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.


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.

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, 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, 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.

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 11 576 (2%) 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 barrelled, 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.)

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.”

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>
<thead>
<tr>
<th>Table 1 Handgun and purchaser characteristics for denied and completed handgun sales, California, 1998–2000*. Results are number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Handgun type</strong></td>
</tr>
<tr>
<td>Semiautomatic pistol</td>
</tr>
<tr>
<td>Revolver</td>
</tr>
<tr>
<td>Derringer/miscellaneous</td>
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</table>

| **Barrel length**                                           | **Denied sales†** (n = 5698) | **Completed sales†** (n = 610 966) | **Absolute difference** | **95% confidence interval** |
| 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**                                                 | **Denied sales†** (n = 5698) | **Completed sales†** (n = 610 966) | **Absolute difference** | **95% confidence interval** |
| 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**                                                   | **Denied sales†** (n = 5698) | **Completed sales†** (n = 610 966) | **Absolute difference** | **95% confidence interval** |
| 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**                                       | **Denied sales†** (n = 5698) | **Completed sales†** (n = 610 966) | **Absolute difference** | **95% confidence interval** |
| US                                                         | 3782 (66.4)                   | 394 525 (64.4)                    | 1.8%                    | 0.6–0.3%                    |
| Import                                                     | 1916 (33.6)                   | 216 441 (35.4)                    | 1.8%                    | 0.6–0.3%                    |

| **Sex**                                                     | **Denied sales†** (n = 5698) | **Completed sales†** (n = 610 966) | **Absolute difference** | **95% confidence interval** |
| 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)**                                            | **Denied sales†** (n = 5698) | **Completed sales†** (n = 610 966) | **Absolute difference** | **95% confidence interval** |
| 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%                    |

†Missing values. Denied sales: handgun type (1), barrel length (18), caliber (18); completed sales: handgun type (271), barrel length (4512), caliber (4607), sex (312), age (56).
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.9 There is evidence that the use in assaults of pistols, compared with revolvers, is associated with increases in the number of people shot and a sample of wounds per person shot.10 20 At the same time, increases in assault of pistols, compared with revolvers, is associated with a decrease in their risk of arrest for new gun and/or violent crimes.21 In addition, Vigdor and Mercy established the potential impact of domestic violence related misdemeanor denials in lowering crime rates.22 26

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,24 25 27 but not all26 28 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.29 31 Although these
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 may help prevent another rise in the rate of violence.

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