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## ORIGINAL ARTICLE

# People and guns involved in denied and completed handgun sales

M A Wright, G J Wintemute, B E Claire

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See end of article for authors' affiliations

Correspondence to:  
Ms M A Wright, University of California, Davis, 2315 Stockton Blvd, Sacramento, CA 95817, USA; [mawright@ucdavis.edu](mailto:mawright@ucdavis.edu)

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**Objective:** Denial of handgun purchases by prohibited people and knowledge of the structure of gun commerce have helped to deter and prevent firearm violence. The authors hypothesize that handguns involved in a denied purchase would more closely resemble those used in crime compared with handguns sold.

**Design:** Cross sectional.

**Setting:** Denied and completed handgun sales in California, 1998–2000.

**Main outcome measures:** Handgun and purchaser characteristics of denied and completed sales were compared. In particular, handgun characteristics most closely associated with crime guns (type, caliber, barrel length, price) were examined.

**Results:** Compared with handguns sold, handguns in denied sales were somewhat more likely to be semiautomatic pistols (74.6% v 69.4%), to have short barrels (25.9% v 22.2%), and be of medium caliber (48.9% v 37.3%). Ten percent of the handguns in denied sales and 3.4% of handguns sold were identified as inexpensive.

**Conclusions:** The characteristics of denied handguns are similar to those seen among crime guns. Both groups of guns may reflect the desirability for criminal purposes of pistols, which have larger ammunition capacities than other handguns, and short barrels, which increase their ability to be concealed.

In 2003 in the United States, guns accounted for an estimated 10 857 deaths from homicide.<sup>1</sup> That same year, there were an additional 366 000 violent crimes (rape, sexual assault, robbery, or aggravated assault) committed with firearms.<sup>2</sup> The cornerstone of policy to prevent gun violence among high risk populations is restriction of firearm purchase and possession. Under federal law, those prohibited from owning guns include people convicted of a felony or domestic violence misdemeanor, addicts and unlawful users of controlled substances, fugitives from justice, those adjudicated mentally ill, individuals subject to a domestic violence restraining order, illegal aliens, and those under felony indictment. Twenty states have variably extended these prohibitions to those convicted of misdemeanors involving violence, alcohol, or drugs.<sup>3</sup> Nationwide in 2003, of the approximately 7 831 000 applications for firearm sales, 126 000 (1.6%) were rejected.<sup>4</sup>

Few studies have been done of the people or guns involved in denied sales.<sup>5–7</sup> Do handguns involved in denied sales resemble guns confiscated in crime or are they similar to those in completed sales? Using both completed and denied handgun sales information, we propose to determine whether differences in handgun characteristics exist between the two groups. As most denials of handgun purchases are made to individuals at high risk for crime (convicted felons and violent misdemeanants),<sup>6,7</sup> we assume that a handgun in a denied transaction, if purchased, would have a higher risk for being used in crime. Based on this assumption, we will examine these handguns as a surrogate for crime guns.

Several lines of evidence, briefly summarized here, provide a general description of handguns used in crime. Continuing a trend that began in the mid-1980s, they are more likely to be semiautomatic pistols than revolvers; pistols generally have a larger ammunition capacity.<sup>8,9</sup> They are increasingly likely to be of medium or large caliber.<sup>8,10,11</sup> Both ammunition capacity and caliber are determinants of firepower, a characteristic that criminal users of firearms rate as the

single most important attribute of guns they select for use in crime.<sup>12</sup> They are likely to have short barrels, which makes them more concealable;<sup>9</sup> an attribute also of great importance to criminal users of guns.<sup>12</sup> They are likely to be inexpensive; criminal gun users do not express a preference for cheap guns,<sup>12</sup> but such guns predominate among those recovered by law enforcement agencies after use in crime.<sup>9,13</sup> This may be the case for at least two reasons. Firstly, violent gun crimes are most frequently committed by young males, whose purchasing power is likely to be lower than that of gun buyers generally, and inexpensive guns are economically more accessible. Secondly, the low cost of these guns allows them to be disposed of more readily to avoid their being linked to multiple crimes; that a gun be “untraceable” is also of importance to criminal users of guns.<sup>12</sup>

## METHODS

This report provides information for denied and completed sales of handguns in California during 1998–2000, using Dealer's Record of Sale data provided by the California Department of Justice. In each of the three years, roughly 1% of handgun sales were denied because the prospective purchasers were prohibited people. Additionally, there were administrative denials when Los Angeles (in 1999), and then the entire state (in 2000), implemented policies limiting handgun purchases by an individual to one within any 30 day period. Only information for prohibited person denials is presented here.

