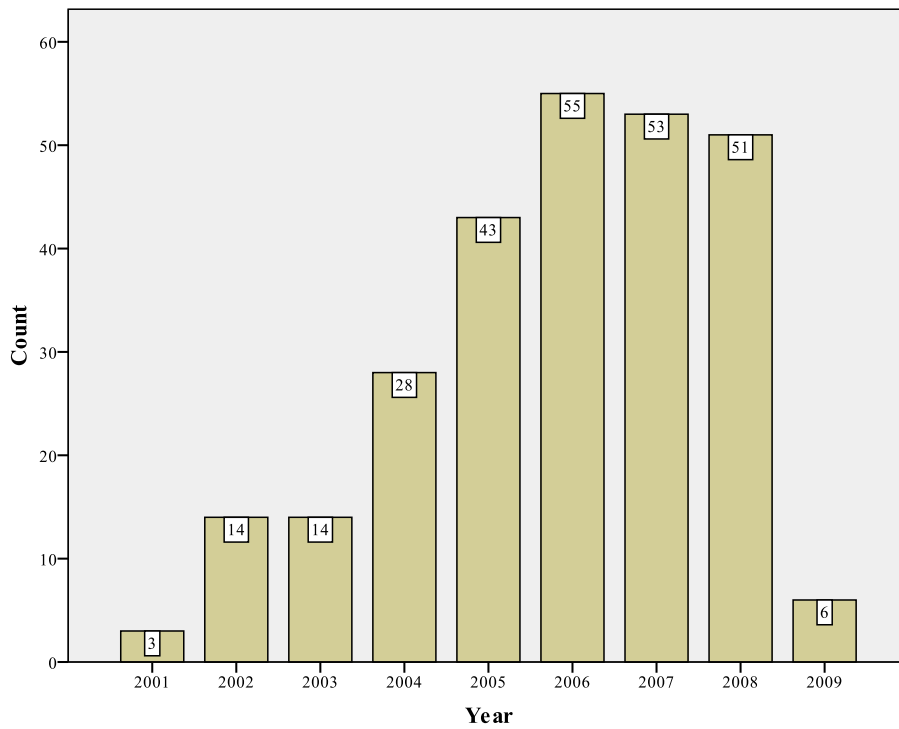
<sup>8</sup> Changes in the number of reported pursuits by year may be due to a number of factors, including differential reporting practices, changes in crime rates, and so forth.

