

## ABSTRACT

# Counting Guns in Early America

James Lindgren and Justin Lee Heather  
Northwestern University

Probate inventories, though perhaps the best prevailing source for determining ownership patterns in early America, are incomplete and fallible. In this article, the authors suggest that inferences about who owned guns can be improved by using multivariate techniques and control variables of other common objects. To determine gun ownership from probate inventories, the authors examine three databases in detail—Alice Hanson Jones' national sample of 919 inventories (1774), 149 inventories from Providence, RI (1679-1726), and Gunston Hall Plantation's sample of 325 inventories from Maryland and Virginia (1740-1810). Also discussed are a sample of 59 probate inventories from Essex County, MA (1636-1650), Gloria L. Main's study of 604 Maryland estates (1657-1719), Anna Hawley's study of 221 Surry County, VA estates (1690-1715), and Judith A. McGaw's study of 250 estates in New Jersey and Pennsylvania (1714-1789). Guns are found in about 50-73% of the male estates in each of the seven databases and in 6-38% of the female estates in each of the first four databases.

Gun ownership is particularly high compared to other common items. For example, in 813 itemized male inventories from the 1774 Jones national database, guns are listed in 54% of estates, compared to only 30% of estates listing any cash, 14% listing swords or edge weapons, 25% listing Bibles, 62% listing any book, and 79% listing any clothes. Using hierarchical loglinear modeling, the authors show that guns are more common in early American inventories where the decedent was male, Southern, rural, slave-owning, or above the lowest social class—or where the inventories were more detailed.

Our results are consistent with all other published studies except one: Michael Bellesiles' *Arming America: The Origins of a National Gun Culture* (2000). Contrary to *Arming America's* claims about probate inventories in 17<sup>th</sup> and 18<sup>th</sup> century America, there were high numbers of guns, guns were much more common than swords or other edge weapons, women in 1774 owned guns at rates (18%) higher than Bellesiles claimed men did in 1765-

90 (14.7%), and 87-91% of gun-owning estates listed at least one gun that was not old or broken.

The authors replicated portions of Bellesiles' published study where he both counted guns in probate inventories and cited sources containing inventories. They conclude that Bellesiles appears to have substantially misrecorded the 17<sup>th</sup> and 18<sup>th</sup> century probate data he presents. For the Providence probate data (1679-1726), Bellesiles misclassified over 60% of the inventories he examined. He repeatedly counted women as men, counted about a hundred wills that never existed, and claimed that the inventories evaluated more than half of the guns as old or broken when fewer than 10% were so listed. Nationally, for the 1765-90 period the average percentage of estates listing guns that Bellesiles reports (14.7%) is not mathematically possible, given the regional averages he reports and known minimum sample sizes. Last, an archive of probate inventories from San Francisco in which Bellesiles claims to have counted guns apparently does not exist. By all accounts, the entire archive before 1860 was destroyed in the San Francisco earthquake and fire. Neither part of his study of 17<sup>th</sup> and 18<sup>th</sup> century probate data is replicable, nor is his study of probate data from the 1840s and 1850s.

# Counting Guns in Early America

James Lindgren\* and Justin Lee Heather\*\*

## I. Introduction

Law professors, social scientists, and historians are now trying to answer a question that no one thought to ask before: How widespread was gun ownership in early America? Perhaps the best single source of information about what people owned in 17<sup>th</sup> and 18<sup>th</sup> century America are appraised lists of assets at death called probate inventories—detailed, yet notoriously incomplete. These inventories were used to disclose property available for creditors, to achieve any necessary title clearing, and to ensure a proper distribution of assets among the members of the large families<sup>1</sup> that prevailed in early America.<sup>2</sup> Historical economists, such as the late Alice

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\*. Stanford Clinton Sr. Professor of Law, Director of the Demography of Diversity Project, Northwestern University School of Law. Chair-Elect, AALS Section on Social Science. J.D., University of Chicago; B.A., Yale University; currently Ph.D. Student, Sociology, University of Chicago. We would like to thank the participants in faculty workshops at William and Mary, Indiana University, and at the Universities of Virginia, Pennsylvania, and Chicago; Al Alschuler, Philip Hamburger, Julie Roin, Gerald Rosenberg, James Davis, and Edward Cook of the University of Chicago; Jack Rakove of Stanford; Gloria Main of Colorado; Richard Posner of the 7<sup>th</sup> Circuit Court of Appeals; Eugene Volokh and Eric Monkkonen of UCLA; Randy Barnett of Boston University; Randolph Roth and Saul Cornell of Ohio State; Richard Uviller of Columbia; Joyce Malcolm of Bentley College and MIT; and Miranda McGowan and David McGowan of Minnesota. Revisions to this project were funded by the G.D. Searle Fund at Northwestern University.

\*\* . J.D., Northwestern University, 2001; A.B., Dartmouth College. Associate, Skadden, Arps.

<sup>1</sup>. The average household size in the 1790 census ranged from 5.7 to 6.2 throughout the Northern states. U.S. Census, 1790.

<sup>2</sup>. See 3 Alice Hanson Jones, *AMERICAN COLONIAL WEALTH: DOCUMENTS AND METHODS* (1978); Judith A. McGaw, “*So Much Depends upon a Red Wheelbarrow*”: *Agricultural Tool Ownership in the Eighteenth Century Mid-Atlantic*, in JUDITH A. MCGAW, ED., *EARLY AMERICAN TECHNOLOGY: MAKING AND DOING THINGS FROM THE COLONIAL ERA TO 1850*, at 339-40 (1994).

Hanson Jones, pioneered in the use of these cold legal records to infer ownership patterns and behavior in early America. We use these records to estimate levels of gun ownership in early America.

This article has several goals, both factual and methodological. First, we report high levels of gun ownership in every probate database we examined in early America—chiefly Alice Hanson Jones’ collection of 919 inventories throughout the American colonies in 1774,<sup>3</sup> the probate records in Providence, Rhode Island in 1679-1726,<sup>4</sup> and the Gunston Hall database of 325 Virginia and Maryland estates, 1740-1810.<sup>5</sup> These counts of guns are especially high when we compare them to other commonly owned items, such as other weapons and books. For example, in the itemized personal property inventories of white males in the three databases listed, gun ownership ranges from 54% to 73%. Because the Jones database is weighted to match the entire country in 1774, we can estimate that at least 50% of all wealth owners (both males and females) owned guns.

Second, we show how historians and economists using probate records can improve their inferences about who owns guns by using control variables of other commonly owned objects. Because inventories are often incomplete, it makes more sense to compare relative levels of ownership than to note absolute levels of ownership. Here we are explicitly extending the work of Gloria Main and Anna Hawley. In early American probate inventories, guns are much more commonly owned than cash of any kind or than Bibles and religious books—and nearly as common as all books together. Guns are also much more common than swords, cutlasses, spears, tomahawks, or other edge or bladed weapons.

Third, we bring more sophisticated multivariate modeling techniques to our analysis of probate records than have previously been used in this field. Using hierarchical loglinear modeling, we show that guns are more common in early American inventories where the decedent was male, Southern, rural, slave-owning, or above the lowest social class—or sometimes where the inventories were more detailed.

Fourth, we compare our results to those of other scholars—showing that our counts are generally consistent with other published counts of guns, including those of Alice Hanson Jones, Gloria L. Main, Anna Hawley, Judith

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<sup>3</sup>. See Jones, *supra* note 2.

<sup>4</sup>. 6, 7, & 16 EARLY RECORDS OF THE TOWN OF PROVIDENCE (Horatio Rogers, et al. eds. 1892-1915).

<sup>5</sup>. Gunston Hall Plantation, PROBATE INVENTORY DATABASE, CD-ROM (2000).

McGaw, and Harold Gill—but contrasting our findings with those of Michael Bellesiles in *Arming America: The Origins of a National Gun Culture*.<sup>6</sup>

## II. Dealing with Incompleteness in Probate Inventories: Anna Hawley, Gloria Main, and Judith McGaw

As Jacob Price has argued: “Probate records are the most valuable single source we have for the economic and social history of extended communities.”<sup>7</sup> Yet inventories are far from complete lists of property owned at death, a fact noted by *every* historian we have read who works in the area.<sup>8</sup> For example, 23% of the inventories in the leading colonial database of 919 inventories include no clothes of any kind.<sup>9</sup> Unless at their deaths 23% of the

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<sup>6</sup>. Michael A. Bellesiles, *ARMING AMERICA: THE ORIGINS OF A NATIONAL GUN CULTURE* (2000) (hereafter AA) (unless noted, citations are to the hardback edition, which was the only edition in print when this article was submitted to the William & Mary Law Review in August 2001).

<sup>7</sup>. Jacob M. Price, *Quantifying Colonial America: A Comment on Nash and Warden*, 6 J. OF INTERDISCIPLINARY HISTORY, 701, 701 (1976).

<sup>8</sup>. See, e.g., See Anna Hawley, *The Meaning of Absence: Household Inventories in Surry County, Virginia, 1690-1715*, 28. in Peter Benes, ed., *EARLY AMERICAN PROBATE INVENTORIES, DUBLIN SEMINAR FOR NEW ENGLAND FOLKLORE: ANNUAL PROCEEDINGS 1987*; Alice Hanson Jones, *Estimating Wealth of the Living from a Probate Sample*, 13 J. OF INTERDISCIPLINARY HISTORY 273, 280 (1982); Lois Green Carr & Lorena S. Walsh, *Inventories and the Analysis of Wealth and Consumption Patterns in St. Mary’s County, Maryland, 1658-1777*, 13 HISTORICAL METHODS 81 (1980); Daniel Scott Smith, *Underregistration and Bias in Probate Records: An Analysis of Data From Eighteenth Century Hingham, Massachusetts*, 32 WM. & MARY QUARTERLY 100 (1975); Ross W. Beales, Jr., *Literacy and Reading in Eighteenth-Century Westborough, Massachusetts*, in Benes, *supra*; Bruce C. Daniels, *Probate Court Inventories and Colonial American History: Historiography, Problems, and Results*, 9 SOCIAL HISTORY 387 (1976); Peter H. Lindert, *An Algorithm for Probate Sampling*, 11 J. OF INTERDISCIPLINARY HISTORY 649 (1981); Gary B. Nash, *Urban Wealth and Poverty in Pre-Revolutionary America*, 6 J. OF INTERDISCIPLINARY HISTORY 545 (1976); Price, *supra* note 7, at 701; Kevin M. Sweeney, *Using Tax Lists to Detect Biases in Probate Inventories*, in Benes, *supra*; Barbara McLean Ward, *Women’s Property and Family Continuity in Eighteenth Century Connecticut*, in Benes, *supra*, at 74-76.

The only scholar to claim that probate inventories listed absolutely everything is Michael Bellesiles. See, e.g., AA at 13, 109, 266, 484-85 n.132; *infra* text and notes at notes 142-54.

<sup>9</sup>. Lindert, *supra* note 8, at 657 (claims incorrectly that 28% do not have clothes, when the unweighted number of estates without clothes is 22%. The weighted percentage

wealthholding males and females in colonial America were *nudists every day all day long*, inventories do not scrupulously record “every item in an estate.”<sup>10</sup> Further, it is not that estates without clothes were too poor to own them, because estates without clothes are wealthier on average than those with clothes listed. The problem is how to handle the obvious incompleteness.

### a. Anna Hawley in Virginia

One scholar, Anna Hawley, has suggested that guns might have been excluded from inventories by law as well as by custom.<sup>11</sup> She notes that because guns were required by law to be supplied by adult males as part of their militia service, in at least one state’s statutes (Virginia’s<sup>12</sup>), guns were not subject to distress or execution by law. Thus, guns might not have been required to be listed on probate inventories, since they were not available to creditors in any event.<sup>13</sup>

Two other biases in probate records are usually noted: age bias and class bias.<sup>14</sup> Older people die more frequently than younger adults and may

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of all wealthholders is 23% without clothes and 21% of itemized male estates without clothes).

<sup>10</sup> Id. (makes a similar comment on nudism, though his % is incorrect).

<sup>11</sup> Hawley, *supra* note 8, at 27-28 (“Guns, on the other hand, were probably exempt by law rather than custom. . . . All free males from sixteen to sixty years of age were liable for militia duty and required by law to provide themselves with arms, powder, and shot. The act requiring this provision specified that the arms and ammunition were exempt from impressments, ‘distresse, seizure, attachment or execution.’ Appraisers in Surry County may have selectively omitted the guns of poor men from their inventories so that their heirs could meet their civic responsibility.”). We do not know whether she is correct about appraisal practices.

<sup>12</sup> See 3 Walter William Hening, *THE STATUTES AT LARGE, BEING A COLLECTION OF ALL THE LAWS OF VIRGINIA* 13-14, 335-42 (1823), cited in Hawley, *supra* note 8, at 28 n14.

<sup>13</sup> Oddly, Bellesiles notes that guns were not subject to being seized by creditors, but says that they were nonetheless required to be probated, AA at 79-80, even though the protection of creditors was the main purpose of probate (along with title-clearing and informing legatees and heirs). While it is possible that Bellesiles is correct, his contention is not supported by evidence in the book.

<sup>14</sup> Daniels, *supra* note 8, at 393-395 (biggest problem is to correct for biases—“exclusion bias” and the fact that decedents were older); Lindert, *supra* note 8, at 660 (biased samples overestimate wealth because of underrepresenting the poor); Daniel Scott Smith, *supra* note 8, at 104 (42% of men inventoried and 4% of women); Nash, *supra* note

own more and different assets. Richer decedents are more likely to have their estates probated, though even the richest decedents may not have their estates probated or their inventories recorded.

Many researchers, such as Alice Hanson Jones in her study of 919 inventories from 1774, try to minimize these biases by weighting their samples.<sup>15</sup> Jones weights older estates less than younger estates, and adjusts her weights to try to reflect all wealthholders, not just those likely to be probated.<sup>16</sup> Further, presenting results by social class allows us to understand, at least partially, the influence of wealth on gun ownership. On balance, Jones thinks that inventories understate assets: “I believe that the American colonial inventories, at least in 1774, are more likely under- rather than over-statements of total wealth.”<sup>17</sup>

An underused approach to assessing the frequency of individual items is to compare them with items known to have been widely owned. This is a partial solution to the problems of undercounting, grouping assets in classes, and assets disappearing from estates before counting. *A priori*, a substantial majority of propertied white males should have owned most of the following: Bibles, books, cups, chairs,<sup>18</sup> hats, knives, axes, and lighting (candles, candlesticks, or lanterns). Using control variables should allow us to determine if estate inventories are good places to determine ownership during life and to assess what is really a small percentage.

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8, at 548 (1976); Sweeney, *supra* note 8, at 32-39; Price, *supra* note 7, at 701 (“Probate inventories do, however, present two basic problems: (1) how complex was the individual inventory and (2) how representative of all estates were the inventories which were recorded and survived.”); *id.* at 701-702 (“Completeness is apparently less of a problem in the colonies.”); Beales, *supra* note 8, at 41-42; Carr & Walsh, *supra* note 8.

Less frequently noted is gender bias in probate, perhaps because it is too obvious. See, e.g., Ward, *supra* note 8, at 75; Smith, *supra*, at 104; Sweeney, *supra*, at 36-37; Beales, *supra* at 42. The great majority of probated estates are from men, and the great majority of wealth was owned by men.

15. See JONES, *supra* note 2.

16. Jones, *Estimating Wealth*, *supra* note 8, at 282 (“My 1774 study weighted down the influence of the older decedents to estimate patterns for all living probate-type wealthholders, for which the calculation of confidence intervals is appropriate. Further extension to estimates for the living nonprobate-type wealthholders required use of death rates and assumptions about how their wealth differed from that of probate-type living wealthholders.”).

