

Officer-Involved Shootings: What We Didn't Know Has Hurt Us ©

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Long debated, the nature of police shootings elicits considerable emotion, as well as ample dosages of misinformation. Central issues of concern and contention have long been severe errors in judgment, and dismal handgun hit ratios. But, there is much, much more to chronicle that has never been fully explored.

Police handgun hit probability has long been an area of focus amongst police trainers, and has generally been discussed within the realm of (1) low expectations of police gunfight performance based on historical data, (2) whether the way in which police are trained has contributed to low hit probability, and (3) whether physiological and psychological impairments experienced in critical incidents contribute to degradation of performance. This article will address those issues, and many more beyond them.

Anyone attempting to research the police use of deadly force encounters a myriad of hurdles. The most formidable impediment to this research is the fact that most agencies don't collect such data. Some simply refuse to do so in apparent concern that such data will be misinterpreted and misused. There seems to be substance to such concerns, as varying agendas were encountered while gathering this data. The author has expended considerable effort to avoid the politics embedded within this material, maintaining focus on problem-solving objectives.

Of the few agencies that actively collect gunfight data, even fewer choose to freely share it. Those that do share their data tend to offer it in a sterilized table format that makes detailed analysis difficult. As this article progresses, you'll see how the devil has long been hidden in the details of gunfight data.

The reader should also be aware of the fact that much of this data was culled from sources with considerable structural disparities between their data formats. The most useful and enlightening information was culled from loosely structured shooting narratives. Often, many of the most crucial shooting variables were unavailable from these sources, simply because certain salient questions (e.g., distance at which shots were fired, number of hits on intended targets, hits by caliber where multiple weapon types were involved, light conditions, whether officers made independent threat identifications in bunch-shootings, etc.) about the events were never asked. In effect, these gross disparities in data collection make inter-agency comparisons extremely difficult. To close these information gaps, the law enforcement community will ultimately have to embrace a standardized deadly force reporting mechanism.

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The Newhall Wake-Up Call

The single incident credited with initiating the police "officer survival" movement was the April 5, 1970 gunfight that left four CHP officers (officers Frago, Gore, Pence and Alleyn) dead in Newhall, California. That brief armed encounter, with two convicted felons, brought considerable attention to a host of deficiencies in police training.

One issue illuminated by the Newhall incident was the fact that the four CHP officers fired fifteen rounds, three of which were 12-gauge buckshot cartridges, yet inflicted only one superficial wound upon their assailants. Typical of police confrontations, all rounds expended by the four

deceased officers appear to have been within seven yards of their adversaries. Also typical of police lethal encounters was the fact that the Newhall firefight occurred during hours (11:54 PM) associated with adverse lighting conditions. Atypical was the duration of that firefight, as it lasted an estimated four minutes.

The Newhall incident shocked the law enforcement establishment. It became fodder for police training films and printed training narratives for many years to come. But, what did the law enforcement community actually learn from this tragedy? Perhaps not as much as we thought we did.

NYPD SOP #9: America's First Exhaustive Firearms Discharge Report

Implemented in 1970, NYPD's "Standard Operating Procedure #9" became an instant vehicle of enlightenment. SOP-9, a formal "Firearms Discharge Report," was implemented to establish documentation of all gunshots fired by NYPD officers. As you might imagine, ammunition expended in training and recreational shooting pursuits were (and are) exempted. However, firearms incidents as diverse as gunfights and officer suicides are documented, as are all "accidental" discharges of firearms.

While imperfect from the outset, SOP-9 ventured where few agencies had previously dared to go. The brainchild of NYPD's Frank McGee, SOP-9 became the Holy Grail to inquisitive police trainers.

Old But Still Relevant

In reviewing even earlier annual issues of NYPD's SOP-9, it became apparent that we remain pressed by many issues that police trainers grappled with decades ago. For instance, the 1981 issue of SOP-9 notes,

"It has been said that if a man can hit a target at 50 yards he can certainly do the same at three feet. The reports do not bear out that assumption. Standard revolver courses of fire may have little relationship to an individual gunfight."

Sighted Versus Unsighted Shooting

There is little national data regarding how often officers have used their handgun sights in armed confrontations. What has been available has offered an interesting but inconclusive perspective on sighted shooting. In 1981, NYPD's SOP stated,

"Good sight alignment is fundamental to target shooting, yet 70% of cases reviewed indicated that no sight alignment was employed when the revolver was fired."

It also suggested that the tendency to use sighted shooting increased as the threat distance increased. "Aiming" was described as diversely as merely using the barrel as a pointing reference, to using only the front sight as an aiming reference, to full utilization of front and rear sights. A substantive number of officers (10% in 1981) stated that they couldn't remember whether or not they used their sights.

To date, I have been unable to collect hard data pertinent to the efficacy of point-shooting, or any reasonable facsimile of point-shooting (i.e., "threat-focused shooting", et al.). No such data has been made available to me. Attempts were made to obtain such data with one large west coast agency that reportedly has done well with such techniques. But, they either refrain from keeping

Lethal Encounter Proximity

NYPD OFFICER GUNFIGHT DEATHS BY DISTANCE YEARS 1854 TO 1979	
DISTANCE OF ENCOUNTER	OFFICERS
CONTACT TO 3 FEET	86
3-6 FEET	119
6-15 FEET	24
15-25 FEET	12
AT 125 FEET (SNIPER)	1
UNDETERMINED	8
82% (205) of the officers slain (250) were slain within 6' of their assailants.	

The NYPD proximity-lethality model is slightly different from the data culled nationally by the FBI. The dissimilarities we see in the “Officers Killed” table are likely attributable to the fact that the NYPD data is much more expansive in that it includes ALL shootings, not just those in which officers were slain.