Handguns were divided into types: semiautomatic pistol, revolver, derringer, and other. Following common usage,<sup>5,14–16</sup> we classified barrel length as short (three inches or less) or long (greater than three inches) and caliber as small (for example, .22, .25, .32), medium (for example, .38, .380, 9 mm), or large (for example, .357, .40, .45, 10 mm).

We classified price as inexpensive (costing \$150 or less) or expensive (costing more than \$150) based on manufacturer. Only eight gun manufacturers (Bryco, Davis, Hi-Point,

Jennings, Lorcin, Phoenix, Raven, and Sundance) produce guns that sell new for \$150 or less. All handguns by these manufacturers were categorized as inexpensive and all others as expensive.

Comparisons of denied and completed sales are for three year combined data. All denied sales were included regardless of reason for denial. A separate analysis was done with only those denied sales having a criminal reason for denial (felony or violent misdemeanor conviction, restraining order, condition of probation). Additional analysis of purchasers less than 35 years of age was done to examine this high risk population. We calculated 95% confidence intervals to compare proportions.<sup>17</sup>

The study was approved by the UC Davis institutional review board.

## RESULTS

In 1998–2000, there were 622 542 completed handgun sales and 5698 sales denied because the prospective purchasers were prohibited people. There were an additional 2108 administrative denials; 2010 which occurred in 2000 when California enacted a “one gun a month” policy.<sup>7</sup> There was no weapon or purchaser information available for 11 576 (2%) of the completed sales.

Semiautomatic pistols accounted for 74.6% of the handguns in denied sales and 69.4% of the handguns in completed sales (absolute difference 5.2%) (table 1). Most of the handguns in both denied and completed sales were long barreled, but those in denied sales were slightly more likely to have short barrels. Nearly half (48.9%) of handguns in denied sales were medium caliber compared with 37.3% of handguns in completed sales (absolute difference 11.7%). Among the handguns in denied sales, those with large calibers increased from 31.8% in 1998 to 43.1% in 2000. Ten percent of the handguns in denied sales and 3.4% of completed sales were

classified as inexpensive (absolute difference 6.8%). Nearly two thirds of handguns in both denied and completed sales were manufactured in the United States. (Handguns manufactured outside the US have design restrictions that are not applied to handguns made in this country.<sup>18</sup>)

We observed a similar pattern of results when denied sales were limited to criminally related denials (89.6% of all denied handgun sales). The differences between denied and completed sales remained the same when the age of the purchaser or potential purchaser was less than 35 years.

Males accounted for the large majority (92.9% or more) of both denied and successful purchasers but were more prevalent among people denied purchase (table 1). Those denied handgun purchases were younger (mean age 37.5 (SD 11.7) years) than purchasers (mean age 41.8 (SD 13.1) years).

For both denied and completed sales and in each of the three study years, the top five handgun manufacturers were Smith & Wesson, Sturm Ruger, Beretta, Glock, and Colt’s Manufacturing. Manufacturers whose guns were most frequently involved in denied sales were generally also those manufacturers whose handguns were most frequently sold. Lorcin Engineering, an exception, ranked 11th in 1999 for handguns in denied sales, but 21st for handguns sold. Before it ceased operations in 1999, Lorcin manufactured handguns that sold new for \$150 or less and were categorized as “Saturday Night Specials”.<sup>19</sup>

A prior criminal conviction was by far the most common reason for a denied sale, accounting for 79.2% of the denials (table 2). Of the felony convictions, nearly one third (28.1%) were for drug related offences and 14.8% were violence related offences. Among misdemeanor convictions, the large majority (88.6%) was for assault. More than a quarter of these assault convictions (27.6%) were for domestic violence.

**Table 1** Handgun and purchaser characteristics for denied and completed handgun sales, California, 1998–2000\*. Results are number (%)