17. Jones, *Estimating Wealth*, *supra* note 8, at 280 (1982).

18. There is some uncertainty about how common chairs or stools actually were, especially in earlier periods.

Although Anna Hawley's article is not about guns, she compared the frequency of common items in 221 probate inventories in Surry County, a relatively poor agricultural Virginia county, 1690-1715. She notes that in this county, the staple crops—tobacco and corn—needed to be hoed several times a year,<sup>19</sup> yet only 34% of Surry estates list any hoes.<sup>20</sup>

Hawley found that guns were the most commonly listed of the six items she counted.<sup>21</sup> In the middling to affluent groups (the 60% of estates ranked from the 30<sup>th</sup> to the 90<sup>th</sup> percentiles), there were the following percentages of these common items:

Guns	(63-69%),
Tables	(50-64%),
Seating furniture	(40-68%),
Hoes	(35-41%),
Axes	(31-33%),
Sharp knives	(18-20%).

Among the wealthiest 10%, only 4% of estates had sharp knives, but 74% had guns. None of the six items she counted were as common as guns, which appear to have been present in 50% or more of estates overall.<sup>22</sup>

Anna Hawley points out that guns were probably often left out of Virginia estates because by law they were not supposed to be subject to impressment by the militia, the claims of creditors, or the execution of debts.<sup>23</sup> Nonetheless, in Hawley's rural Virginia county 1690-1715, guns are more commonly listed than chairs, tables, or sharp knives.

As Anna Hawley argues in her analysis of Surry County, it would be a mistake to conclude that 18<sup>th</sup> century decedents did not own any particular item of property, simply from its absence in a probate inventory. To her analysis, we would add that, unless one compares the frequency of guns to other common items, one would confuse the incompleteness of inventories

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19. Timothy H. Breen, *TOBACCO CULTURE: THE MENTALITY OF THE GREAT TIDEWATER PLANTERS ON THE EVE OF THE REVOLUTION* 48 (1985).

20. Hawley, *supra* note 8, at 28-29.

21. Hawley does not indicate what she considered to be a sharp knife. *Id.*

22. Hawley does not give an overall percentage for any item except hoes, but the number of guns (~50%) can be approximated from the numbers she does report. *Id.* at 28. In the poorest 30% of estates, 19% of the estates of poor non-householders list guns, and 32% of the estates of poor householders list guns.

23. *Id.*



with a lack of ownership. In a general way, guns are very commonly listed in inventories compared to the listing of clothing, money, lighting, chairs, axes, hoes, books, Bibles, swords, and knives.

### **b. Gloria Main in Maryland**

Along similar lines, Gloria L. Main studied the relative frequency with which inventories in six tidewater Maryland counties contained particular items, 1657-1719.<sup>24</sup> Most of her data were presented in terms of what 604 younger fathers owned, which she approximately generalizes to 1863 male heads of household. She presents a hierarchy of items of personal property based on how commonly they were listed in the estates of young fathers:

1. Beds (listed in 97% of estates)
2. Iron cooking utensils (96%)
3. Pewter (88%)
4. Arms (78%)
5. Brass (70%)
6. Chairs (63%)
7. Hand Mills (53%)
8. Books (40%)
9. Silver (35%)
10. Warming Pans (34%)
11. Pictures, Curtains (24%)
12. Chamber Pots (22%)
13. Personal Ornaments (20%).<sup>25</sup>

For arms, the approximately poorest 34% of estates show 50-67% arms. The richest 66% of estates list 78-95% arms, averaging over 90% of estates listing guns. While Main did not separate out firearms from bladed weapons, we can estimate from the Providence data during a similar period that 90.3% of estates with either guns or bladed weapons have guns. Thus, 78% of the Maryland estates of young fathers list arms, and (adjusting downward) very roughly 71% of the estates of young fathers should list guns.

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24. Gloria L. Main, *TOBACCO COLONY: LIFE IN EARLY MARYLAND, 1650-1720* (1989).

25. *Id.* at 242.

As Main's work suggests, guns were next in importance after beds, cooking utensils, and pewter—and ahead of chairs and books. This pattern suggests that guns were highly prized, but it does not indicate why. We do not know from these data whether guns were a necessary tool for protection, hunting, or vermin control—or just part of the cultural identity of men.

### **c. Judith McGaw in Pennsylvania and New Jersey**

Unlike Hawley and Main, Judith McGaw<sup>26</sup> only casually compares the frequency of guns in probate estates to other common items. McGaw, concerned with tools used by farmers, studied 250 estates of farmers with sufficient itemization to list beds in five counties in New Jersey and Pennsylvania in seven one year samples, 1714-1789. The percentages of guns in probate estates is 60% in the frontier and 50% in more settled regions:

I find, for example, that only a little more than half of the farmers or yeomen probably owned plows and that, among farm women, about 20 percent made do without a pot or kettle . . . . The artifact that we most often envision in early American hands—the gun—actually existed in only about half of households. And frontiersmen were only slightly more likely to own firearms: about 60 percent versus about 50 percent for inhabitants of longer-settled regions. Nonetheless, early Americans were far more likely to own guns than to possess that other icon of early American life—the Bible—although, surprisingly, frontier households came closest to owning Bibles as often as guns.

McGaw's percentages are slightly higher than the percentages we found for 1774 in the Middle Colonies (41%).<sup>27</sup> Note that among farmers McGaw finds as many guns as plows and that she considers a 60% level of frontier gun ownership to be a smaller than expected percentage.

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<sup>26</sup>. Judith A. McGaw, "So Much Depends upon a Red Wheelbarrow": *Agricultural Tool Ownership in the Eighteenth Century Mid-Atlantic*, in JUDITH A. MCGAW, ED., *EARLY AMERICAN TECHNOLOGY: MAKING AND DOING THINGS FROM THE COLONIAL ERA TO 1850*, at 340(1994).

<sup>27</sup>. These percentages are much higher than the 14.2-14.9% frequencies found in *Arming America*, even though Bellesiles' sample partially overlapped with McGaw's.

## II. Counting Guns in Providence Probate Records

### 1. Widespread Ownership of Guns in Providence

Three volumes of Providence probate records are part of a 21-volume set of *Early Records of the Town of Providence* published from 1892 to 1915. They are transcribed into typeset with most inconsistent and archaic spellings apparently intact and interlineations marked. As was the pattern in historical transcriptions a century ago, they are meticulously indexed at the end of each volume, including a good list of estates<sup>28</sup> and their contents and a good index of items mentioned, including books, knives, and guns. It would have taken a researcher only a few minutes to discover that guns were more common in the inventories than Bibles or knives or any other item primarily used as a weapon.<sup>29</sup> The Providence probate records are in three volumes (6, 7, and 16) starting in 1679<sup>30</sup> and ending in 1729, though the last inventory is for a man who died in 1726.<sup>31</sup>

Besides some guardianships and miscellaneous matters, there are about 186 decedents' estates. How many there are depends on what is required to be in them to count as an estate. Of these estates, 17 of the decedents leaving inventories are female<sup>32</sup> (only one of whom owns guns<sup>33</sup>). Over a dozen

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28. The names are sometimes spelled a bit differently in the appendices.

29. See PROVIDENCE RECORDS, *supra* note 4. The Providence records are now available on CD-ROM from HeritageBooks.com for slightly more than the cost of Bellesiles' book, making our claims (and his) easy to check.

30. In *Arming America* Bellesiles reports them as 1680-1730, but the last inventory in book 16 was from 1726, though the records go through 1729. We think he was just giving the approximate dates for the records he looked at. In addition, the Providence town council in 1683 asked that one earlier estate, that of Resolved Waterman who died in 1670, be added to the record book in the 1680s, which it was (6 PROVIDENCE RECORDS, *supra* note 4, at 105-107).

There are also a few probate records scattered through the other 18 volumes in the series, but we found only one full inventory in those other volumes, an inventory without a gun that we included in our analyses (but was not in Bellesiles' study) (Estate of John Mathuson, 13 PROVIDENCE RECORDS, *supra* note 4, at 32).

31. As Bellesiles probably did, we also include the Waterman inventory from 1670.

32. See, e.g., 16 PROVIDENCE RECORDS, *supra* note 4: Mary Borden (at 60), Sarah Clemance (at 420), Abigail Hopkins (at 410), Joanna Inman (at 236), Mary Inman (at 146), Tabitha Inman (at 238), Ann Lewes (at 429), Rachal Potter (at 346), Elizabeth Towers (at 278), Hannah Wailes (at 165), Anna Whipple (at 370), Susanna Whipple (at 174), Mary Whiteman (at 70), and Lydia Williams (at 341).

decedents' estates contain no inventory at all or no personal property inventory. One reason for having only a real estate inventory<sup>34</sup> besides bad record-keeping or inconsistent law enforcement is what today is called ancillary probate. If you die as a resident of another state but still own real estate in your former town, you would probate your personal assets in your new home state, but still need ancillary probate of your real estate in your former home. It would have been a mistake to list guns on real estate inventories and none are in Providence.

There were actually only 153 male estates with personal property inventories (not 186).<sup>35</sup> One of these is explicitly listed as incomplete, since the estate was looted by the father-in-law of the decedent.<sup>36</sup> Three others do not have any substantial itemization of personal household goods.<sup>37</sup> Thus, of the 153 adult males estates with personal property inventories, 149 had usable responses: all adult males with inventories purporting to be (nearly) complete itemized lists of personal property.<sup>38</sup>

Counting only guns, there are 94 estates (63%) out of 149 that have guns of some kind. If we included gun parts, such as “a peice of a Gun Barrill,” the numbers would not change—still 94 of 149 estates have guns. Only nine estates have any guns listed as old or in poor condition; one of

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<sup>33</sup>. Estate of Freelove Crawford, 7 PROVIDENCE RECORDS, *supra* note 4, at 117-120.

<sup>34</sup>. See, e.g., 16 ID. at 322 (J. Crawford); 16 ID. at 126-127 (R. Waterman); 6 ID. at 31 (T. Suckling); 6 ID. at 30 (W. Fenner).

<sup>35</sup>. We excluded a fragment of an inventory and a few cases missing inventories, which had some form of partial property list such as a property distribution or account. See, e.g., 16 ID. at 421 (a second R. Waterman); 16 ID. at 128 (J. Dexter).

<sup>36</sup>. Estate of Jonathan Randall, 16 PROVIDENCE RECORDS, *supra* note 4, at 359-360.

<sup>37</sup>. One does not itemize any personal property beyond cattle, corn, and feed, using only general language for three rooms of household goods. Estate of James Mathuson, 6 PROVIDENCE RECORDS, *supra* note 4, at 70-71. In its first inventory, another estate itemizes a few pieces of agricultural business property, but not any household property, using the broad general language: “household goods.” In a supplemental inventory, a gun was added. Estate of Benjamin Hearnden, 7 ID. at 93. Even though that estate listed one gun, the estate lacked sufficient itemization to include it in our study. Another lists land, bonds, and “apparrill,” but has no itemized personal estate. Estate of John Steere, 16 ID. at 367.

<sup>38</sup>. We included the Estate of Toleration Harris, 6 PROVIDENCE RECORDS, *supra* note 4, at 38-39, 95-96, where not all the personal property had been collected or valued, but they did attempt to itemize it; further, although one might rationally seriously doubt the completeness of such an estate, there is no actual statement that the property listed is incomplete, just not yet collected, viewed, or appraised.

those estates also has four apparently working guns.<sup>39</sup> Thus, fully 91% of the estates with guns and 58% of the 149 estates have guns that are not listed in pejorative terms. Of course, that does not mean that these guns were actually in good working condition, only that they were not listed as old or broken.

Gun ownership drops slightly over the period of the Providence records.<sup>40</sup> As Chart 1 shows, guns are more common in the earlier years of the period (63-71% of estates) than in the later years. Only 52% of the 50 estates after 1720 list guns.

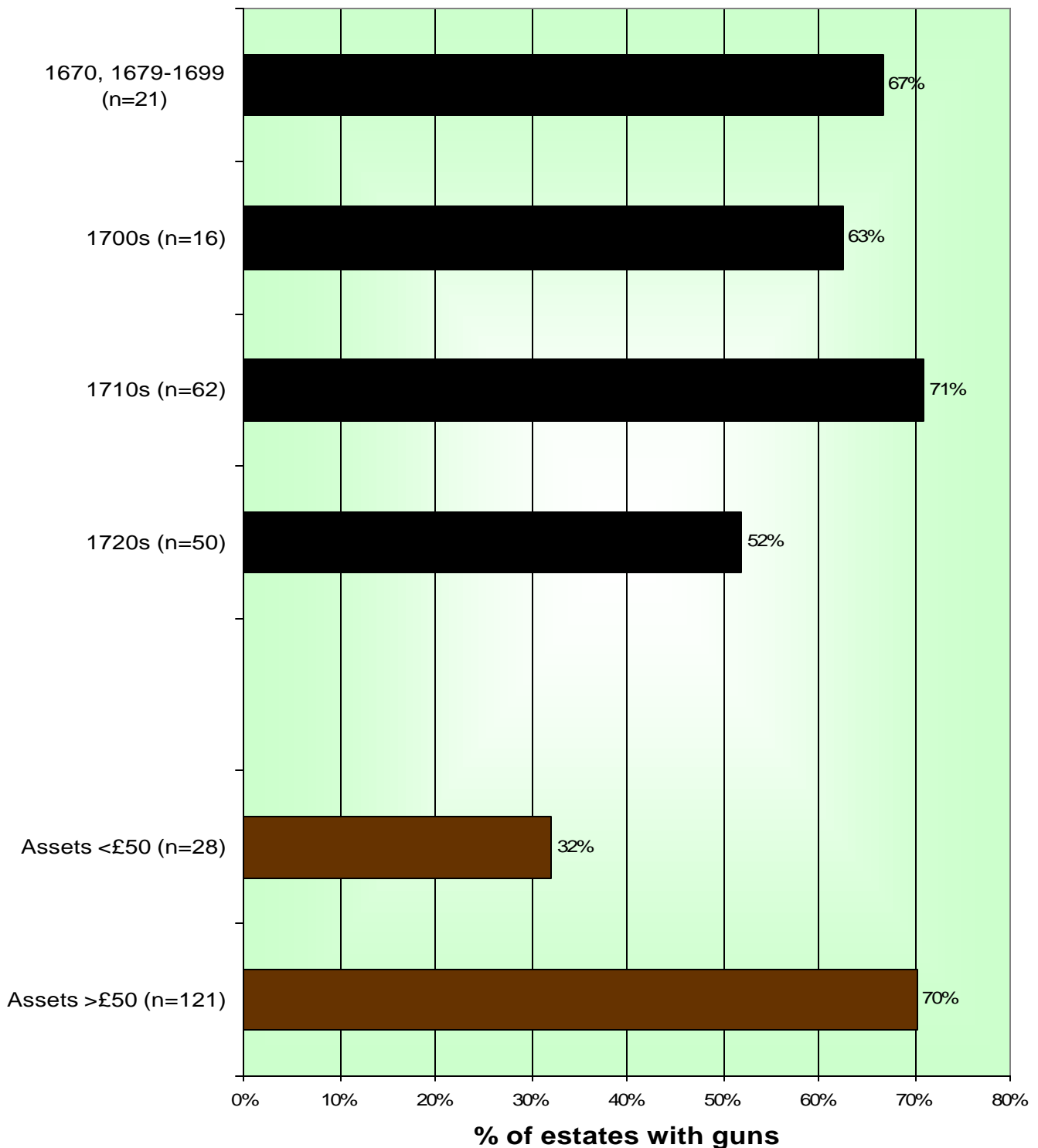
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<sup>39</sup>. Nearly 10% of estates have any guns listed as old or broken; about 9% of total guns were so listed.