Law Enforcement Officers Killed by Firearms											
Source: FBI "Law Enforcement Officers Killed and Assaulted" 2000											
Distance Between Victim Officer and Offender, 1991-2000											
Distance in feet	Total	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total	601	68	55	67	78	62	57	68	58	41	47
0-5	303	34	28	33	43	28	31	36	26	19	25
6-10	121	9	14	14	21	16	14	11	7	9	6
11-20	70	13	6	7	7	6	6	9	8	4	4
21-50	52	6	4	6	4	7	3	7	8	3	4
Over 50	49	6	3	7	3	5	3	5	7	5	5
Unknown	6	0	0	0	0	0	0	0	2	1	3
50% (303) of officers slain (601) were within 5' of their assailants, while 71% (424) were within 10'											

What is a “Gunfight”?

Technically, and as defined by NYPD SOP-9, a gunfight occurs when officers confront assailants armed with firearms. From a researcher’s standpoint, that distinction is important. However, differentiating between “reality” and human perception comes down to whether an officer is *erroneously* convinced that he/she is faced with an imminent threat from a firearm, or is actually under attack from a firearm. Is the perception of a firearm attack enough to influence the degradation of human (i.e., psychological & physiological) performance? The data seems to suggest that it does.

An annual breakdown of NYPD “Gunfight” hit-ratio data is differentiated in the table below.

NYPD GUNFIGHT STATISTICS 1990-2000			
NYPD SOP-9 YEAR	NYPD GUNFIGHT HIT PROBABILITY	NYPD SHOTS FIRED PER GUNFIGHT	NYPD SHOTS FIRED PER OFFICER
1990	19%	8.2	4.4
1991	15%	5.9	3.7
1992	17%	7.7	3.6
1993	15%	Unavailable	Unavailable
1994	12%	9.3	4.4
1995	18%	12.5	6.2
1996	14%	11.1	6.1
1997	10%	10.6	5.3
1998	25%	10.0	5.5
1999	13%	10.6	5.9
2000	9%	16.8	6.9
MEAN SCORES	15%	10.3	5.2

Shots Fired & Hit Probability

Some of the early data supplied by SOP-9 didn’t clearly differentiate hit probability in firearms “Incidents” from those in actual gunfights. A firearms discharge “incident” could include officer suicides, “accidental discharges,” shots fired at dangerous animals, etc.

“Incidents” will be included in the overall analysis. There are many years in which SOP-9 offered proximity/hit ratio ONLY for firearms incidents. The years in which proximity/hit ratio data was made available will be differentiated in tables that follow.

Since NYPD adopted semi-automatic pistols (en-masse) in the early 1990s, the number of shots fired per officer has edged upward, though not nearly as much as many have maintained.

The number of shots being fired, per incident and per officer, has shown gradual escalation over the last decade. While some may rush to judgment and assert that high capacity pistols are the primary culprit, substantive changes in the way police are being trained to use these pistols (e.g., “fire until your foe falls,” “vertical tracking,” etc.) has also influenced this trend.

The increase in shots fired by officers in shooting "incidents" appears to be relatively stable when viewed within an historical context, as the illustration below suggests.

NYPD SOP-9 1988-2001† COMPARISON OF SHOOTING INCIDENTS ††							
YEAR	TOTAL NUMBER OF INCIDENTS	NUMBER OF SHOOTING INCIDENTS	# SHOTS FIRED BY OFFICERS	AVERAGE SHOTS PER INCIDENT	AVERAGE SHOTS PER OFFICER	TOTAL SHOTS FIRED BY OFFICERS AT PERP.	TOTAL HITS BY OFFICERS AT PERP.
1988	371	251	752	3	2.4	540	100
1989	450	329	1073	3.3	2.6	823	157
1990	425	307	1176	3.8	2.8	965	220
1991	440	332	1112	3.4	2.6	846	175
1992	392	279	1094	3.9	2.7	875	193
1993	415	312	1193	3.8	2.8	928	173
1994	419	331	1146	3.5	2.6	689	138
1995	435	345	1728	5	3.6	1245	255
1996	410	318	1292	4.1	3.1	892	201
1997	329	253	1040	4.1	3.1	708	121
1998	321	249	856	3.4	2.6	529	302
1999	202	155	621	4.0	3.2	389	88
2000	134	129	471	4.6	3.3	367	58
2001†	67	67	162	3.6	2.7	103	22
TOTALS	4810	3657	13716	3.82	2.86	9899	2203
† As of 6/30/2001 †† Note that the gunshot hit probability in these incidents is often skewed by the diverse nature of this data. For instance, in 1998 we had 26 incidents in which officers exchanged gunfire with a perpetrator armed with a firearm. We also had 79 incidents in which officers fired at perpetrators without guns. In addition, embedded with that total number of shots fired by officers (856) in 1998, there were 234 shots fired at dogs that year.							

In addition, since one landmark study^j indicated that 85% of officers who were feloniously slain weren't able to fire their handguns before being slain, statistical averages of shots fired must be examined with caution.

An in-depth 1992 reviewⁱⁱ of Portland, Oregon's police shootings revealed an increase in the number of shots fired per incident from 2.6 rounds per revolver to 4.6 rounds fired from pistols. However, the study also seemed to suggest that hit probability increased with adoption of semi-auto pistols. From January 1, 1983 through January 5, 1990, Portland police reportedly struck adversaries with 24 rounds out of 67 fired (36% hit ratio). Firing semi-auto pistols from July 21, 1984 through February 7, 1992, officers struck their adversaries with 19 rounds out of 44 that were fired (43% hit ratio).