	Denied sales† (n = 5698)	Completed sales† (n = 610 966)	Absolute difference	95% confidence interval
Handgun type				
Semiautomatic pistol	4248 (74.6)	423 912 (69.4)	5.2%	4.0–6.3%
Revolver	1392 (24.4)	177 870 (29.0)	4.7%	3.6–5.8%
Derringer/miscellaneous	57 (1.0)	8913 (1.5)	0.5%	0.2–0.7%
Barrel length				
Short (≤3in)	1473 (25.9)	134 430 (22.2)	3.9%	2.7–5.0%
Long (>3in)	4207 (74.1)	472 024 (77.8)	3.4%	2.3–4.6%
Caliber				
Small	799 (14.1)	100 143 (16.5)	2.4%	1.5–3.3%
Medium	2777 (48.9)	225 993 (37.3)	11.7%	10.4–13.1%
Large	2104 (37.0)	280 223 (46.2)	8.9%	7.7–10.2%
Price				
Inexpensive (≤\$150)	576 (10.1)	20 529 (3.4)	6.8%	6.0–7.5%
Expensive (>\$150)	5122 (89.9)	590 437 (96.6)	6.8%	6.0–7.5%
Country of origin				
US	3782 (66.4)	394 525 (64.6)	1.8%	0.6–3.0%
Import	1916 (33.6)	216 441 (35.4)	1.8%	0.6–3.0%
Sex				
Male	5384 (94.5)	567 518 (92.9)	1.6%	1.0–2.2%
Female	314 (5.5)	43 136 (7.1)	1.6%	1.0–2.2%
Age (years)				
21–24	787 (13.8)	57 430 (9.4)	4.4%	3.5–5.3%
25–34	1786 (31.3)	147 639 (24.2)	7.2%	6.0–8.4%
35–44	1657 (29.1)	154 709 (25.3)	3.8%	2.6–4.9%
45–54	940 (16.5)	143 935 (23.6)	7.1%	6.1–8.0%
55–64	389 (6.8)	75 358 (12.3)	5.5%	4.9–6.2%
65+	139 (2.4)	31 859 (5.2)	2.8%	2.4–3.2%

\*Yearly totals. Denied sales: 1743 (1998), 2334 (1999), 1621 (2000); completed sales: 181 526 (1998), 235 938 (1999), 193 502 (2000).

†Missing values. Denied sales: handgun type (11), barrel length (18), caliber (18); completed sales: handgun type (271), barrel length (4512), caliber (4607), sex (312), age (36).

## DISCUSSION

Compared to handguns sold, those involved in denied sales were somewhat more likely to be semiautomatic pistols, to have shorter barrels, be of medium caliber, cost \$150 or less, and were slightly more likely to be made in the US. This remained true when we limited the denied sales only to those having a criminal reason for denial or when purchaser age was restricted to less than 35 years. The differences between handguns in denied and completed sales were modest. However, it does support our hypothesis that handguns in denied sales were more likely than those in completed sales to resemble those used in crime.

The greater percentage of pistols among denied handguns may reflect the desirability for criminal purposes of these firearms, which have larger ammunition capacities than other handguns, and short barrels, which increase concealability. In addition, medium caliber pistols figure prominently among crime guns traced by the Bureau of Alcohol, Tobacco, and Firearms.<sup>9</sup> There is evidence that the use in assaults of pistols, compared with revolvers, is associated with increases in the number of people shot and the number of wounds per person shot.<sup>10–20</sup> At the same time, increases in handgun caliber have repeatedly been linked to increases in lethality.<sup>10–21</sup>

Our findings are consistent with a study of denied and completed handgun sales in California in 1991.<sup>5</sup> This earlier study looked at only one year's worth of denials and a sample of the handgun sales. The study presented here, in addition to updating the information by 7–9 years, is an amalgamation of three years' worth of denied and completed sales. The current data show an increase since 1991 in the percentage of semiautomatic pistols among the denials and an overall tendency towards large caliber and long barrel length in both the denied and completed sales. This may reflect a change in handgun preference in the ensuing seven years. Although the two studies are similar, the earlier study covers a time when

crime rates were rapidly increasing, and the current study when rates were rapidly decreasing. Within the context of the changing crime rates, updating the data is an important addition to our knowledge on handgun commerce and denied sales.

The age difference between purchasers and those to whom handguns were denied was notable. Nearly half of those denied purchase were under age 35, compared with one third of the purchasers. The differences between handguns denied and completed sales were slightly greater when limited to those under 35.