<sup>40</sup>. The drop is contrary to *Arming America's* interpretation, AA at 109-110 ("Two-thirds of those inventories containing guns fall into the last twenty years of this fifty-year period, after the distribution of firearms by the British government to the New England militia in Queen Anne's War."). Compared to the earlier period, gun ownership drops significantly in the last 20 years (1707-1726) of inventories (from 66% of estates to 62% of estates). The two decades from 1711 to 1730 show an insignificant 1% drop in guns from the earlier period.

### Chart 1: Frequency of Estates Listing Guns by Time Period and by Value of Estate

149 Providence Itemized Male Inventories, 1670, 1679-1726



Using exploratory data analysis to determine preliminarily which wealth levels were associated with owning guns, we determined that estates under £50 (the smallest 19% of estates) had fewer guns, but wealth had no large effect above that low threshold level.<sup>41</sup> We then recoded all Providence estates into two groups—those with less than £50 in assets and those with more.

Chart 1 also shows that only 32% of inventories for the poorest fifth<sup>42</sup> of estates listed guns among the assets. Among the other 4/5<sup>ths</sup> of estates, 70% listed guns. This suggests that gun ownership among the poorest property-owners was moderate, while guns were extremely common among the bulk of Providence estates. These data are consistent with an interpretation that guns were not a luxury good, but rather a relatively expensive staple that only a third of the poorest estates could afford, but that a solid majority (70%) of middle and upper class estates owned.

The average household size in the 1790 census in Providence was 6.1 people and it ranged from 5.7 to 6.2 throughout the Northern states in 1790.<sup>43</sup> Thus, in Providence there were many more white males over the age of 15 than there are families. If white males were evenly distributed among families, the average household would have three white males, half of them over the age of 15. If at least 63% of adult white males owned guns and they were distributed about evenly across households (which they would not be), nearly all families in Providence had guns, since very few people lived in families of one (less than 1% of people in 1790 Providence). Further, most adult females and most children of both sexes lived in households with adult white males.

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<sup>41</sup>. For this analysis, we used the totals in the inventories themselves, recoding them into five groups. Where it could be easily done, we totaled short lists of assets and added assets in supplementary inventories. We did not total long inventories, where the inventories themselves did not do so. Because of supplementary inventories, probable inconsistencies in adding real estate assets to estate totals, and the confusion of subtotals in their texts, our exploratory analysis should not be considered reliable. Once the decision was made to dichotomize the asset variable, all estates were fairly reliably assigned into the two groups, notwithstanding the classification problems mentioned.

<sup>42</sup>. Actually, it is the poorest 19% of estates—with assets below £50 in value.

<sup>43</sup>. U.S. Census, 1790. It appears that family sizes were even larger early in the 18th century. Duane A. Ball, *Dynamics of Population and Wealth in Eighteenth-Century Chester County, Pennsylvania*, 6 J. OF INTERDISCIPLINARY HISTORY 621, 633 (1976) (in Chester County, PA, average family size declined by more than two persons from the beginning of the 18th to the end of the 18th century).

The fact that a typical Providence household had three white males may also explain why these probate records show as few guns, knives, chairs, candles, candlesticks, and Bibles as they do. Why not treat some of these things as belonging to the family or household, rather than to the decedent? A possible partial corrective for this problem, using controls, is explored in the next section.

## **2. Introducing Control Variables: Other Common Items**

As historical economists using probate records have often noted, probate inventories are incomplete. Just how incomplete they are can be explored by comparing gun ownership to that of other commonly owned items, as Hawley and Main did. It is widely believed that many propertied white males were religious and could read, especially in the later colonial period,<sup>44</sup> so Bibles should be common and other books even more common, though not necessarily as universal as the other items. Also, Bibles have the heirloom quality that the pro-gun scholars sometimes claim that guns had. Thus, if Bibles are much more common than guns in these probate inventories, the heirloom explanation for the absence of guns would be unsupported. To examine whether early Americans used knives, swords, and axes as weapons because they owned few guns, it is instructive to look at swords and rapiers, as well as knives, axes, and hatchets.

As Chart 2 shows, guns are extremely likely to be listed in Providence estates (63% of itemized male inventories list them), compared to other commonly owned objects. Thus if axe and knife ownership was near universal in Providence, then gun ownership was probably near universal as well, since guns are as commonly listed as axes (65%) and more commonly listed than knives of all kinds (36%), including table knives. If one compares gun ownership (63%) with the ownership of swords, cutlasses, bayonets, and other edge weapons (30%),<sup>45</sup> the difference is particularly striking. Indeed,

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<sup>44</sup>. Jon Butler and others have inquired just how religious Americans were. See Jon Butler, *RELIGION IN COLONIAL AMERICA* (2000); Jon Butler, *THE REVOLUTION BEFORE 1776* (2000). See also Frank Lambert, *INVENTING THE "GREAT AWAKENING"* (1999). The classic work on the acquisition of literacy in the late 18th century is William Gilmore, *READING BECOMES A NECESSITY OF LIFE: MATERIAL AND CULTURAL LIFE IN RURAL NEW ENGLAND, 1780-1835* (repr. ed. 1993).

<sup>45</sup>. Here we are treating axes, hatchets (which were much less common than axes), and knives, not as edge weapons, since this was not their primary purpose. Bellesiles presents a small amount of evidence to support his conclusion that axes were very



the odds of finding a gun in a colonial Providence inventory are 4.1 times as high as the odds of finding a sword or other edge weapon.<sup>46</sup>

Guns were as commonly listed in Providence estates (63%) as all lighting items combined (60%): candles, tallow, candlesticks, oil, lamps, and lanterns. Gun ownership is as common as book ownership (62%) and much more common than the ownership of Bibles (32%). It should be noted that the low totals for hats and caps (15%) are mostly the result of the very common use of general language (e.g., wearing apparel) in describing clothes. As for chairs and stools, even when we include the general language “furniture,” the percentages remain lower than expected (79%).

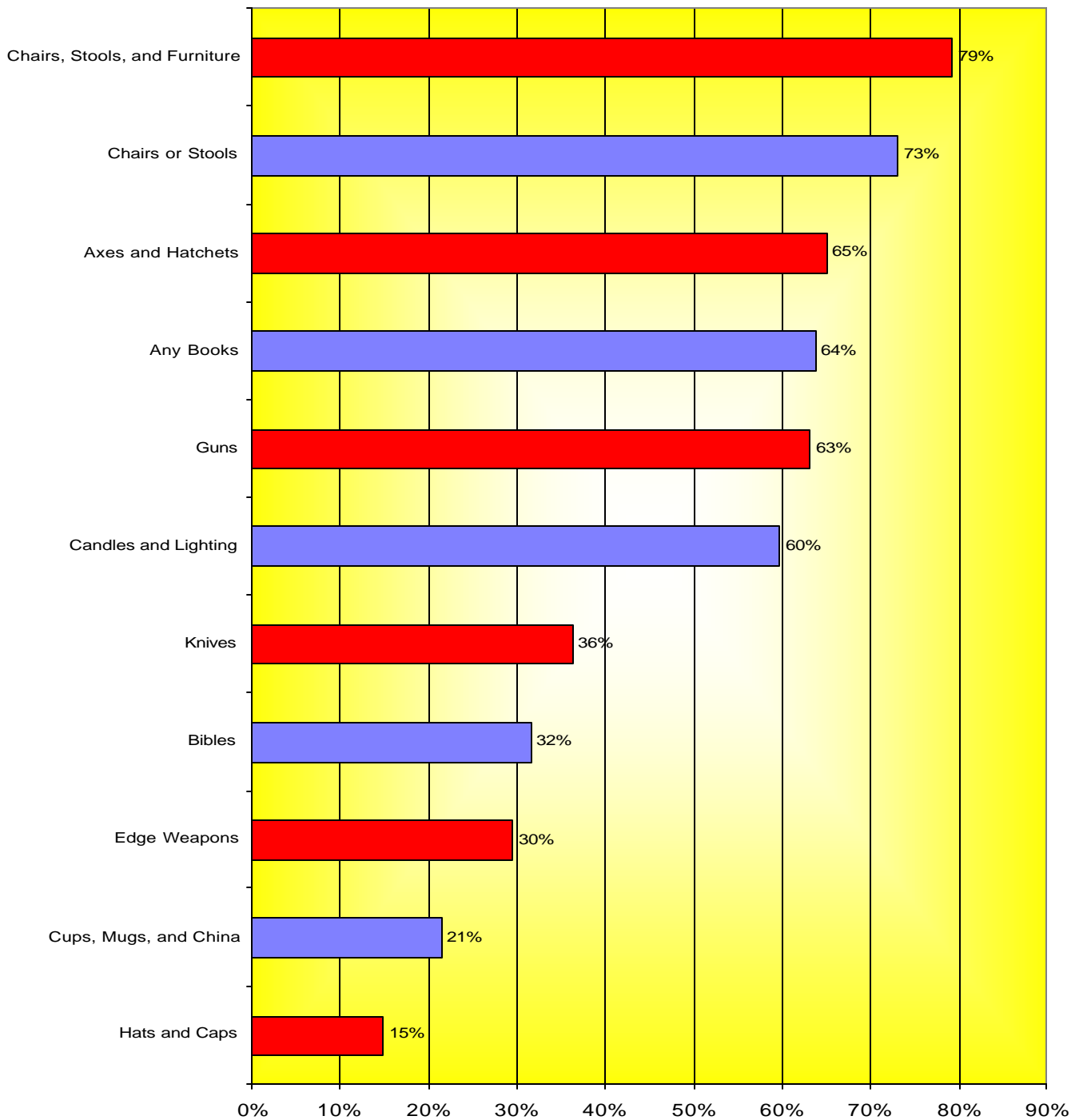
The high but far from universal itemization of most of these extremely common items of personal property suggests that Providence probate inventories probably do not accurately reflect the actual ownership patterns of decedents, at least without using control variables. Untethered, free-floating estimates of the ownership of particular items are (in our opinion) a misuse of this fallible source. Only relative numbers make much sense. The idea that people in early America used knives because they had few guns is undercut by our finding that, at least in Providence, only 36% of the records show knives.

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frequently used as weapons. After checking the sources he cites, we determined that they do not support his conclusion. Unlike hatchets, which can be wielded with one hand and thrown, axes required two hands and were generally used for attacking stationary targets, such as trees and logs. Our classification of axes, hatchets, and knives is the conventional one, since neither Alice Hanson Jones, nor the Gunston Hall database, classify them as weapons. (Very few knives are listed in terms suggesting that they were used for hunting.) Tomahawks, of course, are always treated as weapons. We might be wrong to follow the conventional classification of experts on colonial property items. Yet most of the sources Bellesiles cites in his book do not support his claim that people favored axes over guns for hunting and battle or treated them as the equal of guns.

<sup>46</sup>. Odds-ratios (and log odds-ratios) are the staple of categorical data analysis in the social sciences—being the heart of both logistic regression analysis and of more sophisticated categorical techniques, such as hierarchical loglinear analysis. Although less intuitive than percentages for all but frequent gamblers, odds-ratios and log odds-ratios have more powerful statistical properties for modeling ratios. Computing the odds-ratio expressing the ratio between 63% gun ownership (1.7 to 1 odds) and 30% edge weapon ownership (.42 to 1 odds) is:  $((.63/(1-.63)) / (.30/(1-.30))) = 1.7/.42 = 4.1$ .

**Chart 2: Frequency of Estates Listing Various Items**  
149 Providence Itemized Male Inventories, 1670 & 1679-1726



We then performed multivariate analysis to determine which variables predicted listing guns in probate inventories. Tables 1 and 2 show the results of loglinear modeling with nested models. In both tables, the first model includes all main variable effects for six explanatory variables of possible theoretical interest. The second model in each table is the result of hierarchical loglinear analysis. This is a sophisticated modeling technique that tries to fit the simplest model accounting for almost all of the variation shown between variables. It involves fitting a model with hundreds of interactions between all levels of all variables in the model and then backing out the insignificant and meaningless interactions. All variables of theoretical interest remain in all models, just most of the interactions are removed.

This technique has several advantages, even compared to most other multivariate techniques (such as logistic regression).<sup>47</sup> First, it can be used to test all interactions at all levels of all variables, not just a defined set of 2-way interactions between predictors. Second, with hierarchical loglinear modeling, researchers often use a Bayesian criterion (called “BIC”) to inform the decision to eliminate statistically significant but weak relationships from any particular model. Since statistical significance is so dependent on sample sizes, it is good to have an objective criterion (BIC) to aid researchers in their ultimate (non-statistical) task of assessing theoretical importance. Third, highly complex models can be expressed in extremely simple notation.<sup>48</sup> Like the cruder technique of logistic regression analysis, hierarchical loglinear modeling predicts log odds, but with the small sets of variables of theoretical interest here, this technique can explore much more complex models than is practically feasible with logistic regression.

Both tables report results of models predicting whether an itemized male inventory in Providence contains a gun. Table 1 shows that, controlling for all interactions between the predictor variables, the odds of listing a gun in the richest 81% of estates (those with assets exceeding £50) is 5 times as high as the odds of the lowest 19% of estates listing a gun (controlling for all interactions between the predictor variables). The second model includes all

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<sup>47</sup>. In sophisticated demographic research, loglinear analysis has become more common than regression analysis.

<sup>48</sup>. Although simple, the notation is opaque to the uninitiated. For example, consider the model: [YF][YA][FEDCBA]. Although the specification of this model is brief, it actually specifies one dependent variable Y, two main effects (one between Y and A and one between Y and F), and dozens of 2-way, 3-way, 4-way, 5-way, and 6-way interaction variables between the six possible predictor variables A, B, C, D, E, and F. A model that would normally take a full page to list all its dozens of interactions takes only 10 letters and 6 brackets to specify.

interactions between the six predictor variables and the two main effects that meet the BIC criterion. None of the other variables make a meaningful direct contribution to accounting for the variance in the data.

In Table 2 we convert the year variable from four categories to two. The odds of having a gun are 5 times as high if an estate has more than minimal assets (>£50) than if it does not and about 2 times as high<sup>49</sup> if an estate is from the decades before the 1720s rather than from the 1720s. None of the other variables make a meaningful direct contribution to accounting for the variance, failing to meet the BIC criterion.

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<sup>49</sup>. This is actually based on the exponent of the absolute value of the result for being from the 1720s. Thus, it is approximate. More precisely, based on the model actually fit, the relative odds of a 1720s estate listing a gun are only 49% as high as the odds for earlier estates.