A reportⁱⁱⁱ published in 1998 reported that the District of Columbia Metropolitan Police had nearly 500 firearms "incidents" from 1994-98 in which they fired over 2,500 rounds. In these incidents, 157 suspects were shot, 45 fatally. There were 126 instances in which officers fired more than six rounds, and 67 instances in which officers fired more than ten rounds. Hit probability was not available for publication.

Although data gathered in the late 1980's into the early 1990's seemed to suggest that hit probability had increased with the adoption of pistols, in retrospect that data was inconclusive. There were too few shootings with pistols upon which one could derive definitive conclusions. In addition, many of the officers who were among the first to carry pistols belonged to specialized police units that

were afforded more training with pistols than would prove to be practical when pistols were adopted en masse.

Revolver vs. Pistol: Comparative Metro-Dade Data

During the same time frame we have published data (“Statistical Abstract of Shooting Incidents, 1988-1994”^{iv}) from Metro-Dade to compare with that of NYPD. Unfortunately, this data does NOT differentiate between “incidents” and actual gunfights. You might find the ratio (15%) of firearm “accidents” in the Metro-Dade data to be high (16 out of 107 shots fired), but it is actually lower than what many agencies transitioning to pistols experienced during that time.

Metro-Dade Police Department			
Statistical Abstract of Shooting Incidents, 1988-1994			
NUMBER OF SHOTS FIRED BY TYPE OF FIREARM			
TYPE OF FIREARM		NUMBER OF INCIDENTS	MEAN # OF SHOTS FIRED
REVOLVER	44	44	2.5
SEMI-AUTOMATIC	79	79	3.2

(Miami) Metro-Dade Police Department			
Statistical Abstract of Shooting Incidents, 1988-1994			
SHOTS THAT HIT INTENDED TARGET, BY TYPE OF FIREARM			
HANDGUN TYPE	REVOLVER	SEMI-AUTOMATIC	TOTAL HIT PROBABILITY
HIT SUSPECT	19 (35%)	17 (25%)	36 (30%)
MISSED SUSPECT	35 (65%)	51 (75%)	86 (70%)
TOTAL	54 (100%)	68 (100%)	122 (100%)

Recently published Metro-Dade Police 1990-2001 shooting data^v shed more light on issues seen elsewhere. During that 12-year period, Metro-Dade Police fired about 1,300 bullets at suspects, and missed more than 1,100 times. This suggests that Miami police fared no better than a 15.4% hit ratio, even though many of these incidents involved suspects who were later determined to be unarmed.

However, as we’ll soon see, examination of so-called “bunch-shootings” may well change the way we view such aggregate police hit ratio data.

Threat Proximity & Officer Handgun Efficacy

As poor as gunfight hit probability is inside of three yards, it gets progressively worse from there. The transition from revolver to pistol has had an indiscernible influence in this area since revolver hit probability fluctuated considerably over the decades in which data were collected. Pistol hit probability seems to have fluctuated just as broadly.

Distances In Which NYPD Officers Were Involved In Shooting Incidents 1994-2000			
0-2	Yards	1188	69%
3-7	Yards	332	19%
8-15	Yards	109	6%
16-25	Yards	41	2%
25+	Yards	24	1%
Unknown		31	2%
TOTALS*		1719	99%
*Percentages rounded			

1994-2000 NYPD Hit Ratios By Distance Gunfights, Other Shootings vs. Perpetrator, and Against Dogs						
DISTANCE (Yards)	0-2	3-7	8-15	16-25	25+	Unknown
HIT RATIO	38%	17%	9%	8%	4%	2%

Training Implications
<p>The majority of state training councils (and the individual agencies governed by them) continue to mandate “qualifying” officers with handguns out to 25 yards. The implication has always been that officers were “qualified” at 25 yards, even though a substantial number of officers miss most of their shots at this distance on the firing range. In fact, many marginal shooters drop all of their rounds at 25 yards, yet still “qualify” at that distance. Street marksmanship seems to reflect and magnify the folly of this anachronism.</p>

Low Light Shootings - The Statistical Norm

Where police shootings have been tallied by tour of duty alone, we must attempt to reach conclusions based on incomplete data. From the outset we must note that many daylight shootings occur in poor indoor lighting, and some “night” shootings occur under ample lighting conditions. For instance, the 2000 SOP-9 states that of 134 “incidents,” 84 were “outdoor” and 50 were “indoor” incidents. By shift assignment alone, NYPD has indicated that as many as 77% (1996 SOP-9) of police shootings occur under some degree of diminished lighting.

Published data for the Metro-Dade (Miami) Police Department (1988-1994) reflect 62% of identifiable outdoor incidents occurring in lighting other than “Daytime” conditions.

Low Light Hit Ratios

If there is a serious omission in NYPD SOP-9 it is the fact that hit probability differentiation has never been made between low light scenarios and ample-light scenarios. Given the disproportionate number of night shootings, we might reasonably conclude that diminished lighting has had a substantive influence on the low overall hit probabilities published. However, until this research was undertaken, performance degradation had never been accurately quantified.

The Baltimore County Police Department, one of the most progressively trained agencies that I have been exposed to in my 20+ years as a firearms trainer, recently afforded us the raw data with which to make such as assessment.

Baltimore County Police Department Officer-Involved Shootings 1989-2002	
Hit Ratio By Light Conditions	
Daylight	Lowlight
64% Avg.	45% Avg.