**Figure 4. Number of Reported Foot Pursuits by Year**

Panel A. All Pursuits

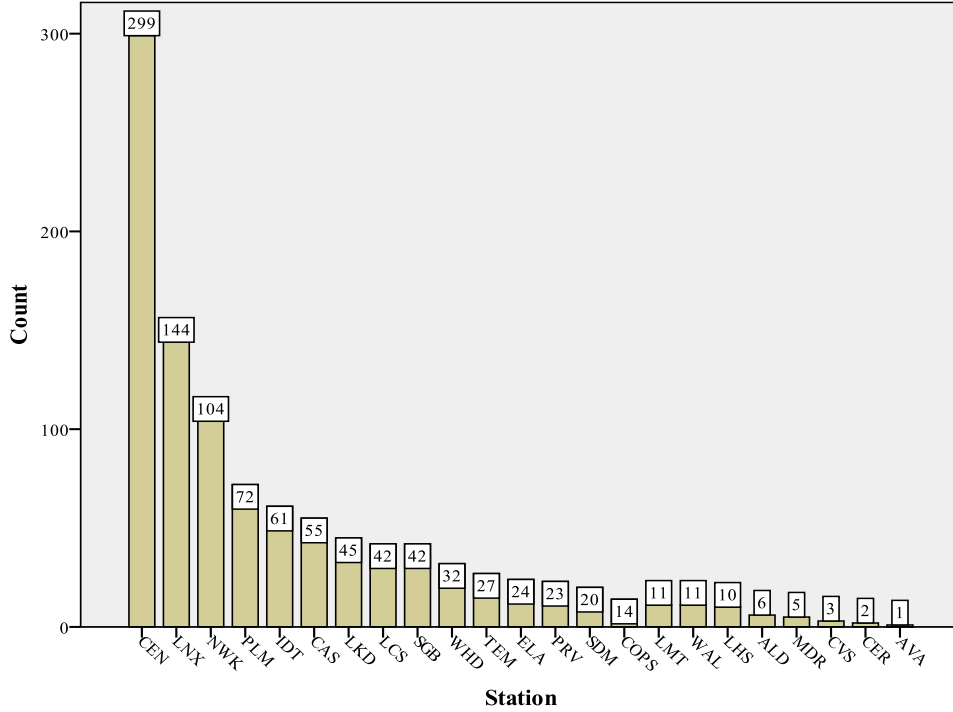


Panel B. Matched Pursuits

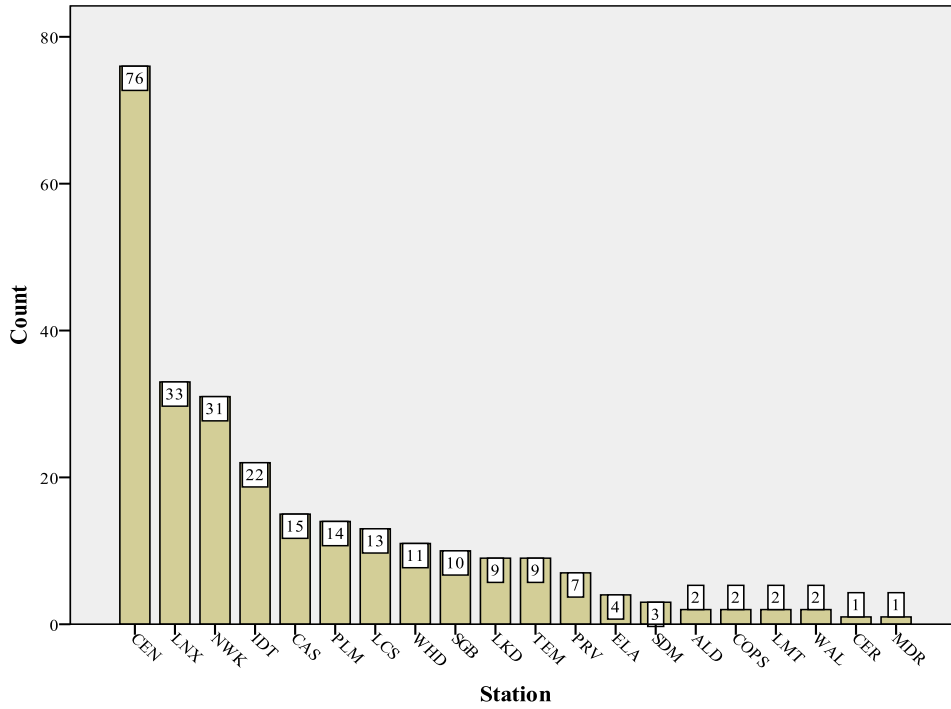


**Figure 5. Number of Reported Foot Pursuits by Patrol Station**

**Panel A. All Pursuits**



**Panel B. Matched Pursuits**



As indicated in Panel A of Figure 5, the majority of foot pursuits occurred in Century Station (299 or 28.4%), followed by Lennox (144 or 13.7%) and Norwalk (104 or 9.9%). Proportionately, the distribution for Century, Lennox and Norwalk stations are similar for the

**Table 5. Duration of Foot Pursuits**

Panel A. All Pursuits

	Frequency	Percent	Valid Percent	Cumulative Percent
Up to 10 Seconds	202	19.2	22.0	22.0
11 - 20 Seconds	151	14.3	16.5	38.5
21 - 40 Seconds	165	15.7	18.0	56.5
41 - 70 Seconds	191	18.1	20.8	77.3
71+ Seconds	208	19.8	22.7	100.0
Total	917	87.1	100.0	
Missing System	136	12.9		
Total	1053	100.0		

Panel B. Matched Pursuits

	Frequency	Percent	Valid Percent	Cumulative Percent
Up to 10 Seconds	42	15.7	20.7	20.7
11 - 20 Seconds	48	18.0	23.6	44.3
21 - 40 Seconds	32	12.0	15.8	60.1
41 - 70 Seconds	43	16.1	21.2	81.3
71+ Seconds	38	14.2	18.7	100.0
Total	203	76.0	100.0	
Missing	64	24.0		
Total	267	100.0		

matched data in Panel B (28.5%, 12.4%, and 8.6%, respectively). One would expect that deputies working in stations with higher levels of crime would engage in more pursuits and it is interesting that in 2008 Century Station had the highest Part I crime rate (358 per 100,000

residents), followed by Lennox (277) and Norwalk (222). Of course other factors affect the incidence of pursuits, including but not limited to differential reporting by patrol station.