## Table 1 Hierarchical Loglinear Modeling Providence Male Itemized Estates

Sample: N=149 males, 1670, 1679-1726

**Dependent Variable:**

Y: gun (None, Listed)

**Independent Variables:**

A: years (<1700,1700s,1710s,1720s)

B: value of assets (<£50,> £50)

C: axe or hatchet (None, Listed)

D: chair or stool (None, Listed)

E: cup, mug, or china (None, Listed)

F: edge weapon (None, Listed)

Model (with 6 main effects):

[YA][YB][YC][YD][YE][YF][FEDCBA]  $G^2=56.9, 119 \text{ df}, p<1.00$

	Log-odds Ratio	s.d.	Exponent (Relat. Odds)	Exponent of Absolute Value
YA (gun-years)				
<1700, 1700s	-.18	.69	.83	1.2
1700s, 1710s	.38	.59	1.5	1.5
1710s, 1720s	-.81	.40	.44	2.2
YB (gun-assets)	1.60	.45	5.0	5.0
YC (gun-axe)	.98	.36	2.7	2.7
YD (gun-chair)	1.18	.38	3.3	3.3
YE (gun-cup)	1.13	.49	3.1	3.1
YF (gun-edge w.)	.93	.41	2.5	2.5

Most Parsimonious Model Fitting the Data:

[YB][FEDCBA]  $G^2=74.4, 126 \text{ df}, p<1.00$

	Log-odds Ratio	s.d.	Exponent (Relat. Odds)	Exponent of Absolute Value
YB (gun-assets)	1.61	.45	5.0	5.0

## Table 2

### Hierarchical Loglinear Modeling Providence Male Itemized Estates

Sample: N=149 males, 1670, 1679-1726

**Dependent Variable:**

Y: gun (None, Listed)

**Independent Variables:**

- A: years (<1720, 1720s)
- B: value of assets (<£50, > £50)
- C: axe or hatchet (None, Listed)
- D: chair or stool (None, Listed)
- E: cup, mug, or china (None, Listed)
- F: edge weapon (None, Listed)

Model (with 6 main effects):

[YA][YB][YC][YD][YE][YF][FEDCBA]  $G^2=29.6, 57 \text{ df}, p<.99$

	Log-odds Ratio	s.d.	Exponent (Relat. Odds)	Exponent of Absolute Value
YA (gun x years)	-.71	.36	.49	2.0
YB (gun x assets)	1.61	.45	5.0	5.0
YC (gun x axe)	.98	.36	2.7	2.7
YD (gun x chair)	1.18	.38	3.3	3.3
YE (gun x cup)	1.14	.49	3.1	3.1
YB (gun x edge w.)	.93	.41	2.5	2.5

Most Parsimonious Model Fitting the Data:

[YA][YB][FEDCBA]  $G^2=37.9, 61 \text{ df}, p<.99$

	Log-odds Ratio	s.d.	Exponent (Relat. Odds)	Exponent of Absolute Value
YA (gun x years)	-.71	.36	.49	2.0
YB (gun x assets)	1.60	.45	5.0	5.0

### III. Counting Guns in 1774 Colonial America

While the Providence data are excellent for showing high levels of gun ownership in one New England town in one period, the more relevant question is: What was the pattern of gun ownership throughout the country? Fortunately, we can build on the extraordinary collection of 919 probate inventories from 1774 (a few were from 1773 and early 1775)<sup>50</sup> that Alice Hanson Jones published in 1978.<sup>51</sup> Not only is this a large collection of published inventories transcribed from handwritten records, but Jones took extraordinary steps to achieve a representative sample of the entire wealthholding population of the country in 1774. She then weighted each inventory to account for her sampling design, the age distribution of the population, and the likelihood of being probated. This allowed her to generate wealth and property ownership estimates for the wealthholding population and the probate-type wealthholding population.

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<sup>50</sup>. See JONES, *supra* note 2. For some counties with fewer than 25 estates from 1774, her sample includes some inventories from 1773 and early 1775 (and in New York, 1772), but the overwhelming majority come from 1774.

<sup>51</sup>. In *Arming America*, Bellesiles cites Jones' book but does not disclose that he included her data in his totals in his Table 1 for 1765-90. AA at 445, 530 n.16. In his 1996 *Journal of American History* article, however, he gives exactly the same percentages in each cell for the 1765-90 period as he republished in his book, saying in the 1996 article that he included the Jones data, as well as data from other unnamed sources. Michael A. Bellesiles, *The Origins of Gun Culture in the United States, 1760-1865*, 83 J. OF AMERICAN HISTORY 425, 427-428 (1996) ("Integrating Alice Hanson Jones's valuable probate compilation into this general study and examining counties in sample periods during the eighty-five years from 1765 to 1850 reveals a startling distribution of guns in early America."). This is the only sentence in the article disclosing the sources of his 1765-90 data.

Also, for most states in his probate study Bellesiles used only counties that Jones used, using exactly the same 25 counties as Jones did for every state. AA at 445. He added a few counties from other states (some presumably for years beyond the 1765-90 period): Vermont, Georgia, Ohio, Indiana, California, and two additional counties in Pennsylvania. The only part of Jones' study that he appeared to exclude is one set of 23 estates in Jones' database, her small sample from the entire state of New York. Since reading a draft of this paper, Bellesiles has recanted his 1996 claim that he integrated Jones' compilation of inventories into his probate study. Michael Bellesiles, Letters to the Editor, *Arms and the Ancestors*, WALL STREET JOURNAL, April 24, 2001, at A25 (speaking of "published sample sets I did not use, those of Alice Hanson Jones (919 inventories from 1774-75)"). While the Jones data would provide enough Southern cases to falsify *Arming America's* 14.7% mean as mathematically impossible, there are more than enough other cases to do so in the rest of Bellesiles' sample.

Since the entire wealthholding population is a larger part of the U.S. population than the probate-type wealthholding population, we have used weights for the wealthholding population (even though this results in about 2% lower gun ownership than if we used the probate-type population). The counts and percentages in our charts are weighted to match the wealthholding population of the Thirteen Colonies in 1774. These weights affect the levels of guns only slightly; thus, compared to the raw unweighted percentages, the weighted frequencies of guns are only a few percent different.

Guns were common in 1774 estates, even in admittedly incomplete probate records—overall, 50% of all wealthholders in the Thirteen Colonies in 1774 owned guns.<sup>52</sup> Among male probate-type wealthholders, 54% owned guns listed in their estates. Moreover, guns were mostly in good condition. About 87% of itemized male estates with guns listed at least one gun that was not listed as old or in poor working condition.

Not all of these estates have itemized inventories of personal property including household property. For example, an estate that lists only real estate or “house and its contents,” or only crops and farm implements, is not sufficiently complete to count as an itemized estate. If one sets aside just these 30 estates without substantial itemization and the 81 female estates,<sup>53</sup> that leaves 813 itemized male estates.<sup>54</sup> Charts 3-5 set out characteristics<sup>55</sup> of these itemized male estates.

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<sup>52</sup>. In all, 52% of male colonial wealthholders in 1774 had guns, while 18% of female wealthholders had guns. If we exclude estates that have no significant itemization of personal property, 54% of male wealthholders’ estates have guns, and 19% of female wealthholders’ estates have guns.

<sup>53</sup>. Five of these 81 female estates are unitemized.

<sup>54</sup>. This includes one free African-American who owns slaves but not a gun.

<sup>55</sup>. Jones coded each item in the Middle Colonies (except New York) in one database and the general characteristics of each estate from all regions in several other databases (including gender, apparel, and wealth). We further coded the individual items (guns, edge weapons, etc.) from the inventories of New England, New York, and the South ourselves, but used Jones’ coding and description of individual items (including guns) for the Middle Colonies from her itemized database. We then combined these data into a single database, using her weights for each estate as well as her data. Our statistics assume that her stratified probability sample was as effective as a simple random sample (SRS) (since no design effect was noted), but our hierarchical loglinear modeling applies a higher test (BIC) for effects large enough to be meaningful. Because her sample is certainly less effective than a SRS (especially for the estimates of wealthholders rather than probate-type wealthholders), one should look more at the strength of relationships than at statistical significance.



As Chart 3 shows, 54% of itemized male estates in 1774 have guns; 47% of estates have guns not listed as old or in poor condition. This compares with a higher rate of books (62%) and much lower percentages of Bibles or religious books (27%). Almost as interesting as the high level of gun ownership is the low level of swords, cutlasses, bayonets, and other blade or edge weapons (14% of estates). Indeed, based on probate records, in colonial America in 1774 the relative odds of a male wealthholder owning a gun was 7.0 times as high as the odds of him owning an edge weapon.

In early America, gun ownership is higher in rural areas than in urban areas (56% to 45%). Moreover, 60% of estates that list livestock also list guns, compared to only 22% of estates not owning livestock—owning livestock being a strong indicator of current (rather than past) farming activity. Although estates with few slaves owned no more guns (46%) than estates without slaves (48%), gun ownership among the bulk of slave-owning estates (with slaves valued >£82.5) was very high—81%. Indeed, the odds that large slaveholders would own guns is 4.3 times as high as the odds of gun ownership for estates without large numbers of slaves.

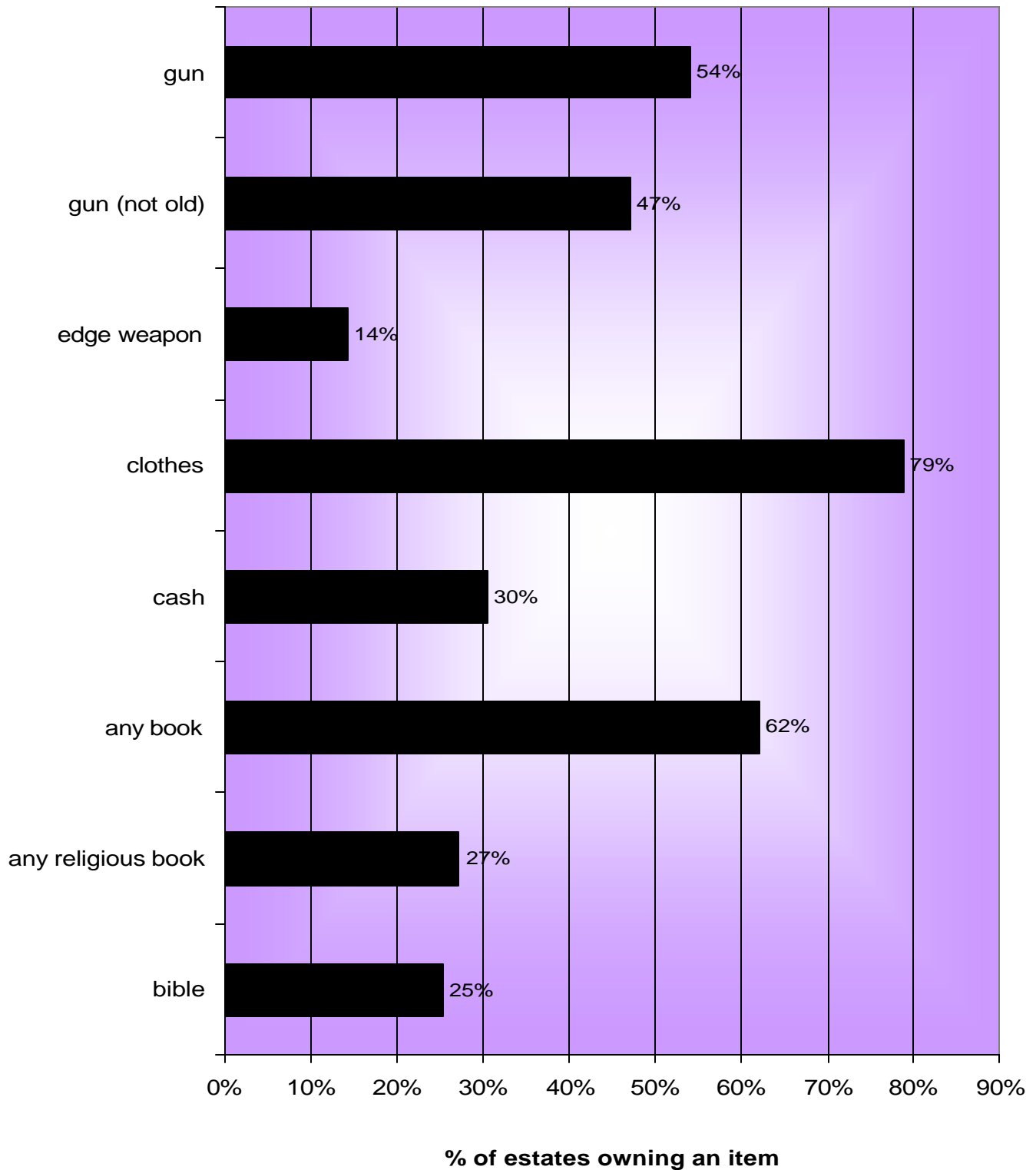
There are some differences between colonies and regions (Charts 5-6). Southern estates have many more guns than other regions (69%). The lowest gun ownership was observed in a string of states from Connecticut and New York<sup>56</sup> to New Jersey and Pennsylvania, all of whom had only 35-44% guns (Chart 6).

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<sup>56</sup>. There were 23 New York estates, all male. Because of the small sample size for New York, Jones reduced the weighting of those cases, thus yielding a weighted n shown in Chart 6 of only 9 estates.

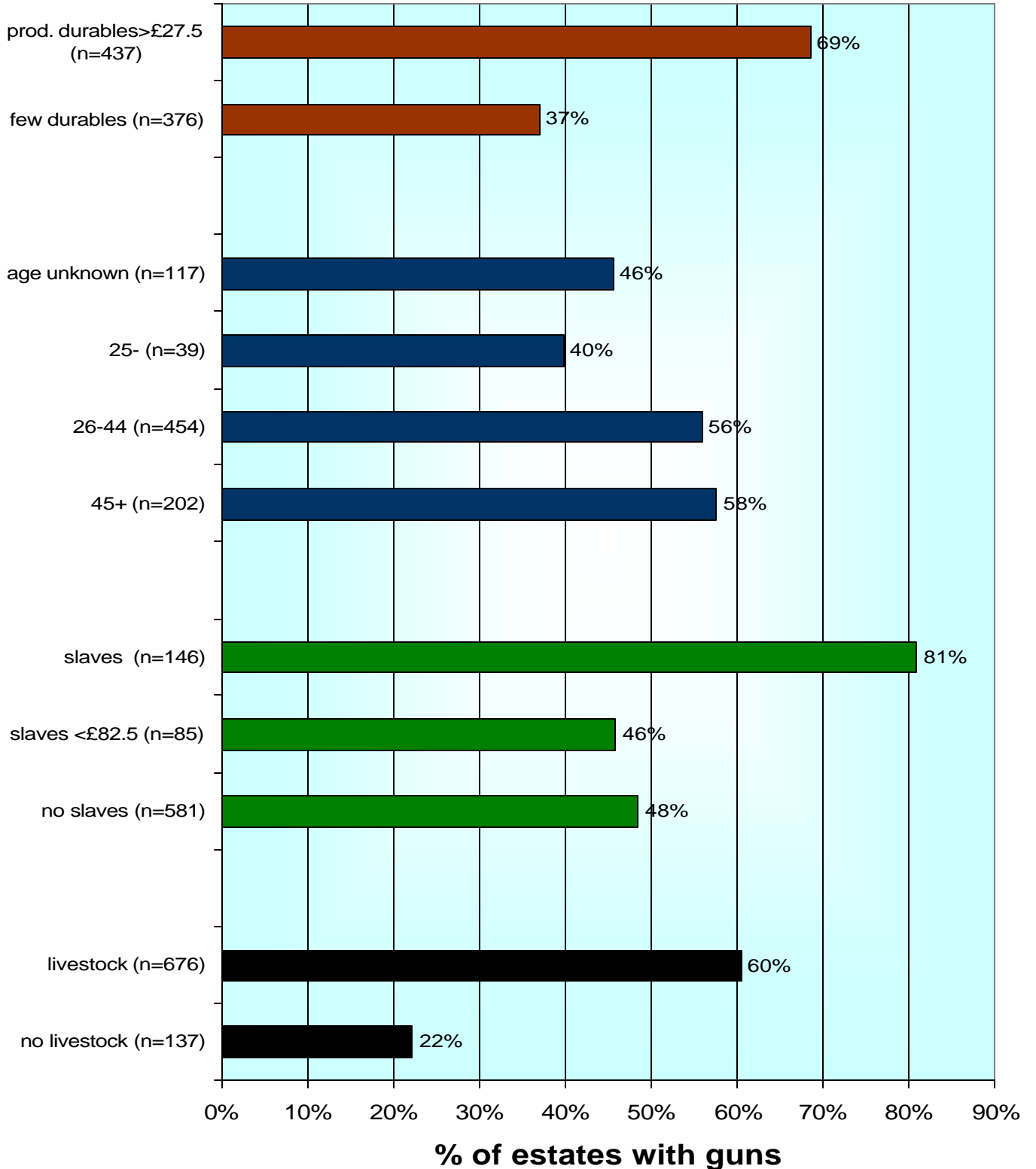
### Chart 3: The Frequency of Various Items in Itemized Male Estates, 1774