And so, as progressively trained as BCPD officers are for low light conditions, they've still experienced a 30% hit declination from their daylight hit ratios. Shooting data provided by Los Angeles County (and discussed in more detail later) suggests a 24% decline in hit ratios under low light conditions when compared to daylight conditions. Where and when police hit ratios are seriously examined, a serious departure from training range performance is attributable to low light conditions. Which brings us to the next point of interest.....

Night Sights

As much as I have attempted to pursue hard data pertinent to whether low light hit ratios have improved since the widespread adoption of "night sights," such data specificity has been elusive. Either hit ratio data has been aggregate (day and night ratios combined), or specific data has not been collected far enough back to reflect pre-night sight shootings in low light. However, based on what aggregate historical data is available, I would venture to proffer that night sights have offered more promise than they've delivered. However, given the infrequency in which officers recount using their sights in shootings, this may not be a revelation.

The "Bunch-Shooting" Paradox

So-called "bunch-shootings," whereby several officers confront an armed suspect in a given incident, seem to elicit an elevated number of rounds being fired per officer. Until recently, very limited data^{vi} existed regarding this phenomenon. That early data which did exist suggested that officers firing alone discharged an average of 2.7 rounds, while officers firing in "bunches" fire an average of 5.9 rounds per officer, per incident. That's a 118% increase in the number of shots fired when officers fire in "bunches." Keep that figure in mind for a minute.

Data recently obtained from Los Angeles County (LAC) unearthed some startling new revelations about bunch-shootings. The LAC data represents most of the law enforcement shootings in that county from 1998-2002, excluding those of LAPD, for which data is currently unavailable. The LAC data proved to be a very rough gold mine. It consisted of a series of loosely structured narratives that left many questions unanswered. However, some surprising patterns began to emerge when this data was analyzed. Readers should be forewarned that this data does include a number of incidents where shots fired by officers saw the employment of not only handguns, but also long guns (shotguns, semi-auto rifles, and MP5 submachine guns).^{vii} The LAC data has one other major shortcoming: It omits ALL police shootings in which officers fired at suspects, but missed altogether. One could reasonably conclude that inclusion of those shootings in which officers missed with all of their shots fired would further diminish hit ratios, but it is unknown to what extent that this might be the case.

While we've had limited data suggesting that the number of shots fired per officer tends to escalate in bunch-shootings, few other conclusions were possible from the data previously available.

The LAC data offers us a critical new insight into how bunch-shootings influence officer hit ratios. Condensed, the data looks like this:

AGGREGATE SYNOPSIS	
LOS ANGELES COUNTY OFFICER-INVOLVED SHOOTINGS† 1998-2002*	
Shots Fired Per Officer With Only 1 Officer Involved	3.59
Shots Fired Per Officer With 2 Officers Involved	4.98
Shots Fired Per Officer With More Than 2 Officers Involved	6.48
Hit Ratio In OIS With 1 Only Officer Involved	51%
Hit Ratio In OIS With 2 Officers Involved	23%
Hit Ratio In OIS With More Than 2 Officers Involved	9%
* At the time this was published, shooting data for 2002 was only available to September 23 rd .	
† Data provided did NOT include data for incidents where shots fired by officers had no suspect being struck by fire.	

While this data isn't altogether conclusive, it merits much more examination. The long prevailing assumption has been that officers have generally had a 15-25% hit probability. While the aggregate figures continue to suggest this, the heavy influence of bunch-shootings in the LAC data illustrate a dramatic decline from the average 51% hit ratio when singular officers are involved in a shooting to as low as 9% when more than two officers participate in a lethal force event. The declination of hit ratios involving singular officer shootings to shootings involving more than two officers is a whopping 82%. Clearly, at least with what data is available, we see the influence of bunch-shootings far exceeding even that of low light conditions.

Reflect back upon the 1992 Portland statistics previously mentioned, suggesting that bunch-shootings saw the average number of shots fired by police increasing by 118% over the average number of shots fired when officers fired alone. The LAC data suggests that bunch-shootings see as much as a 45% increase in the number of shots fired when more than two officers are involved in a shooting. The old Portland data involved the use of a substantial number of police service revolvers, and the early implementation of semi-automatic pistols. The LAC data consists largely of semi-automatic firearms (pistols, AR-15s, MP5s), and yet the averages (118% vs. 45% increases) differ dramatically. Why the huge disparity?

The 1992 Portland study was based on a relatively small (29) number of incidents and officers (43). The LAC data was culled from 150 shootings, in which 438 officers actively participated as shooters. While the LAC data contained three extreme cases in which 90 to 201 rounds were fired, the sheer size of the LAC database was able to absorb these aberrations without disproportionately skewing the statistical mean.

Why are we seeing such pervasive influence of bunch-shootings upon the numbers of shots fired by officers, and even more upon their hit ratios?

While much more focused research needs to be pursued on this issue, if one were inclined to speculate further at this juncture, bunch-shootings seem to embody the essence of so-called, "emotional contagions." Using the proverbial "crowded theater" as a hypothetical example, two people smelling smoke in an otherwise empty theater would likely exit the theater briskly, but without panic. The emotional synergy of a crowded theater would unleash a very different set of dynamics. This may also be the case in bunch-shootings. Since this "contagion" theorem would be highly difficult to quantify, the data was closely examined again to look for more discernable and quantifiable variables that might influence bunch-shooting performance.