In California, in 1998–2000, 40% of the denials were for a misdemeanor conviction, slightly more than were for a felony conviction. Nationwide, for the same years, misdemeanor convictions accounted for 9% of denials and felony convictions accounted for 65%.<sup>22</sup> Handgun denial policies with regards to misdemeanor convictions vary by state. Therefore, the nationwide numbers do not reflect the same denial policies as are in effect in California. California's denial criteria include misdemeanor convictions for most common violent offences. The federal criteria are limited to domestic violence misdemeanor convictions. Among our population, domestic violence misdemeanor convictions accounted for approximately 10% of all denials. Although California's overall denial rate is not higher than those of other states, the expanded criteria resulted in approximately 30% more denials than would have occurred if the federal criteria had been used. Misdemeanants who legally purchase a handgun are at a high risk for future criminal activity,<sup>23</sup> and denying handgun purchases by violent misdemeanants is associated with a decrease in their risk of arrest for new gun and/or violent crimes.<sup>24</sup> In addition, Vigdor and Mercy established the potential impact of domestic violence related misdemeanor denials in lowering crime rates.<sup>25–26</sup>

There were limitations to our study. We assume that the handguns in denied sales have a greater chance of being used in crime compared with handguns in completed sales. This assumption is based on the greater risk for crime among those denied handgun purchase. However, it is unlikely that all the handguns in denied sales will have the same risk of being used in crime, and probable that some handguns among the completed sales will be used in crime. To address this limitation, we did a comparative analysis excluding non-criminal denied sales and handguns in denied and completed sales to those under age 35 years (the age group of highest criminal risk) and found no difference in our results.

Another limitation was our determination of price. The classification of handguns as inexpensive was based on manufacturer, as actual selling prices were not available. It would have been preferable to restrict this classification to new handguns, as used guns from other manufacturers could also be inexpensive, but the sales records did not reliably indicate whether guns were new or used. However, any misclassification will result in an underrepresentation of inexpensive handguns.

In general, the handguns in denied sales were similar to guns used in crime. However, the differences observed between handguns in denied and completed sales were not substantial, and our results did not produce a clearly defined crime gun that could be targeted for policy purposes. This suggests to us that, at least for handguns that can be purchased legally under current law and for the characteristics we studied, the focus for intervention should be on high risk purchasers rather than high risk firearms.

Most,<sup>24–25–27</sup> but not all<sup>26–28</sup> evaluations have found that denying prohibited people's access to firearms can prevent criminal violence. More generally, understanding the structure and function of legal and illegal commerce in firearms has helped to deter and prevent violence.<sup>29–31</sup> Although these

**Table 2** Reasons for handgun sale denial, 1998–2000\*

	n (%)
Denial type	
Misdemeanor	2288 (40.1)
Felony	2233 (39.1)
Restraining order	477 (8.4)
Mental health	288 (5.1)
Certain offences as juvenile	250 (4.4)
Condition of probation	117 (2.1)
"Yes" to screening question	56 (1.0)
Regulatory	2 (0.04)
Law enforcement agency	1 (0.02)
Felony convictions	
Dangerous drugs/narcotics	628 (28.1)
Other (conspiracy, accessory)	493 (22.1)
Burglary	272 (12.2)
Assault†	165 (7.4)
Vehicle code violations	157 (7.0)
Theft	151 (6.8)
Forgery/fraud	123 (5.5)
Robbery†	77 (3.5)
Weapons	81 (3.6)
Sex crimes†	49 (2.2)
Homicide†	19 (0.9)
Arson†	13 (0.6)
Kidnap†	5 (0.2)
Misdemeanor convictions	
Assault†	2026 (88.6)
Dangerous drugs/narcotics	139 (6.1)
Weapons	88 (3.9)
Other (conspiracy, accessory)	31 (1.4)

\*In 1998, seven denied sales listed two reasons for denial, one with none; in 1999, nine denied sales listed two reasons; in 2000, one denied sale had no reason for denial given.

†Violent offence.



## Key points

- In 1998–2000, 5698 handgun sales were denied in California because the prospective purchasers were prohibited people. This represents approximately 1% of the completed sales.
- A prior criminal conviction accounted for 79.2% of the denials. Of the felony convictions, nearly one third were for drug related offenses and 14.8% were for violent offenses. The large majority (88.6%) of misdemeanor convictions were for assault; of these, 27.6% were for domestic violence.
- Handguns in denied sales, compared with handguns in completed sales, were somewhat more likely to be semiautomatic pistols (74.6% v 69.4%), to have short barrels (25.9% v 22.2%), and be of medium caliber (48.9% v 37.3%).
- The characteristics of handguns in denied sales may reflect the desirability for criminal purposes of pistols, which have larger ammunition capacities than other handguns, and short barrels, which increase concealability.

data broaden the knowledge of handgun commerce, much remains to be learned. Studies of firearm commerce as a complement to such surveillance activities as the new National Violent Death Reporting System<sup>32</sup> may help prevent another rise in the rate of violence.

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## Authors' affiliations

M A Wright, G J Wintemute, B E Claire, University of California, Sacramento, CA, USA

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