Source: Alice Hanson Jones, 1978, n=813



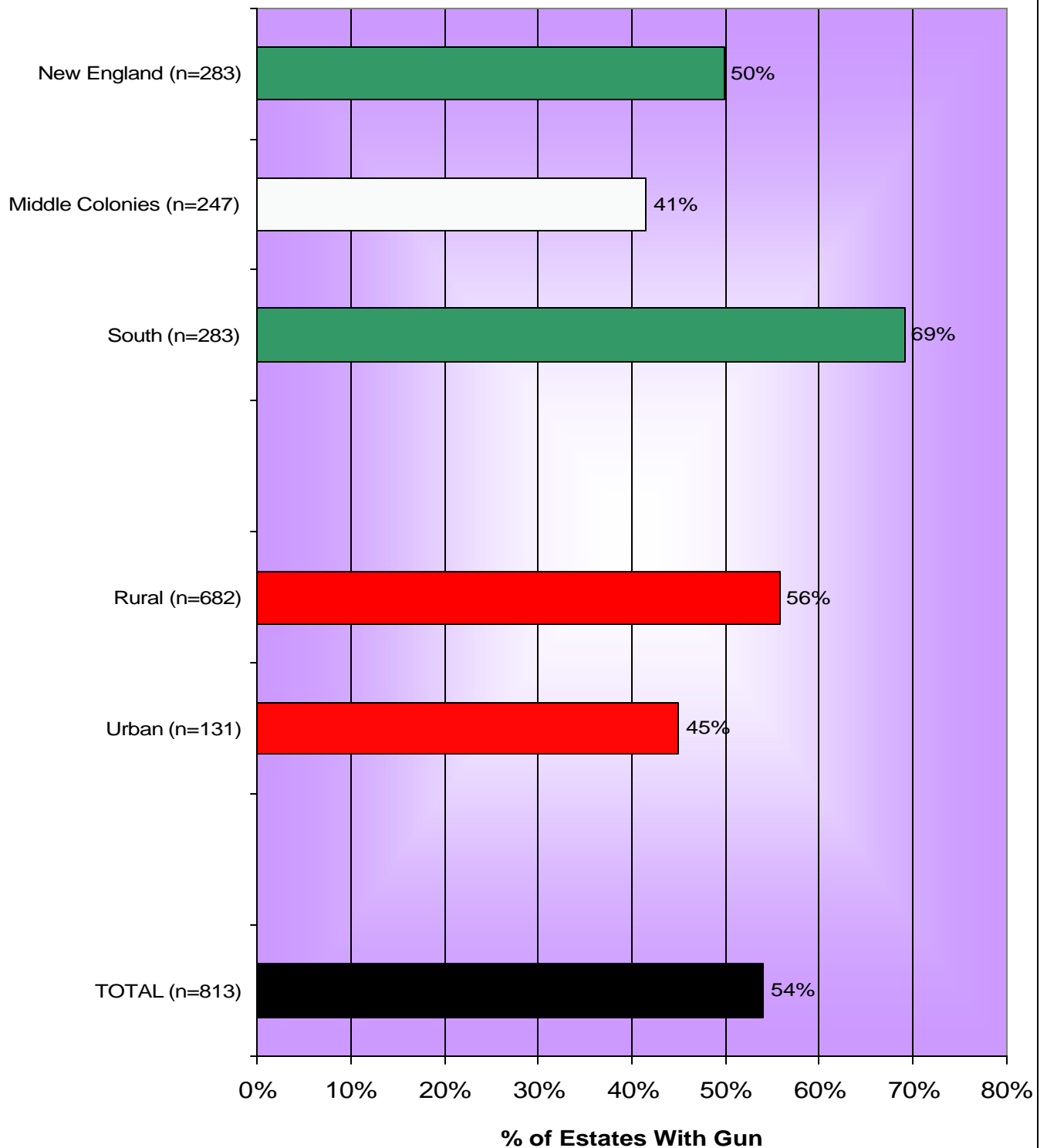
**Chart 4: The Frequency of Guns in Itemized Male Estates  
by Various Characteristics, 1774**

Source: Alice Hanson Jones, 1978, n=813



**Chart 5: The Frequency of Gun Ownership in Itemized Male Estates by Region and Urban/Rural, 1774**

Source: Alice Hanson Jones, 1978, n=813



### Chart 6: The Frequency of Gun Ownership in Itemized Male Estates by Colony, 1774

Source: Alice Hanson Jones, 1978, n=813

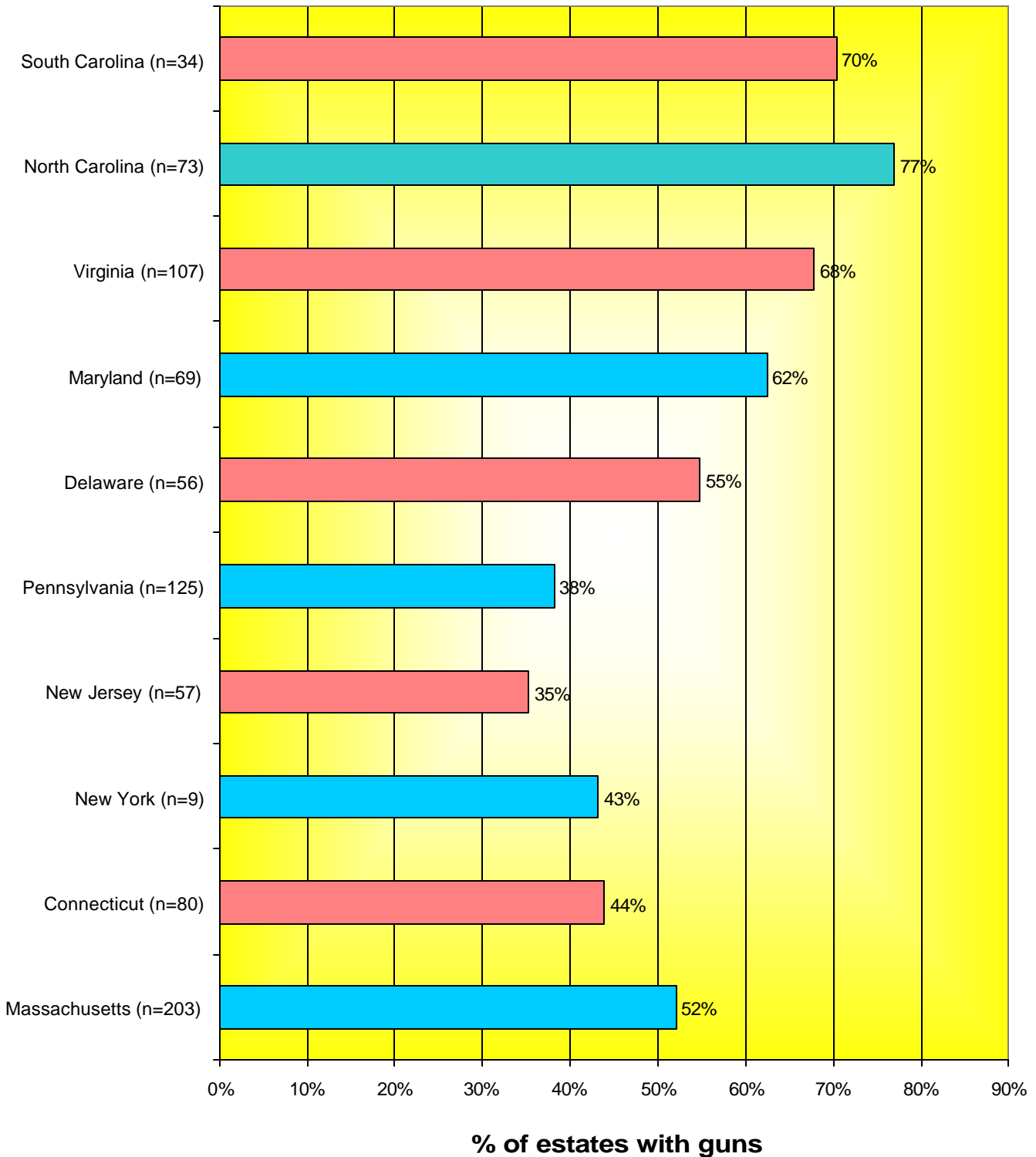
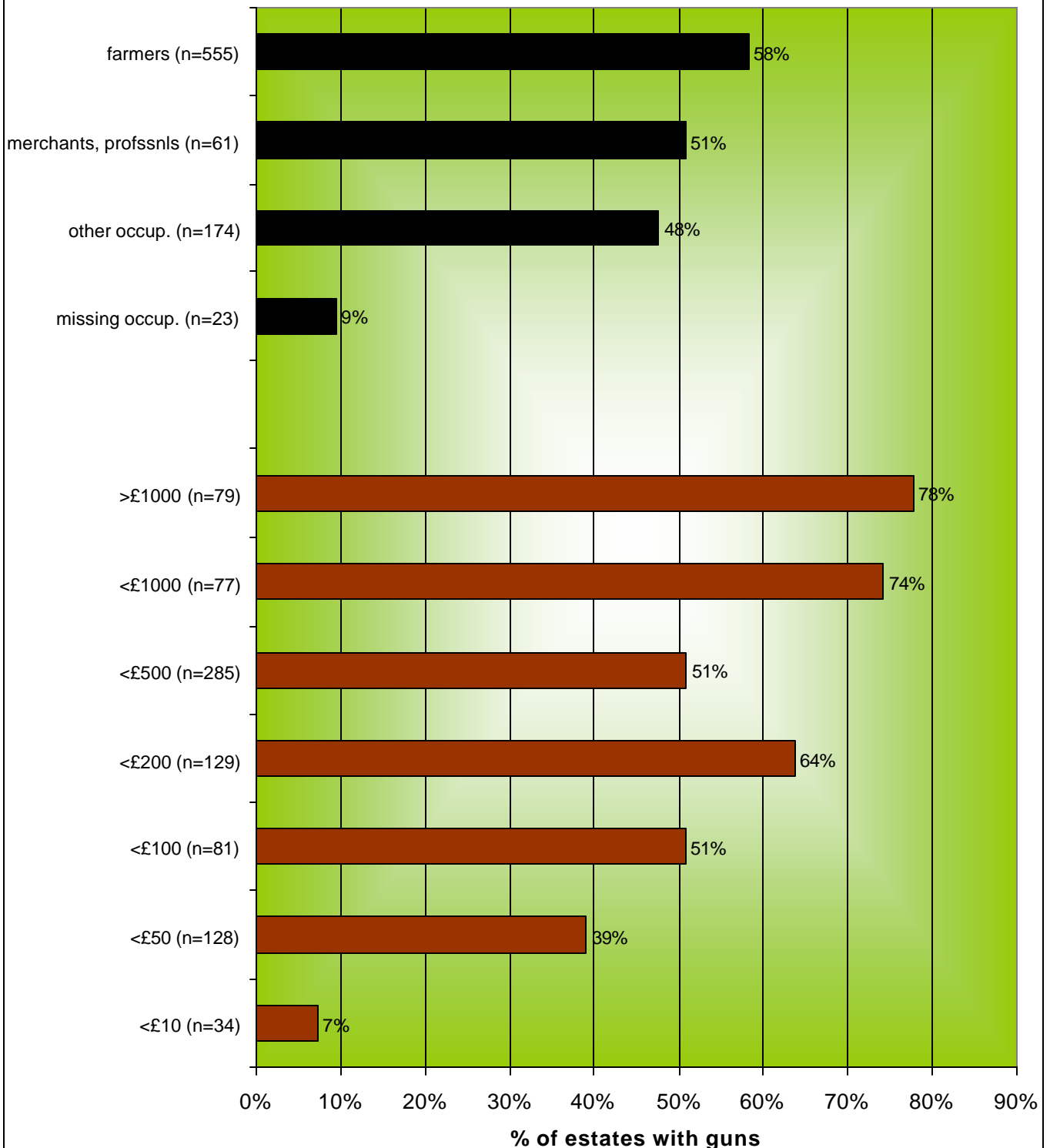


Chart 7: The Frequency of Guns in Itemized Male Estates  
by Occupation and Physical Wealth, 1774

Source: Alice Hanson Jones, 1978



Among occupations (Chart 7), farmers have slightly more guns (58%) than other occupations. Those with missing occupations have many fewer guns (only 9%), suggesting that incompleteness of probate inventories is an important possible reason for an inventory lacking guns, even among male estates with itemized inventories. Total physical wealth is related to gun ownership, with 74-78% of the most elite estates having guns and only 7% of the poorest probate estates owning guns.

Next, we used hierarchical loglinear modeling to predict whether an estate would list a gun. In Table 3, we used all estates, including female estates and those without itemized inventories. In Table 3, the most parsimonious model that fits the data suggests strong relationships between gun ownership and several predictors. Men have about 5 times as high odds of owning a gun as women. Large slave-owners have 4.3 times as high odds of owning a gun as small slave-owners or those who own no slaves. Those who own livestock have odds of gun-owning 6.7 times as high as those who do not. Active farming and large slave-owning are good predictors of owning guns. Inventories with no itemization have no guns. Physical wealth and region are not meaningful direct predictors of guns in this model.

Tables 4 and 5 show models for 813 male itemized estates, excluding female estates and those without itemization. Both tables show high odds of gun ownership for Southerners, livestock-owners, and those whose estates contain substantial amount of producer durables. Producer durables include livestock, guns,<sup>57</sup> other weapons, wagons, wheelbarrows, harnesses, plows, hoes, shovels, sickles, axes, saws, hatchets, mills, grindstones, bags, buckets, bushels, spinning wheels, tools, lumber, nails, and fishing equipment. The odds that inventories contain guns are 11.6-11.7 times as high if they record an occupation as when they do not. Physical wealth and slaveholding are statistically significant in this modeling, but not meaningful main predictors of guns using the BIC criterion.

In Table 5, controlling for all interactions between the predictor variables, the odds of having a gun are several times higher for Southerners, those who own livestock, and those whose physical wealth exceeds £ 10. Inventories are much more likely to contain guns if they record an occupation and list more than small amounts of producer durables (valued at £27.5 or greater). The main effect between large slaveholding and guns is statistically significant, but not meaningful using the BIC criterion.

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<sup>57</sup>. One reason for dichotomizing a level of producer durables larger than the value of guns in virtually all estates is so that the same gun data are not both a predictor variable and the dependent variable.