In my ongoing examination of bunch-shootings, I'm recognizing discernable patterns that tend to differentiate them from more "typical" lethal encounters. Many bunch-shootings embody extremely chaotic and complex characteristics. In them we find many of our barricaded gunman scenarios, our drawn-out foot pursuit and vehicular pursuit scenarios, and scenarios involving heavily armed suspects. Yes, the Newhall incident was a bunch-shooting, as was the FBI Miami shootout, as was the North Hollywood shootout. Hardened career criminals, or those with extreme ideological affiliations (or both) also seem to disproportionately confront police in bunch-shooting scenarios. Or, we might more accurately suggest that more officers are being dispatched to confront suspects under these more challenging circumstances. Such confrontations do attract police in larger numbers, contributing to the increased likelihood that bunch-shootings will occur.

The Correlation Between Range Scores and Gunfight Efficacy

There has long been a degree of controversy regarding whether prowess on the firing range would translate into higher hit ratios in actual gunfights. Very little data is available to elucidate this issue beyond what will be attempted here.

The 1981 edition of SOP-9 makes this observation:

"An attempt was made to relate an officer's ability to strike a target in a combat situation to his range qualification scores ended with no clear connection. After making over 200 such comparisons, no firm conclusion was reached."

The 1988-1994 Metro-Dade data (Below) does shed additional light on the issue, showing slightly higher qualifying scores for those who hit their intended targets in street encounters. However, when held to accepted standards of statistical analysis (i.e., where there is a small sampling and a large standard deviation), the Metro-Dade comparison exhibits no statistical significance between range and street efficacy.

Metro-Dade Police Department Statistical Abstract of Shooting Incidents, 1988-1994			
LAST QUALIFYING RANGE SCORE			
	CASES	MEAN SCORE	STD. DEVIATION
SHOTS HIT INTENDED TARGET	3	282	10.8
SHOTS MISSED INTENDED TARGET	12	271	17.7
Handguns = 15 cases Range = 52 Mean = 273.8 Standard Deviation = 16.29			

Since most of the shootings examined in this research involved perpetrators who were highly animated when shot at by police, until such time that police handgun qualifications involve naturally and randomly moving targets, and until such time we can simulate life-threatening dynamics during handgun qualification, direct comparisons are largely pointless. In addition, as much as trainers may wish to pursue this angle to more definitive conclusions, future efforts at quantifying the relationship between range and street efficacy will likely be further complicated by the fact that most agencies have adopted "pass-fail" qualification protocols.

However tenuous the relationship between range proficiency and street proficiency may seem with the sparse data available, it should never be used as an excuse to short-change training. Training isn't just a means by which we foster firearms competency, it is a means by which we attempt to assure the use of lethal force within legal and procedural parameters.

Mistake-of-Fact Shootings

Until now, all known data pertinent to the frequency in which officers shoot unarmed suspects predates the landmark *Tennessee v. Garner* case. However, given the frequency in which police engage in low-light lethal force events, the pre-Garner studies deserve serious consideration. The 25-43% frequency^{viii} in which those studies suggested that police shot unarmed suspects appears dated due to the more restrictive deadly force parameters established by Garner. However attenuated this phenomenon is since the Garner decision, currently available data suggests that it still persists with alarming frequency. For instance, between 1990 and 2001, the Metro-Dade Police Department reportedly^{ix} had 22 shootings in which suspects were clearly unarmed, and a dozen others in which the officers claimed they saw guns -- but no guns were found. All told, Miami officers shot and killed 33 people in that period of years -- 11 of which were under questionable circumstances.

The Los Angeles County data (1998-2002) has given us the most recent quantified glimpse of this phenomenon. Of the LAC incidents (148 total) examined during that period, 27 (18%) were identified as likely mistake-of-fact shootings. Not surprisingly, of that total of MOF shootings, 20 (75%) occurred at a time of day (seasonally adjusted) that we'd generally associate with reduced light conditions.

Where the author has been able to examine "questionable" shootings in detail, they are largely attributable to (1) misidentification of threat level due to impaired visual "contrast sensitivity" in low levels of ambient light, (2) precipitating suspect behavior^x, and (3) context-based expectations relative to the nature of the assignment or call. There are training implications embedded in this issue that are too numerous and complex to elaborate upon in this article. However, it must be noted that in addition to having most MOF shootings occurring in low light, only one of them denoted officers using flashlights to better identify possible threats. Police training in low light tactics still has a very long way to progress. But, there are other errors that also seem to contribute to MOF shootings.

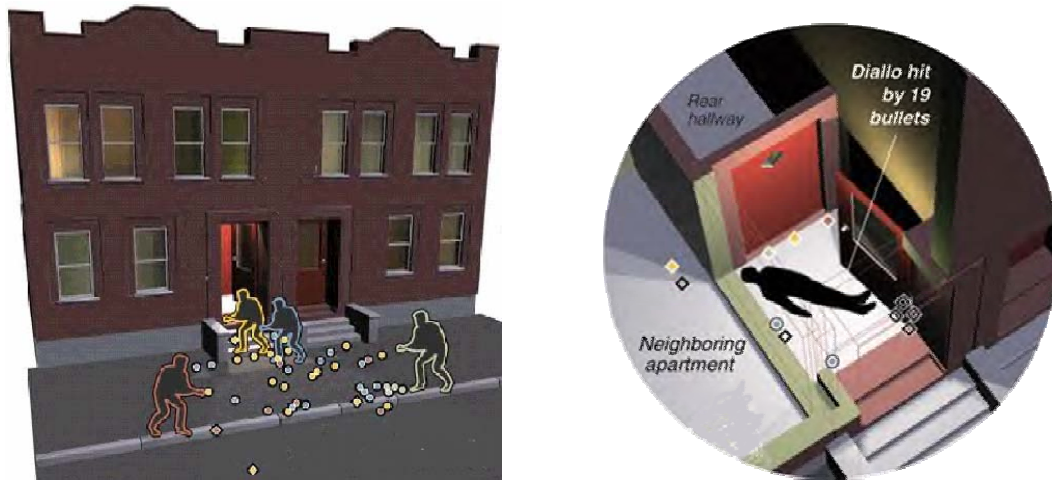
Mistake-of-fact shootings may also involve other misleading threat cues. The author has noted a significant number of shootings whereby one or more officers perceive another officer's stumble and fall as being affirmation that he is under attack. When an officer's fall is in conjunction with an unintentional discharge of his firearm (e.g., NYPD's Diallo shooting), it can set off a powerful chain of events.