Table 5 presents information on the duration of all pursuits (Panel A) and pursuits matched to the PPI data (Panel B). Overall, pursuits reportedly lasted from 1 second to just over two hours.<sup>9</sup> The average duration for all pursuits was 3 minutes and 46 seconds, while the median duration was 32 seconds. As shown in Panel A, the vast majority of all foot pursuits reportedly lasted 70 seconds or less (709 or 77.3%), while 202 or 22.0% were of very short duration (10 seconds or less). For the matched data (Panel B), the average duration was 1 minute and 35 seconds, while the median duration was 30 seconds. The vast majority of these pursuits also lasted 70 seconds or less (165 or 81.3%) and 42 or 20.7% were of very short duration (10 seconds or less).

The number of deputies involved in pursuits is available only for the matched data (Table 6). About a quarter of the foot pursuits involved a lone deputy (66 or 24.7%), while nearly half

**Table 6. Number of Deputies Involved in Foot Pursuit**

Number of Deputies	Frequency	Percent	Valid Percent	Cumulative Percent
1	66	24.7	24.7	24.7
2	127	47.6	47.6	72.3
3	28	10.5	10.5	82.8
4	27	10.1	10.1	92.9
5	12	4.5	4.5	97.4
6	4	1.5	1.5	98.9
7	2	.7	.7	99.6
9	1	.4	.4	100.0
Total	267	100.0	100.0	

<sup>9</sup> The data contained durations ranging from 0 seconds to nearly 10 hours. Zero values and pursuits lasting several hours are in most cases likely due to data entry errors. The zero values were removed as were durations lasting more than 126 minutes. Even if some of these values are valid, they are extreme and have an undue influence on the distribution. Removing them provides estimates of durations that are more representative of the “average” pursuit. Note also that whether or not the extreme values are removed has no influence on the estimate of the median duration. Given the apparent errors in the data, the median is probably a better estimate of the typical duration.

involved two deputies (127 or 47.6%).<sup>10</sup> Fifty-five (20.6%) involved 3 to 4 deputies, and 19 (7.1%) involved 5 to 9 deputies. As shown in Table 7, the vast majority of pursuits reportedly involved a lone suspect (254 or 95.1%).

**Table 7. Number of Suspects Involved in Foot Pursuit**

Number of Suspects	Frequency	Percent	Valid Percent	Cumulative Percent
1	254	95.1	95.1	95.1
2	11	4.1	4.1	99.3
3	2	.7	.7	100.0
Total	267	100.0	100.0	

### ***Deputy and Suspect Demographics***

This section presents information on the age, sex and race of suspects and deputies involved in foot pursuits as well as deputy length of service. This information is available only for the 267 pursuits matched to the PPI database.

Regarding gender, 98.5% (263) pursuits involved 1 or more male deputies; 38.2% involved a lone male deputy, 34.5% involved two male deputies, and 25.8% involved 3 or more male deputies. Twenty-one pursuits (7.9%) included one or more female deputies and two (.7%) involved two female deputies each. The vast majority of pursuits involved male suspects. Specifically, 262 (98.1%) of the incidents involved one or more male suspects while 9 (3.3%) involved one or more female suspects. Nearly all involved a lone male suspect (252 or 94.4%) and 5 (1.9%) involved a lone female suspect.

Deputy age ranged from 23 to 52 and the average age was 35.7 (average median age = 35.2). Deputy length of service ranged from a year or less to 28 years; the average length of service was 11.1 years (median = 10.7 years). Suspects were substantially younger than pursuing deputies. Suspect age ranged from 14 to 55 and the average age was 26.7 (average median age = 24.0).

<sup>10</sup> The percentage of pursuits involving lone deputies is inflated. The number of deputies involved in pursuits initially was calculated based on the number of unique employee IDs associated with a given pursuit, but based on the foot pursuit narratives it was apparent that in some cases these pursuits actually involved two or more deputies. When narratives clearly indicated more than one deputy was involved, the values were changed from 1 deputy to 2 deputies. (Determining precisely whether or not these pursuits involved more than 2 deputies was difficult because deputy names were redacted. Hence, they were given a value of 2.) When the narratives indicated clearly that one deputy was involved in a pursuit or when narratives were vague or otherwise lacking detail, the value of 1 deputy was retained.