**Table 3**  
**Hierarchical Loglinear Modeling**  
**1774 Colonial Estates**

Sample: N=919 (including 81 female estates and 31 estates without itemized personal property)

Dependent Variable:

Y: gun (None, Listed)

Independent Variables:

A: gender (Male, Female)

B: itemization of personal household property (Some, Almost none)

C: physical wealth (<£ 10, £ 10-49, £ 50-99, £ 100-199, £ 200-499, £ 500-999, £ 1,000)

D: livestock (None, Livestock)

E: slaves (None or slaves valued at <£ 82.5, Slaves valued at >£ 82.5)

F: region (South, New England, Middle Colonies)

Model With 6 Main Effects: [FEDCBA][YB][YD][YA][YE]  $G^2=117.2$ , 323 df,  $p<1.00$

	Log-odds		Exponent	Exponent
	Ratio	s.d.	(Relat. Odds)	(of Abs. Value)
YA (gun x gender):	-1.60	.34	.20	5.0
YB (gun x itemization):	-5.31	2.45	.005	202.4
YC (gun x wealth):				
<£ 10, £ 10-49	2.47	.73	11.8	11.8
£ 10-49, £ 50-99	.48	.27	1.6	1.6
£ 50-99, £ 100-199	.72	.27	2.1	2.1
£ 100-199, £ 200-499	-.65	.21	.52	1.9
£ 200-499, £ 500-999	.89	.26	2.4	2.4
£ 500-999, >£ 1,000	.28	.34	1.3	1.3
YD (gun x livestock):	1.90	.21	6.7	6.7
YE (gun x slaves):	1.46	.20	4.3	4.3
YB (gun x south/new eng.):	-.77	.16	.46	2.2
(gun x new eng./middle):	-.22	.17	.80	1.2
(gun x south/middle):	-.99	~ .17	.37	2.7

Most Parsimonious Model Fitting the Data:

[FEDCBA][YB][YD][YA][YE]  $G^2=165.6$ , 331 df,  $p<1.00$

	Log-odds		Exponent	Exponent
	Ratio	s.d.	(Relat. Odds)	(of Abs. Value)
YA (gun-gender):	-1.59	.34	.20	4.9
YB (gun-itemization):	-5.31	2.45	.005	202.4
YD (gun-livestock):	1.90	.21	6.7	6.7
YE (gun-slaves):	1.46	.20	4.3	4.3



**Table 4**  
**Hierarchical Loglinear Modeling**  
**1774 Colonial Male Estates**

Sample: N=813 (male estates with itemized personal property)

Dependent Variable:

Y: gun (None, Listed)

Independent Variables:

A: physical wealth (<£ 10, £ 10-49, £ 50-99, £ 100-199, £ 200-499, £ 500-999, >£ 1,000)

B: region (South, New England, Middle Colonies)

C: slaves (None or slaves valued at <£ 82.5, Slaves valued at >£ 82.5)

D: livestock (None, Livestock)

E: producer's durables (None or <£ 27.5, Producer's durables >£ 27.5)

F: occupation missing (Unknown, Occupation known)

**Model With 6 Main Effects:** [FEDCBA][YD][YF][YE][YB]  $G^2=133.2$ , 323 df,  $p<1.00$

	Log-odds		Exponent	Exponent
	Ratio	s.d.	(Relat. Odds)	(of Abs. Value)
YA (gun x wealth)				
<£ 10, £ 10-49	2.30	.75	10.0	10.0
£ 10-49, £ 50-99	.51	.28	1.7	1.7
£ 50-99, £ 100-199	.54	.29	1.7	1.7
£ 100-199, £ 200-499	-.55	.22	.58	1.7
£ 200-499, £ 500-999	1.03	.29	2.8	2.8
£ 500-999, >£ 1,000	.17	.38	1.2	1.2
YB (gun x south/new eng.):	-.82	.18	.44	2.3
(gun x new eng./middle):	-.31	.17	.73	1.4
(gun x south/middle):	-1.13	~ .18	.32	3.1
YC (gun x slaves):	1.55	.23	4.7	4.7
YD (gun-livestock):	1.79	.23	6.0	6.0
YE (gun-durables):	1.29	.15	3.6	3.6
YF (gun-occup. missing):	-2.46	.72	.09	11.7

**Most Parsimonious Model Fitting the Data:**

[FEDCBA][YD][YF][YE][YB]  $G^2=162.6$ , 330 df,  $p<1.00$

	Log-odds		Exponent	Exponent
	Ratio	s.d.	(Relat. Odds)	(of Abs. Value)
YB (gun-south/new eng.):	-.82	.18	.44	2.3
(gun-new eng./middle):	-.31	.17	.73	1.4
(gun-south/middle):	-1.13	~ .18	.32	3.1
YD (gun-livestock):	1.79	.23	5.99	6.0
YE (gun-durables):	1.29	.15	3.63	3.6
YF (gun-occup. missing):	-2.45	.72	.09	11.6

**Table 5**  
**Hierarchical Loglinear Modeling**  
**1774 Colonial Male Estates**

Sample: N=813 (male estates with itemized personal property)

Dependent Variable:

Y: gun (None, Listed)

Independent Variables:

A: livestock (None, Livestock)

B: occupation missing (Unknown, Occupation known)

C: slaves (None or slaves valued at <£ 82.5, Slaves valued at >£ 82.5)

D: producer's durables (None or <£ 27.5, Producer's durables >£ 27.5)

E: physical wealth (<£ 10, >£ 10)

F: south (New England or Middle Colonies, South)

**Most Parsimonious Model Fitting the Data:**

[FEDCBA][YA][YE][YB][YD][YF]  $G^2=30.1$ , 58 df,  $p<1.00$

	Log-odds		Exponent	Exponent
	Ratio	s.d.	(Relat. Odds)	(of Abs. Value)
YA (gun-livestock):	1.72	.22	5.6	5.6
YB (gun-occup. missing):	-2.50	.75	.08	12.2
YD (gun-durables):	1.31	.15	3.7	3.7
YE (gun-physical wealth):	-3.00	.73	.05	20.1
YF (gun-south region):	.96	.16	2.6	2.6

Thus, the picture that emerges from a careful analysis of the 1774 Jones database is confirms and expands on what other scholars have found. In the Jones database, guns are common. Guns are apparently in good condition (not usually listed as old or damaged). Women own guns at substantial rates—18%.<sup>58</sup> In rural areas, guns are more common. Edge weapons are much less common than guns.

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<sup>58</sup>. This is the weighted average of all women. If one excludes women without itemized inventories, the percentage of female wealthholders with guns would be 19%.

#### **IV. Maryland and Virginia, 1740-1810— The Gunston Hall Probate Inventory Database**

At George Mason's home, Gunston Hall Plantation in rural Virginia, the museum's staff has collected and analyzed a database of 325 estate inventories from selected counties in Virginia and Maryland.<sup>59</sup> For these 325 inventories, they catalogued over 65,000 individual objects named in the inventories, a database that we analyzed statistically. Michael Bellesiles did not analyze this database.

The staff of Gunston Hall originally started this enterprise because they had no probate inventory for George Mason himself. Thus, they collected records for counties in the two states in which Mason did business. Nothing about the selection process was directly concerned with guns, so there should be no bias for or against estates with guns, except as gun ownership is related to other criteria for selection (which it probably is). These 325 estates, nonetheless, are far from a random sample. The process of selection was purposely weighted in favor of estates with food service items, particularly forks. The process was also weighted in favor of more detailed inventories, particularly ones listing items room by room. That these are highly detailed inventories is evidenced by the extremely high percentage (97%) of estates listing some goods related to lighting, such as candles, candlesticks, lanterns, and so forth.

The User's Manual for the database explains the selection process<sup>60</sup> and their division into social classes, based mostly on food service items. They classified the four social classes from "Old-Fashioned" (having no forks<sup>61</sup>) through "Decent" and "Aspiring" to "Elite" (dinner service for 20 guests).<sup>62</sup>

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<sup>59</sup>. Gunston Hall Plantation, *PROBATE INVENTORY DATABASE*, CD-ROM (2000) (325 individual inventories are available for downloading at [gunstonhall.com](http://gunstonhall.com), where you can purchase a CD-ROM of the coded database and the inventories).

<sup>60</sup>. See User's Manual, at 2 ("For further details on the criteria for inclusion see Barbara Carson, *Ambitious Appetites: Dining, Behavior, and Patterns of Consumption in Federal Washington* (Washington, D.C.: The American Institute of Architects Press, 1990, particularly pages 30-52.)").

<sup>61</sup>. Forks were important markers of social status. See generally Norbert Elias, *THE CIVILIZING PROCESS* (reprint ed. 1994).

<sup>62</sup>. The User's Manual states, at p. 2-3, 7-8: "Classifications used in the Gunston Hall Inventory Database are: . . .

The subtext of the modern historical inquiry into the frequency of gun ownership is the original meaning of the Second Amendment, which recognizes the right to bear arms. The Gunston Hall database may be relatively unimportant for determining the absolute level of gun ownership in 18<sup>th</sup> century America, though it is still relevant for determining the ownership of guns relative to other weapons.

While this database might not particularly interest cultural historians, it is interesting to intellectual and legal historians.<sup>63</sup> This database might be good for determining the experience of Constitutional framers and the prominent anti-federalists who gave rise to the Bill of Rights. The estates were selected to reflect the experience of a particular prominent politician and theorist—to reflect in part his world. Thus, to the extent that probate records can be assumed to reflect the world that at least some prominent framers walked around in, this is a good database to explore, better for that limited purpose than databases more representative of the general public. Most estates in the Gunston Hall database are from social classes below the presumably elite class of George Mason, though these lower classes in the database would have included many free white males from social classes with whom he interacted.

Overall, 71% of the Maryland and Virginia estate inventories in the Gunston Hall database listed guns (Chart 8). Fully 73% of the 304 male estates listed guns. Of the 21 female estates, 8 (38%) owned guns, higher than the 18% of 1774 female estates in the Jones database that owned guns and the one gun-owning female estate in Providence. Only 27% of the Gunston Hall estate inventories include swords, cutlasses, bayonets or other edge weapons. The odds of an estate inventory containing a gun are 6.4 times as high as the

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E: (Elite) The economic designation for inventories of the wealthiest decedents which exceed in quantity and quality all the criteria of the “Aspiring” classification. These inventories contain sufficient knives, forks, spoons, and other accouterments to serve twenty guests at a seated dinner.

A: (Aspiring) Economic designation for inventories deemed to have extensive households that include spoons, knives, and forks, as well as enough equipage to entertain and give dinner parties for ten or more people.

D: (Decent) The economic designation for inventories that include spoons, knives, and forks, but without enough equipage to seat a dinner party for ten persons. It is more likely that these people would have entertained at tea.

OF: (Old Fashioned) The economic designation for inventories that lack forks, some of which might otherwise be considered aspiring or elite.”

<sup>63</sup>. For example, one intellectual historian (Saul Cornell) thought that this was the most interesting database in the article because of the light it shed on what George Mason might have been thinking when he assumed an armed citizenry.

odds of having an edge weapon.<sup>64</sup> A quarter of the estates (25%) include an old or broken gun, but half of those also include a gun that is not listed as old or broken. Thus 59% of estates had a gun that was not listed as being old or in poor working condition.

The distribution of gun ownership by year of estate and social class is shown in Chart 9. Chart 10 displays the distribution of gun ownership for several demographic and inventory characteristics. As Chart 9 shows, in the Gunston Hall database social class is not meaningfully related to gun ownership. There are only insignificant differences between estates from the lowest social class, those with no forks (called “Old-Fashioned), and the higher social classes who had forks. There is slightly falling gun ownership from the 1750s through the early 1800s, which might reflect the relative development of Virginia and Maryland and the reduction of physical threats.<sup>65</sup>

In the Gunston Hall database, the best predictors of gun ownership are whether the decedent was male or lived in a rural area (Chart 10).<sup>66</sup> What seems important here is not how wealthy the estates were, but how detailed the inventories were. Thus, other predictors (besides rural/urban) of listing guns are whether the contents of a cellar or closet<sup>67</sup> are listed. Also slave-owning estates are more likely to have guns.

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<sup>64</sup>. The odds-ratio expressing the ratio between 71% gun ownership (2.4 to 1 odds) and 27% edge weapon ownership (.38 to 1 odds) is  $((.71/(1-.71)) / (.27/(1-.27)))$  or 6.4.

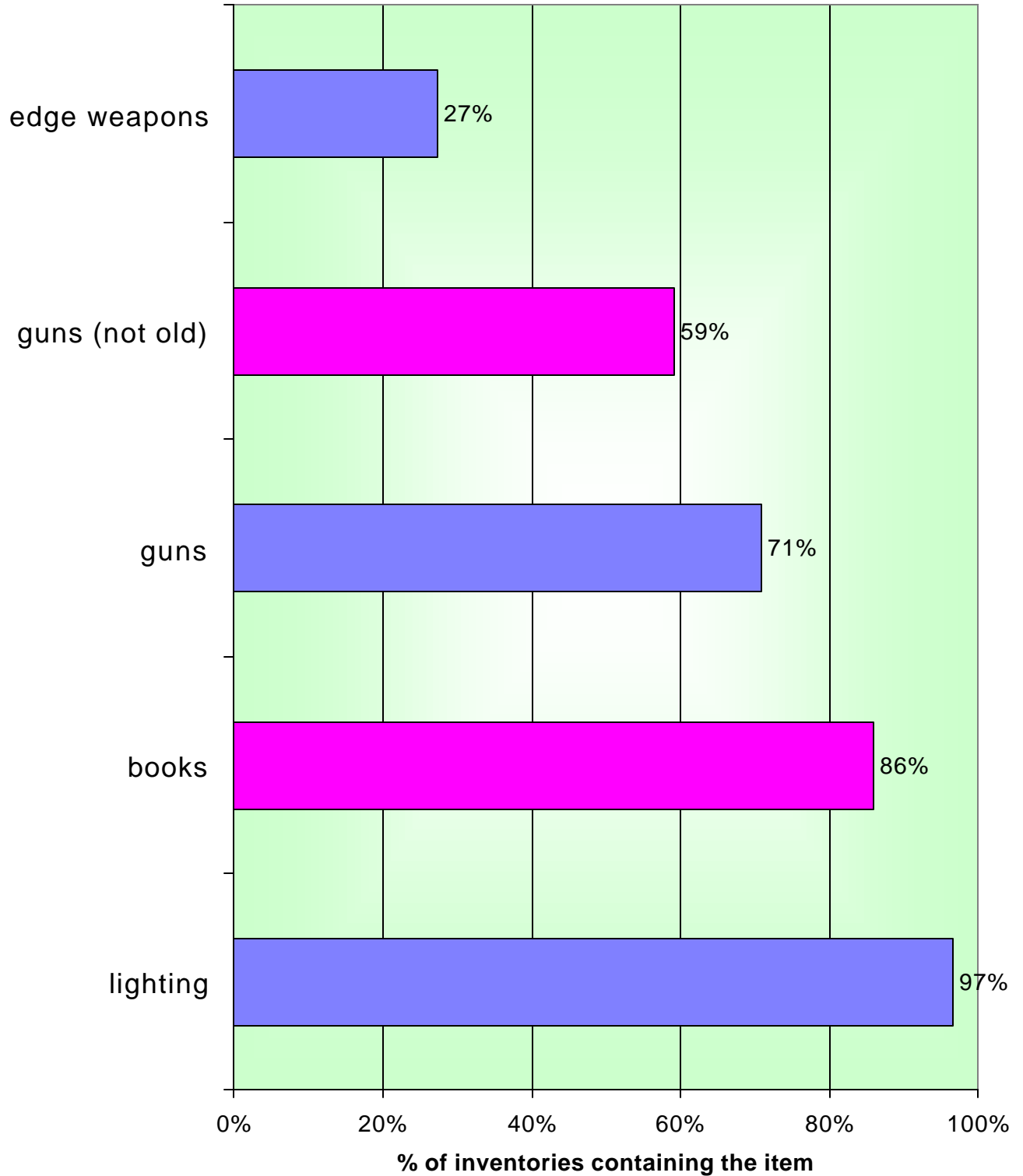
<sup>65</sup>. Both the Gunston Hall and the Providence databases show slight drops in gun ownership over time (though the latter is meaningless using the BIC criterion). Bellesiles, on the other hand, shows growing gun ownership from the 1765-1790 period through the Civil War, AA at 445. We do not have data from enough areas in enough periods to make any generalizations on whether gun ownership was growing or declining in the 18th century.