Observational study conducted by the author^{xi} suggests that there is an "associative firing impulse" where multiple officers encounter what they believe to be an imminent lethal threat. Plausible explanations for these occurrences fall into two categories; (1) officers experience an "associative threat assumption" phenomenon, as one or more officers conclude that the officer that initiated fire correctly identified an imminent lethal threat, or (2) one or more officers experiences a "mistaken origin of fire" phenomenon, whereby an officer believes shots being fired by another officer are in fact shots fired by the suspect. In cases examined by the author, this mistake-of-fact occurrence is most common when officers place themselves in a geographical crossfire.

As a result of some of these MOF shooting phenomena, many are also bunch-shootings. Some of the most high profile "questionable" shootings have embodied both MOF and bunch-shooting characteristics. To cite just a few recent examples:

- The February 4, 1998 shooting of Amadou Diallo^{xii} saw four NYPD officers firing a total of 41 shots in approximately 4 seconds. Nineteen of those shots hit an unarmed Diallo inside of 7 yards. Among many issues arising from this tragedy was the fact that low light conditions

contributed to the mistaken belief that Diallo was armed. Also embedded in this incident were issues illustrative of “mistaken origin of fire,” and “associative threat assumption.”



Artist's rendering of the Diallo Shooting scene

- A June 2, 1999 Parsippany, NJ shooting^{xiii} involved four officers from three different agencies firing 27 rounds at an unarmed motorist named Stanton Crew. Four of the 27 rounds strike Crew, killing him. One errant round also struck and wounded his unarmed vehicular passenger, Adrienne Hart. As a consequence of the way three police vehicles boxed and forced Crew's vehicle off the road, officers found themselves in a crossfire that contributed to likely confusion about the origin of the initial rounds fired.



Overhead view of scene of Stanton Crew shooting, illustrating officer crossfire positioning.

- March 15, 2003, at about 11:30 PM, 25-year old Marquis Hudspeth led Shreveport (LA) police on a five-mile vehicular speed pursuit. By the nature of his driving, pursuing officers believe is driving under the influence of alcohol. When finally cornered, three Shreveport police officers fired a total of 15 shots^{xiv}, killing Hudspeth because they saw a metallic silver object in his hand. The object they had thought was a handgun was later identified as a cell phone.



(Left Photo) Shreveport Police dash-camera video illustrating Hudspeth holding his cell phone in a manner consistent with a handgun. (Right Photo) Hudspeth turns abruptly, pointing his cell phone at the officer.

Bunch-shootings may also contribute to higher suspect fatality rates. When handgun encounters conclude with a suspect fatality, the number of rounds employed to fell the suspect appear to be high, with the Portland study suggesting an average of 9.3 hits per slain suspect.

The Less-Lethal Factor

The last decade has witnessed an accelerated development of less lethal alternatives to deadly force. This has in turn accelerated general acceptance of the most viable alternatives available. To what extent the plethora of less lethal products will diminish the future use of deadly force is not yet clear. However, we do see some issues surfacing in the Los Angeles County data that are worth mentioning.

Of the 148 officer-involved shootings examined, 18 (12%) of those shooting incidents examined were preceded by unsuccessful attempts to control subjects through the use of less-lethal force. The implements utilized ranged from 12-gage beanbag munitions, to OC spray, to Tasers. In some cases, more than one less-lethal product was deployed before deadly force was applied. There are some documented cases where officers were hurt by assailants when less-lethal alternatives failed, and before deadly force could be decisively employed. There are several documented cases in which subjects were hit by multiple (as many as 8-12) 12-gage beanbag rounds, with little or no effect. Unfortunately, the available data wasn't clear at what distances these munitions were ineffective.

Important Training & Policy Implications

While officers are generally trained to maintain a minimum of 21 feet from an adversary armed with an edged weapon, many less-lethal implements (i.e., OC sprays, Tasers, etc.) are of diminished or no value at or beyond that range. If the officer gets closer than 21' to deploy less-lethal alternatives, he must have covering officers prepared to immediately employ deadly force if less-lethal options fail and enrage the armed subject.

Another less-lethal operational issue should be noted here. This research has uncovered some evidence of significant behavioral change in subjects when officers announced (intentionally or otherwise) that another officer was en route to the scene with a Taser or beanbag weapon. Officers must assume that subjects are increasingly aware of the nature of these devices (presumably from TV exposure) and that they don't wish to be on the receiving end of your agency's new gadgetry. Until Taser or beanbag implements are actually deployed on-scene, attempt to keep these options under wraps.

None of this narrative should be construed to suggest that less-lethal devices shouldn't be adopted or employed. However, we may conclude that such devices are not a panacea, and must generally be used when time and distance from an imminent threat make them viable. Also, since these factoids were culled from officer-involved shooting narratives, we have no indication as to how many times these devices were used successfully enough to preclude the application of deadly force, and for that reason, this research affords an incomplete picture.

Promise

The shooting data provided by BCPD encompasses 83 police shootings, from 1989-2002. Of those, 81 were handgun shootings, with 48 (59%) occurring during hours associated with diminished lighting.