The majority of pursuits involved either white or Hispanic deputies (200 or 74.9%). Specifically, 176 (65.9%) involved one or more white deputies, 167 (62.5%) involved one or more Hispanic deputies, and 67 (25.1%) involved one or more deputies of another race (black, Asian, etc.). As shown in the crosstab in Table 8, 92 (55.0%) of the pursuits involved one or more white *and* Hispanic deputies, 84 (50.3%) involved one or more white deputies *and* deputies of another race, 75 (44.9%) involved one or more Hispanic deputies *and* deputies of another race, and 16 (6.0%) involved deputies of another race only (i.e., neither white nor Hispanic deputies).

**Table 8. Deputy Race/Ethnicity**

		1+ Deputies Hispanic		Total
		No	Yes	
1+ Deputies	No	16	75	91
White	Yes	84	92	176
Total		100	167	267

The majority of pursuits involved one or more Hispanic and/or one or more black suspects (229 or 86.4%). Specifically, 138 or 52.1% involved 1 to 2 Hispanic suspects, 91 (34.4%) involved 1 to 3 black suspects, 33 (12.5%) involved 1 white suspect, and only 3 pursuits (1.1%) involved one suspect of another race.

### ***Other Suspect Characteristics***

One or more fleeing suspects were armed with a weapon during 62 of the foot pursuits (23.3%) and one or more suspects were impaired by drugs, alcohol or mental illness in 108 pursuits (40.8%). The vast majority of pursuits involved one or more suspects with a prior criminal history (194 or 72.9%).

## CONCLUSION

One of the major concerns regarding foot pursuits has been the use of deadly force by or against deputies. The data used in this analysis suggest that deputy-involved shootings are relatively rare; deputies discharged a firearm in 10 or 3.3% of the foot pursuits analyzed in this report. To the degree that the data are representative of all foot pursuits, this translates to about 3 deputy-involved shootings for every 100 pursuits. Suspects used or threatened to use a firearm to assault deputies in 5 or 1.9% of pursuits and they used some other weapon in an additional 10 or 3.8% (edged weapon, vehicle, etc.). These statistics indicate foot pursuits are less dangerous than implied by investigations that first sampled on officer-involved shootings and then examined how many shootings involved foot pursuits (Bobb, 2003, 2005; Graham, 2009; Simpson, 2007).

Although shootings during foot pursuits appear to be rare events, other risk indicators suggest that it is important for law enforcement agencies to manage foot pursuits appropriately. For example, suspects assaulted one or more deputies in 110 or 42% of pursuits and although few suspects threatened or attacked deputies with a weapon, suspects were armed with some type of weapon in 62 or 23% of pursuits. Moreover, in 194 or 73% of pursuits, suspects had a prior criminal record who perhaps pose a greater hazard to deputies as they may be more motivated to resist and assault deputies than suspects without criminal records who do not flee. Future research might address this possibility. Suspects were impaired by drugs, alcohol, or mental illness in 108 or 41% of pursuits, which is a concern as impaired persons may be less willing or unable to respond to deputy commands or instructions. Substantial numbers of pursuits also involved uses of types of force by deputies that have been found to be associated with relatively high rates of injury to both suspects and deputies (MacDonald, Kaminski & Smith, 2009; Smith et al., 2007). Specifically, 38% of the pursuits involved the use of hard-hand tactics (strikes without weapons) by deputies and 25% involved the use of impact weapons (e.g., batons, saps, flashlights).

The estimated rates of injury associated with foot pursuits were relatively high. Overall, 60% of the pursuits resulted in force-related injuries to suspects (excluding complaints of pain) and 20% resulted in a more serious injuries (including one fatality). Deputies were injured in 45 or 17% of the pursuits and force-related injuries were more serious in 15 or 5.6%. Although the percentage of pursuits that resulted in force-related injuries to deputies was relatively small and most injuries were minor, other research suggests that the amount of time lost on the job (in terms of days off and days working in a reduced capacity) due to injuries sustained during foot pursuits can be substantial (Kaminski, 2007).

On a positive note, deputies appear to be pursuing suspects for serious offenses. Most pursuits were initiated for a known or suspected felony (about 70%), and one or more suspects were charged with one or more felonies in 85% of pursuits.

In summary, the analysis presented in this report represents a modest attempt to better understand the hazards associated with foot pursuits, an issue on which little empirical research

exists. While informative, continued research on foot pursuits is important. For example, the data used for the analysis in this report cannot be used to determine whether or not foot pursuits are any more or less risky than encounters with resistive suspects not involving foot pursuits. The data also cannot determine whether or not deputy-involved shootings, rates of injury, or other outcomes such as apprehensions may have declined following the adoption of a more restrictive foot-pursuit policy by the LASD. These are issues the LASD might wish to examine in future research.

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