<sup>66</sup>. Although it might seem obvious that rural estates would have more guns, Bellesiles implies the opposite. See AA at 109.

<sup>67</sup>. Models with itemized closets show similar patterns to models with itemized cellars, suggesting that both variables are measuring the same thing—itemization.

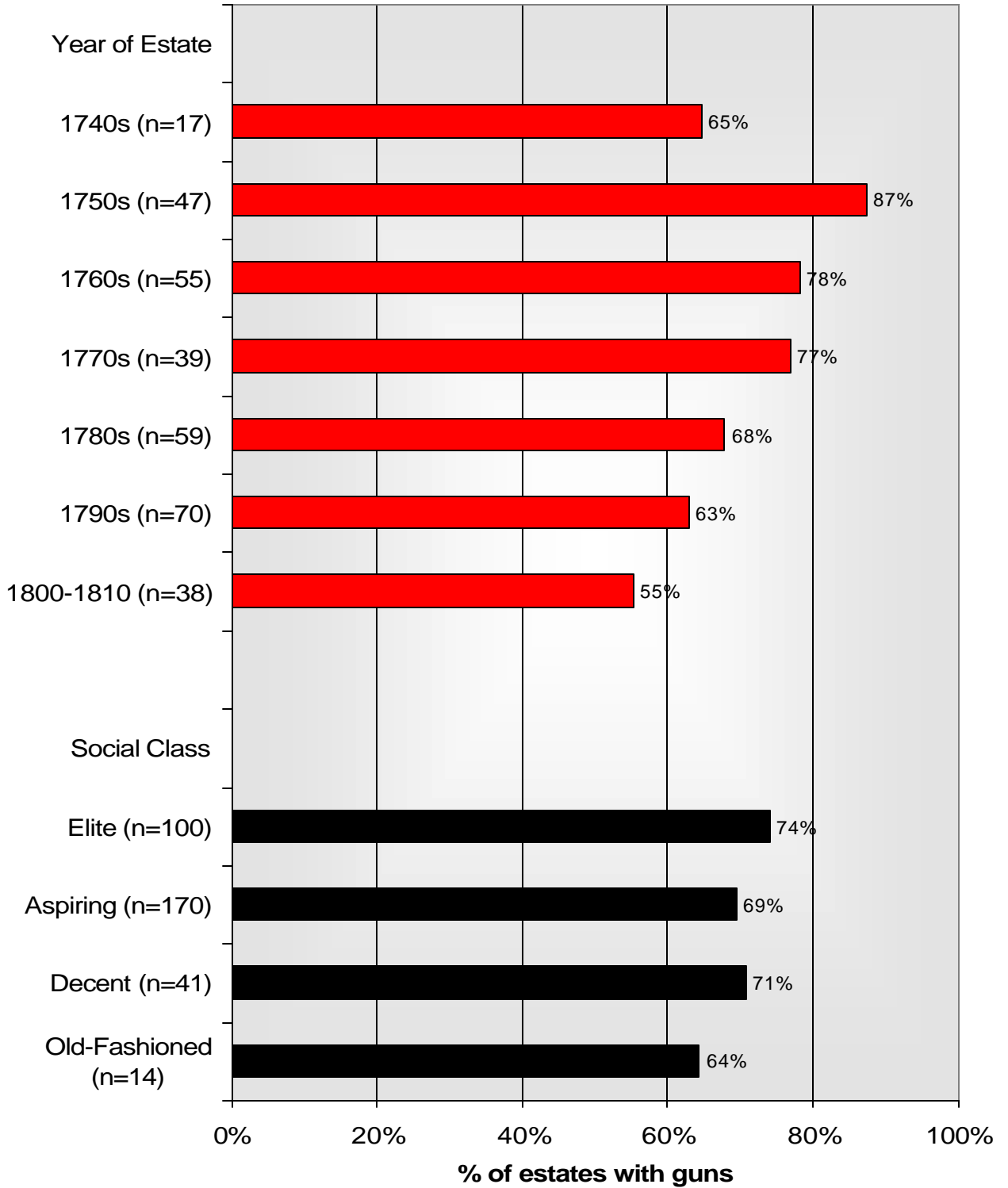
**Chart 8: Frequency of Commonly Owned Items  
in VA and MD Estates, 1740-1810**

Source: Gunston Hall Database, n=325



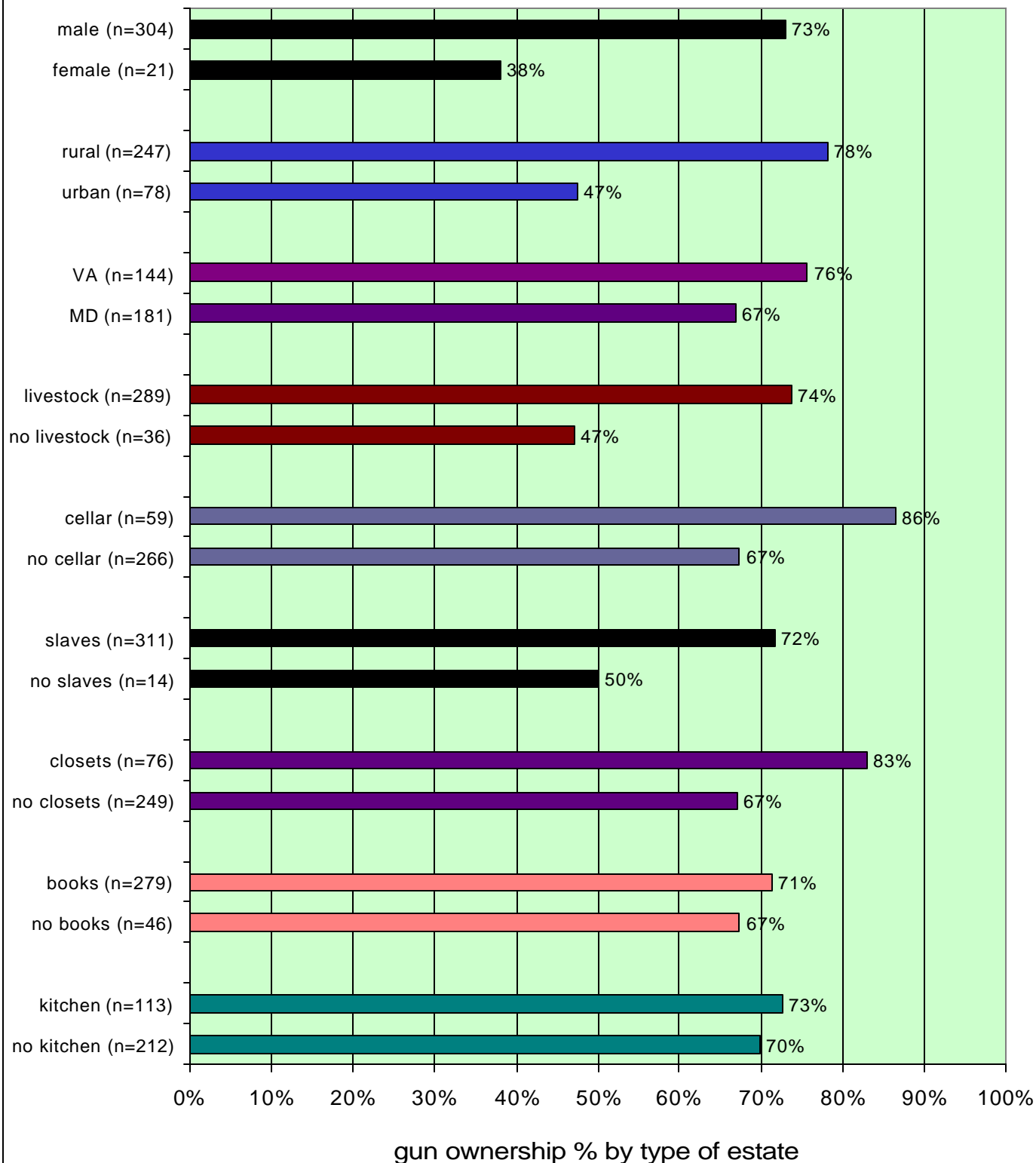
**Chart 9: The Frequency of Gun Ownership in MD and VA Estates by Year and Social Class, 1740-1810**

Gunston Hall Database, n=325



### Chart 10: The Frequency of Gun Ownership in MD and VA Estates by Various Characteristics, 1740-1810

Source: Gunston Hall Database, n=325





**Table 6**  
**Hierarchical Loglinear Modeling**  
**All Gunston Hall Estates**

Sample: N=325 (304 males and 21 females)

Dependent Variable:

Y: gun (None, Listed)

Independent Variables:

A: room by room itemization (None, Itemized by Room)

B: years (1740s,1750s,1760s,1770s,1780s,1790s,1800-10)

C: state (VA, MD)

D: gender (Male, Female)

E: rural (Urban, Rural)

F: cellar (None, Contents Listed)

Model With All 6 Main Effects (and 1 significant interaction term):

[YCA][YB][YD][YE][YF][FEDCBA]  $G^2=78.8$ , 211 df,  $p<1.00$

	Log-odds		Exponent	Exponent
	Ratio	s.d.	(Relat. Odds)	(Absol. Value)
<b>YAC</b>				
(gun x item., in VA)	1.66	.43	5.3	5.3
(gun x item., in MD)	-.94	.35	.39	2.6
(gun x state, no room)	.64	.33	1.9	1.9
(gun x state, room)	-1.95	.44	.14	7.0
<b>YB (gun x years)</b>				
(1740s x 1750s*)	1.31	.67	3.7	3.7
<b>YD (gun x female)</b>				
	-1.48	.46	.23	4.4
<b>YE (gun x rural)</b>				
	1.38	.27	4.0	4.0
<b>YF (gun x cellar)</b>				
	1.12	.40	3.1	3.1

\*other (smaller) decade-by-decade comparisons omitted from the table

Most Parsimonious Model (5 main effects and 1 interaction term):

[YCA][YB][YD][YE][YF][FEDCBA]  $G^2=95.1$ , 217 df,  $p<1.00$

	Log-odds		Exponent	Exponent
	Ratio	s.d.	(Relat. Odds)	(Absol. Value)
<b>YAC</b>				
(gun x item., in VA)	1.66	.43	5.3	5.3
(gun x item., in MD)	-.94	.35	.39	2.6
(gun x state, no item.)	.64	.33	1.9	1.9
(gun x state, item.)	-1.96	.44	.14	7.1
<b>YD (gun x female)</b>				
	-1.48	.46	.23	4.4
<b>YE (gun x rural)</b>				
	1.37	.27	3.9	3.9
<b>YF (gun x cellar)</b>				
	1.12	.40	3.1	3.1

Table 6 shows the results of hierarchical loglinear modeling. It reports on models for the entire database of 325 estates, including 21 females. Controlling for all interactions between the predictor variables, the odds of listing a gun are about 4.4 times as high<sup>68</sup> if an estate is male as when it is female, 3.9-4.0 times as high if it is a rural estate as when it is not, and 3.1 times as high if the estate has an itemized cellar as when it does not. In the Gunston Hall database, 38% of women own guns, and rural estates are much more likely to have guns than urban estates.

There was one meaningful, statistically significant interaction. As might be expected, in Virginia if the inventory itemized property room by room, there was a 5.3 times higher odds of finding a gun. Yet inexplicably, in Maryland room by room itemization actually led to 2.6 times lower odds of finding a gun in the estate. Among the variables that do not make a meaningful contribution to any of several models explored are county, social class, livestock ownership, book ownership, and decade of the estate.

## V. Arming America's Study of Guns in Probate Records

In *Arming America: The Origins of a National Gun Culture*,<sup>69</sup> Michael Bellesiles argues that America in the 1700s and early 1800s had relatively few guns, and what few guns existed were in mostly in poor working condition. Expanding on these claims, he argues that America did not have a "gun culture," notwithstanding what he acknowledges were the comments of some prominent constitutional framers. His sources are varied: contemporary accounts, probate records, gun censuses, manufacturing records, and homicide counts. *Arming America* was welcomed to the cover of the *New York Times* book review section with an enthusiastic review by Northwestern colleague and Pulitzer Prize-winner Garry Wills.<sup>70</sup> The *Philadelphia Inquirer*

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<sup>68</sup>. This is actually based on the exponent of the absolute value of the result for being female. Thus, it is approximate. More precisely, based on the model actually fit, the relative odds of female estates listing guns are only 23% as high as the odds for male estates.

<sup>69</sup>. AA.

<sup>70</sup>. Garry Wills, *Spiking the Gun Myth*, NEW YORK TIMES, s.7, at 5, col. 1 (Sept. 10, 2000).

chose it as the best nonfiction book of the year.<sup>71</sup> On April 18, 2001, Columbia University awarded *Arming America* a Bancroft Prize for history.

Yet researchers have found a large number of problems in Bellesiles' use of these sources (especially in the travel accounts, gun censuses, gunsmith counts, hunting reports, militia reports, and homicide counts), but deficiencies in these areas are not a subject of this article. The most interesting claim of *Arming America*—and the most persuasive if true—is that gun ownership was rare in early America, even among propertied males in their probate inventories. In a quick count of articles on *Arming America* in both law reviews and the popular press, before this manuscript was first publicly presented, Bellesiles' evidence from probate records was the most commonly mentioned quantitative evidence supporting his thesis.<sup>72</sup>

## 1. The Providence Claims

One run of probate records that Bellesiles cites as a source of his data is a published set of about 186<sup>73</sup> decedents' estates in colonial Providence in 1679-1729.<sup>74</sup> Even though he finds high gun ownership in Providence in this period (48%), he substantially undercounts the percentage of itemized male estates listing guns. According to our careful count, 63% of adult male estates with itemized personal property inventories had guns.

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<sup>71</sup>. Carlin Romano, *The Most Important Books of 2000*, PHILADELPHIA INQUIRER (Dec. 14, 2000) ("In nonfiction, the most important book of the year was Michael A. Bellesiles' *Arming America: The Origins of a National Gun Culture*" (Alfred A. Knopf, \$30). It accomplished the astounding scholarly feat of convincing many experts in American history that a fundamental belief about our country—that the United States began as a land in which most citizens owned guns and used them—is false.").

<sup>72</sup>. See *infra* text at notes 142-54.

<sup>73</sup>. Precisely how many decedents' estates there are depends on how you count them—that is, how much has to be in a record to count it. Nonetheless, there are *not* 186 probate records for adult males containing inventories itemizing all types of property (which is what Bellesiles says in *Arming America* that he analyzed). There are only 149 (or a few more if one uses even looser standards for itemization than we did). In a recount of the Providence records on his website in the late spring and early summer of 2001, Bellesiles' report came up with 184 inventories.