Baltimore County (MD) Police Gunfight Statistics 1989-2002								
Year	Armed Encounters	Total Shots Fired	Overall Hits (Ratio)	Hit Ratio By Light Conditions		Distance-Hit Ratio		
				Daylight	Lowlight	<11'	11-25'	>25'
SUM	75	211	103 (49%)	64% Avg.	45% Avg.	51%	40%	75%

How can BCPD be achieving a 49% overall hit probability, and a 64% hit probability under daylight conditions? While their gunfight database is currently too shallow to facilitate drawing definitive conclusions, some of my long-term observations of BCPD training might be noteworthy. Their training staff is not only superbly trained and motivated, but they energetically stress both handgun fundamentals and job-related handgun skills. And, perhaps even more importantly, they are among the most progressive agencies I've seen in their approach to low light training. Having said that, we do see a 30% declination between BCPD's daylight shootings and its lowlight shootings. This is somewhat consistent with the 24% decline we saw in the Los Angeles low light shootings.

However, so that the BCPD data isn't misconstrued or misused, one must pause long enough to reflect upon the fact that of the 75 deadly force encounters observed during this period, only two incidents involved two officers. Only one incident involved more than two officers. To what extent a higher proportion of bunch-shootings might have further influenced the BCPD data is beyond my ability to reasonably speculate at this time.

Research Summary of Facts

To encapsulate and contrast the conclusions reached through the course of this research, the following observations are offered:

1. It appears that using officer hit ratio data from metropolitan law enforcement agencies has skewed our expectations. Individual hit ratios may be substantially higher than previously thought. Since bunch-shooting data was seldom (if ever) segregated from other officer hit ratios, we might surmise that much of the historical metro police shooting data has been misleading. Shootings involving singular officers appear to have hit ratios approaching (if not exceeding) 50%.
2. Mistake-of-Fact shootings remain a troublesome issue, representing 18-33% of police shootings.
3. Bunch-shootings seem to increase the number of rounds fired per officer by at least 45%, and reduce per officer hit ratios by as much as 82%.

4. Bunch-shootings may very well influence the nature in which officers utilize deadly force through the manner in which judgment and reactions are influenced (e.g., MOF shootings, associative threat identification, sympathetic firing impulse, etc.).
5. Low light shootings account for at least 60% of police applications of deadly force. They seem to diminish police hit ratios by as much as 30%. Low light also accounts for as many as 75% of all mistake-of-fact shootings.
6. Applications of deadly force seem to be more frequently preceded by unsuccessful attempts to employ less-lethal alternatives.

Analysis & Recommendations

While it is clear is that police firearms training must continue to pursue more job-related “context,” it is not clear to what extent training will mitigate some of the problems observed in this research. It is also not clear to what extent stress-induced performance degradation is a factor. Many officers report that lethal encounters culminated so quickly that they didn’t consciously experience fear until after the scenario had ended.

While research into so-called “stress inoculation” might hold promise for the enhancement of future police gunfight efficacy, this concept cannot be pursued haphazardly. The employment of so-called “shoot-houses” or “kill-houses” has been seen as a means to achieve handgun proficiency while inoculating officers to the stress of worldly dangers. In reality, heavy reliance on such tools may give officers a distorted predisposition for using their handguns as a primary tool for problem-solving. Instead of the “house-of-horrors” approach to handgun training, agencies should be pursuing handgun training that represents an all-encompassing “conflict resolution” methodology. Scenario-based training is essential, and it should seldom culminate in gunfire.

The recent trend toward availability of quality, low-cost, video-based firearms training simulators (e.g., CAPS®) is encouraging. However, when we employ them, we must do so more intelligently. Officers must become more adept at articulating imminent threat cues in their report writing, and in subsequent courtroom testimony. Trainers must venture far beyond critiquing shootings in scenario-based training as being either “good” or “bad.” All too frequently, the delineation between an “in-policy” shooting and one that isn’t will fall within a fraction of a second. In addition, since bunch-shootings are clearly more problematic than previously thought, it is imperative that we employ and critique two or more officers within singular training scenarios. Observe, debrief and adjust. Multiple officer scenario-based training will routinely reflect issues that become operational concerns. Mistakes are far better addressed in training than they are on the street.

There were many early visionaries (Applegate, Ayoob, Cirillo, et al.) who assumed unpopular positions regarding unsighted, close-proximity shooting. While unsighted shooting has been advanced for many years, unsighted shooting was a very hard-sell until only recently. Perhaps it was a hard-sell for good reason. I know of few instructors who feel confident enough to wish to take the witness stand in defense of teaching unsighted shooting. If police firearms trainers haven’t already defined the differences between sighting, aiming and pointing firearms, they should waste no more time in doing so.

There has been a growing consensus that our brains are wired for (close range) threat-focus, as opposed to weapon-sight focus. In addition, everything crucial about real-time threat assessment requires a visual threat focus. While I have long been cautious about accessorizing police handguns with laser aiming devices, the durability and ergonomics of some products have since diminished my concerns. While lasers are not a panacea, nor a substitute for training, and are not a substitute for metallic sights, their ability to afford court-defensible aimed fire, concurrent with threat focus, certainly make them well worth considering at this juncture. Laser handgun sights may also afford visual

continuity; from threat assessment in the “ready-gun” position, to the application of aimed fire. Visual focus wouldn’t need to be shifted back and forth from suspect to front sight. At the very least, laser-equipped service pistols may help attenuate the 20-30% declination of hit ratios we see under low light conditions.

There are a multitude of training and operational aids available to agencies today – many of which may well serve to mitigate some of the problems discussed herein. For agencies that lack adequate range facilities and/or funding for adequate training, there are acceptable solutions. According to some recent foundational research, cost-effective products such as BeamHit® have illustrated a profound influence on handgun proficiency, thereby diminishing the reliance upon extensive live-fire training that many agencies find prohibitive. While the introduction of such technology will never diminish the need for live-fire training, it will allow agencies to more effectively use time and money allocated for training.

We mustn’t overlook the importance of white light application in low light scenarios. In all of my years of research, I have failed to document a single case of an officer being shot because he was using his flashlight. Yes, the flashlight may well become a “bullet magnet” if used improperly, but I’ve found no statistical evidence of this ever happening. However, the Los Angeles and Metro-Dade data should serve to reestablish some old commonsense priorities. If we now know that as many as 18-33% of our shootings are of the “mistake-of-fact” genre, and that 75% of those occur in low light, we must emphasize flashlight deployment. As much as is operationally possible, we should attempt to condition officers to deploy their lights long before deployment of their firearms. Where we tend to walk into threatening scenarios we couldn’t see unfolding, we tend to feel compelled to use deadly force before facts are clearly established.

Additional Shooting Research Pending

We are currently running additional shooting data to elucidate (1) how foot and vehicle pursuits influence the number of shots fired by police, and police hit ratios thereafter, (2) how many police shootings were preceded by verbal warnings, (3) how often “furtive movements” were noted prior to “mistake-of-fact” shootings in low light, and (4) how weapons used by perpetrators influence police firing rates and hit ratios. We wholeheartedly invite your participation with any data you wish to contribute to this worthy cause.

PPSC will also be looking at the feasibility of equipping an interested metropolitan agency with 100 laser aiming devices for a controlled, 1-2 year study of low light (handgun) shooting efficacy.

Closing Credits & Observations

My deepest gratitude must be extended to those individuals who assisted in the collection of this data. Several contributors may prefer to remain nameless, but I can extend my heartfelt gratitude to fellow Police Policy Studies Council staff members; Detective Michael Bumcrot (Ret), who helped gather some very critical data, and to our statistical magician, Dr. Robert Maurer, who helped with some of the most critical number deciphering and logic checks. Special thanks should also be extended to Officer Michael F. Clark for his valuable and gracious assistance in gathering data.

None of the data represented in this article should be construed to suggest that any of the depicted agencies are negligent in their firearms training. After digesting this material, one should reflect upon the fact that police gunfight data has been universally mismanaged, and as a consequence, largely misunderstood. While there will undoubtedly be consternation in some circles about this data being published, it is imperative that it is published. Misconceptions abound, and from them flourish mountains of distrust, and yes, endless litigation.

The data represented within this article only represents the inauguration of this research. By the time this article is published, we will have a considerable amount of new data and analysis that will elucidate other previously unexamined deadly force issues. Since more exhaustive national study is needed to bring about change, I invite any and all readers to assist the Police Policy Studies Council in furthering the collection of such data for more extensive study.

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Endnotes:

ⁱ FBI (1992). *Killed In The Line Of Duty: A Study of Selected Felonious Killings of Law Enforcement Officers*. U.S. Justice Department. Washington, DC.

ⁱⁱ The Oregonian, April 25, 1992, "Shootings: Who, What and How Many"

ⁱⁱⁱ The Washington Post, November 15, 1998, "District Police Lead Nation In Shootings."

^{iv} Alpert, G., Dunham, R. (1995). "Police Use of Deadly Force: A Statistical Analysis of the Metro-Dade Police Department." Police Executive Research Forum, Washington, DC.

^v Data published from Metro-Dade Internal Affairs and Firearms Discharge Reports, 1990-2001.

^{vi} The Oregonian, April 25, 1992, "Shootings: Who, What and How Many"

^{vii} The number of long gun rounds fired is about 14% of the total number of rounds examined during this period. To what extent this skews hit probability is hard to determine, as suspect hits were not delineated by the caliber of projectiles causing wounds. Another confounding variable might be that for every "hit" with 12-gauge buckshot, there might be as many as 8 other pellets missing their intended target.

^{viii} Geller, W. & Scott, M. (1992). *Deadly Force: What We Know*. Police Executive Research Forum. Washington, DC.

^{ix} Data published from Metro-Dade Internal Affairs and Firearms Discharge Reports, 1990-2001.

^x The LAC data suggests that furtive movement on the part of suspect commonly preceded a mistake-of-fact shooting.

^{xi} (1996-2001) Unpublished, scripted Simunition®-based role-playing scenarios conducted by the author.

^{xii} Diallo reportedly fit the description of a serial rapist who was being sought at the time of the incident. His behavior was reported to be suspicious when members of NYPD's Street Crimes Unit approached him. He ran from police when challenged, and was shot while withdrawing a wallet from his pant pocket.

^{xiii} Crew, whose driver's license was revoked at that time, attempted to elude an officer who endeavored to pull him over for erratic driving. What followed was a 15-mile high-speed pursuit that ended in collision between Crew's vehicle and a police car. Though Crew's vehicle was subsequently boxed-in by multiple police units, he subsequently attempted to extricate his vehicle in a manner that compelled police to use deadly force. The Stanton Crew scenario was complicated by low light, which contributed to the erroneous threat identification. Also embedded in this shooting were issues of “associative threat assumption” and “mistaken origin of fire.”

^{xiv} Hudspeth was shot (in the back) eight times after turning several times toward officers pursuing him from behind. He pointed the cell phone at officers in a manner consistent with the presentation of a handgun.