<sup>74</sup>. See PROVIDENCE RECORDS, *supra* note 4 (these records include one inventory from 1670 and no inventories from the last three years of records—1727-1729)

In the Providence probate records Bellesiles discusses in the hardback edition of his book, he has done the following:

- He claims that all 186 estates had both wills and itemized inventories when less than half did. Indeed, intestacy was common then<sup>75</sup> and was frequently noted in the records.<sup>76</sup> Thus, he counted about a hundred wills that are not there and never were.<sup>77</sup>
- He claims that he included only males in his 186 Providence estates when he apparently included 17 women.<sup>78</sup> Thus, he repeatedly counted women as men.
- He claims that most of the guns in the (approximately) 90 Providence inventories listing guns<sup>79</sup> “are evaluated as old and of poor quality”<sup>80</sup> when only about 9% of the guns are so listed.<sup>81</sup>

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<sup>75</sup>. See 3 JONES, *supra* note 2, at 1933 (an unweighted 494 of the 919 decedents died intestate); Alice Hanson Jones, *Estimating Wealth of the Living from a Probate Sample*, 13 J. OF INTERDISCIPLINARY HISTORY 273, 278 (1982) (“There is not a will for every inventory; inventories were made for many intestates as well as testates.”).

<sup>76</sup>. Less than half of the Providence inventories were accompanied by wills. See, e.g., most of the first few estates in volume 16 of PROVIDENCE RECORDS, *supra* note 4: ID. at 12 (“John Mathewson . . . Dyed Intestate”); ID. at 14 (“Stephen Arnold . . . dyed Intestate”); ID. at 17 (“James Appleby . . . Died Intestate”); ID. at 28 (“Jonathan Knight . . . Dyed Intestate”); ID. at 31 (“Thomas Field . . . Dyed Intestate”); ID. at 33 (“Richard Lewes . . . Dyed Intestate”). For other estates of people dying intestate, see, e.g., 7 PROVIDENCE RECORDS, *supra* note 4, at 32, 53, 45, 65, 69, 106, 109, 112, 139, 142, 145, 152, 157, 179, 205; 16 ID. at 9, 37, 45, 62, 63, 73, 92, 97, 120, 121, 124, 156, 159, 167, 175, 197, 199, 228, 241, 246, 248, 279, 286, 312, 316, 332, 343, 358, 366, 373, 377, 380, 425, 428, 430, 441, 446, 448, 457, 462, 467, 468).

<sup>77</sup>. Only about 86 estates even mention both a will and an inventory in the indices to the three volumes. Both wills and itemized inventories appear in about 81 estates, of which 8 are female, leaving about 73 estates (out of 149) with both wills and male itemized inventories. Whatever the count, it is fewer than 90 estates, not 186, as Bellesiles contends in *Arming America*.

<sup>78</sup>. See *supra* at notes 32-33.

<sup>79</sup>. Our count is 94 itemized male inventories listing guns. There is another gun in a male estate without a sufficiently itemized inventory and a female estate with 5 guns (thus 96 estates had guns). Our count of 94 estates includes 2 estates where the only weapons are “armes,” valued high enough to be reasonably likely to include guns. Then, as in the Second Amendment, arms often (but not always) referred to firearms; further, edge weapons are less common than guns. One estate included a carbine (indexed as a carbine, but spelled unconventionally), which referred to a short rifle or a musket.

<sup>80</sup>. AA at 109.

- By counting female estates in his male estate totals and counting estates with no itemized personal property inventories as having inventories, and double-counting estates with two inventories,<sup>82</sup> he undercounted the percentage of guns in male estates with itemized personal property inventories.
- He claims that “a great many inventories”<sup>83</sup> list “one of ye Queens Armes,” another name for a military weapon, when only one inventory did.<sup>84</sup>

In all, Bellesiles misclassified over 60% of the estates on these criteria that he thought important enough to mention. It is hard to see how Bellesiles could have counted so many wills that are not there. Bellesiles’ mistakes go, not only to trivialities, but to the heart of the matter—the frequency and condition of guns and the sorts of people who owned them.<sup>85</sup>

It would take anyone less than an hour in a good university library to be reasonably certain that several of *Arming America’s* claims about probate records were false. For example, Bellesiles asserts, “These 186 [Providence] probate inventories from 1680 to 1730 are all for property-owning adult males

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81. Here we are referring to the number of guns, not the number of estates with guns. For most purposes, we count the number of estates with guns, not the number of guns. The count of the number of guns is greatly hampered because some inventories list “guns” without enumerating how many. Does this refer to 2 guns, 3 guns, or what? We counted them as 2 guns and suspect that Bellesiles did as well (but do not know). Also, it is unclear how Bellesiles counted gun parts. We counted a “gun without a lock” as a gun and a “gun lock” or a “gun barrel” not as a gun. Although Bellesiles’ count of 90 estates with guns is close to ours, Bellesiles’ gun counts in those 90 estates appear too small to have included gun parts. If we had included gun parts in our counts, the percentage of estates with old or broken guns would have been a few percentage points higher, but nothing even close to the majority reported by Bellesiles. Further, every estate with a gun part also included a gun.

82. This overcounting comes despite the claim that immediately precedes his Providence counts, “It is vital to emphasize that these probate inventories scrupulously recorded every item in an estate, from broken glasses to speculative land titles to which the deceased claimed title.” AA at 109.

83. AA at 109 (Bellesiles claims: “A great many inventories explicitly list ‘one of ye Queens armes,’ which officially still belonged to the government.”).

84. 6 PROVIDENCE RECORDS, *supra* note 4, at 188 (O. Browne). Browne’s estate also has 3 other guns.

85. The only significant thing he got right about Providence is that there are about 90 estates with guns in the records. AA at 109.

. . . ."<sup>86</sup> Yet in volume 16 of the Providence Records alone are the inventories of Mary Borden, Sarah Clemance, Abigail Hopkins, Joanna Inman, Mary Inman, Tabitha Inman, Ann Lewes, Rachal Potter, Elizabeth Towers, Hannah Wailes, Anna Whipple, Susanna Whipple, Mary Whiteman, and Lydia Williams.<sup>87</sup> Bellesiles counts all these women in his total of "186 men."<sup>88</sup>

## 2. Arming America's National Claims— The 1765-90 Data

The Providence data are only part of *Arming America's* argument about probate records. The book's much more dramatic claim is made in its Table 1: it asserts that probate inventories in the 1765-1790 period had only 14.7% gun ownership nationally and only 14.2% ownership in frontier counties.<sup>89</sup> Bellesiles also claims that 53% of guns in 1200 frontier probate inventories during the 1765-1790 period are listed as being old or in poor condition<sup>90</sup> and that rifles are extremely rare.<sup>91</sup> Bellesiles concludes that guns rose to just 17% of probate records in 1819-21 and 20.7% in 1830-32.<sup>92</sup> He argues that, as the gun culture begins to take hold, guns in probate records rise to 27.6% in 1849-50 and 32.5% in 1858-59.<sup>93</sup>

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86. AA at 109.

87. 16 PROVIDENCE RECORDS, *supra* note 4, at 60, 70, 146, 165, 174, 236, 238, 278, 341, 346, 370, 410, 420, 429. Without including all these female estates, he cannot get even close to 186 personal property inventories in the Providence Records.

88. AA at 109-10.

89. AA at 445.

90. AA at 13, 266-67 (this statement is false; a preliminary analysis of complete data from 4 of his 6 frontier counties and partial data from the other 2 counties suggests that fewer than 15% of 1765-90 frontier estates list old or broken guns).

91. AA at 13, 266-67 (mistakenly claims that there are only 3 rifles in 1200 records in frontier counties 1765-90). In fact, we have found many more than 3 rifles in just a few of those years in Washington and Westmoreland County, PA, 2 of the 6 frontier counties in his sample. See 1 JONES, *supra* note 2 (Westmoreland County inventories); Washington County (Pennsylvania) Recorder of Deeds, *Inventories of Estates (1776-1781) and Record of Marks, Receipts, and Certificates of Freedom (1789-1790)* (Family History Library US/CAN Film 1449139 Item 1).

92. ID.

93. ID.

Besides the Providence data, Bellesiles' main probate data are in his Table 1 in both *Arming America*<sup>94</sup> and in his 1996 *Journal of American History* article.<sup>95</sup> Here are the first four columns of identical data from Table 1 in both the 1996 article and the book:

**Table One**  
**Percentage of Probate Inventories Listing Firearms**

	1765-90	1808-11	1819-21	1830-32
Frontier	14.2	15.8	16.9	20.4
Northern coast:				
urban	16.1	16.6	17.3	20.8
rural	14.9	13.1	13.8	14.3
South	18.3	17.6	20.2	21.6
NATIONAL				
AVERAGE:	14.7	16.1	17.0	20.7

Bellesiles presents no regional sample sizes or cell counts for this table—and has provided none after repeated requests. To work with multiple samples and not disclose sample sizes is unusual in academics. In text,<sup>96</sup> he gives a count of 1200 inventories for the first cell—frontier inventories 1765-90.<sup>97</sup> In the first column—the 1765-90 period—note that only the frontier region (14.2% of inventories list guns) is below the “National Average” of 14.7%.

Accepting Bellesiles' regional averages in the first column above (1765-90) and known minimum sample sizes, his 14.7% national average is mathematically impossible. Given the 1200 inventories he reports<sup>98</sup> for the frontier's 14.2% mean, any number of Southern inventories greater than 185

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<sup>94</sup>. AA at 445.

<sup>95</sup>. Michael A. Bellesiles, *The Origins of Gun Culture in the United States, 1760-1865*, 83 J. OF AMERICAN HISTORY 425, 428 (1996).

<sup>96</sup>. AA at 266-67.

<sup>97</sup>. AA at 445. ID. at 13, 266-67. He discloses that all these frontier counties in the 1765-90 were in western Pennsylvania and northern New England. Only 2 Pennsylvania and 4 Vermont counties fit this description.

<sup>98</sup>. AA at 266-67.

at the South's mean of 18.3% puts the national mean above the 14.7% Bellesiles reports.<sup>99</sup>

It is a simple sixth-grade arithmetic problem of finding a mean:

$$\frac{((N^{\text{frontier}} * 14.2\%) + (N^{\text{south}} * 18.3\%) + (N^{\text{no.-urban}} * 16.1\%) + (N^{\text{no.-rural}} * 14.9\%))}{N^{\text{total}}} = 14.7\%$$

Plugging in just the 1200 frontier inventories and 186 Southern inventories, the equation yields a mean above 14.7%:

$$\frac{((1200 * 14.2\%) + (186 * 18.3\%) + (N^{\text{no.-urban}} * 16.1\%) + (N^{\text{no.-rural}} * 14.9\%))}{N^{\text{total}}} > 14.7\%$$

Or plug in just the 1200 frontier inventories and 489 Northern urban inventories; the equation again yields a mean above 14.7%:

$$\frac{((1200 * 14.2\%) + (N^{\text{south}} * 18.3\%) + (489 * 16.1\%) + (N^{\text{no.-rural}} * 14.9\%))}{N^{\text{total}}} > 14.7\%$$

Adding any estates from the other regions above the mean only makes it easier to falsify his data.

So how many surviving inventories are there in the 26 years (1765-90) supposedly in Bellesiles' sample? Philadelphia alone has well over 4,000 estates. Remember, in *Arming America* Bellesiles claimed to have counted over 30 counties for 26 years.<sup>100</sup> There should be many more estates in just

<sup>99</sup>. We also did counts with the most extreme rounding in Bellesiles' favor (1249 frontier inventories rounded down to 1200; 14.15001% frontier guns rounded up to 14.2%, etc.). With extreme rounding, any number of Southern inventories greater than 201 would make the 14.7% mean impossible. Further, with extreme rounding any number of Northern urban inventories greater than 611 would make the 14.7% mean impossible, even if there were no Southern inventories.

Bellesiles says that his method was just to do simple counts; he says nothing about the national mean being population weighted, which would be almost impossible with the method he used—just a running tally. Since the 6 frontier counties Bellesiles examines are small compared to the rest of the country, a population-weighted or wealth-weighted national mean would only make things worse for his 14.7% mean.

<sup>100</sup>. In a letter to the *Wall Street Journal* in April 2001, Bellesiles claimed for the first time that he excluded the years 1774-75 because there were too many guns that he wanted to exclude because of supposed evidence that some were government-owned. Michael Bellesiles, Letters to the Editor, Arms and the Ancestors, WALL STREET JOURNAL, April 24, 2001, at A25. Scholars call this "the suppression of contrary evidence." This claim is in direct contradiction to his 1996 claim to have included Alice Hanson Jones'



one year of probate records in his sample counties than would be needed to falsify his 14.7% mean. His 16 Southern counties alone should generate more than 300 estates a year, falsifying his mean in less than one year's data. Philadelphia (a Northern urban county) averages roughly 160 inventories a year, thus falsifying his 14.7% mean in just three years of data from only one county. His two Maryland counties (Anne Arundel and Queene Anne) average about 70 inventories a year in the late 1760s, thus falsifying his 14.7% national mean in fewer than 3 years with just the data from these two counties. This is not speculation; we have counted the number of inventories (215) in the two Maryland counties in the 3 years 1765-67. We can report conclusively that the 14.7% national mean that Bellesiles has twice published<sup>101</sup> is false (because it is mathematically impossible given the regional averages and the more than 214 Maryland estates 1765-67).

There is another way to falsify *Arming America's* 14.7% mean using simple arithmetic. If there are at least 34 Southern inventories with guns, there must be at least 186 Southern estates to generate a mean of 18.3% in the South ( $34 \div 186 = 18.3\%$ ). Yet (as we have shown) to support the 14.7% national mean, there must be fewer than 186 estates from the South. It is impossible therefore to have simultaneously 34 or more Southern estates with guns, 18.3% guns in the South, and 185 or fewer Southern estates with guns.

In other words, all we have to do to falsify the 14.7% national mean is to discover 34 Southern inventories with guns in his sample. Since there are roughly 200 Southern inventories with guns in Bellesiles' sample each year, this is an easy task. It would take about two months of data (out of a supposed 26 years of data for 16 counties) to find the 34 Southern inventories with guns needed to falsify Bellesiles' 14.7% mean. In a recorded interview with a reporter in April 2001, Bellesiles disclosed that among the years he counted were 1765-66.<sup>102</sup> There are more than 100 estates with guns in just two years (1765-66) in one of his Southern counties—Charleston, S.C. Indeed, there are more than 34 estates with guns in just the first six months of 1765 Charleston records. His national mean is thus easily falsified by looking at

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data (from 1773-75) in the very percentages reprinted in *Arming America*. Nor did he disclose this restriction of his published sample set in response to our replication requests in August and September, 2000. On the contrary, he claimed, "My sample set is listed in the note on table one," which presents the sample as "1765-90." Correspondence from Michael Bellesiles to James Lindgren, Sept. 19, 2000.

<sup>101</sup>. AA at 445, Table 1; Michael A. Bellesiles, *The Origins of Gun Culture in the United States, 1760-1865*, 83 J. OF AMERICAN HISTORY 425, 428 (1996).

<sup>102</sup>. Taped interview of Michael Bellesiles by John Lofton, April 18, 2001.

just six months of data in one South Carolina county in his sample, given the regional means he reports and the 1200 frontier estates.

One can be absolutely certain that his data are false because they are mathematically impossible by two related methods. No fancy computations are involved—just sixth-grade arithmetic, finding an overall mean from group means. There are no regional sample sizes for 1765-90 that Bellesiles could report that would support his national average, based on what he said he counted in *Arming America*, or in his 1996 *Journal of American History* article,<sup>103</sup> or in an April 2001 press interview.<sup>104</sup> If his regional means are true, his claim of a 14.7% national average is false with absolute mathematical certainty.

For those having trouble with this example, an analogy might help. Suppose that someone claims that he has a 3.9 GPA with 30 courses (and a normal grade scale without intermediate grades). You check 8 grades and they are all Bs. Without checking any other grades, you can be mathematically certain that the 3.9 GPA is too high. Even with rounding in its favor, *Arming America's* main probate data can be falsified if there are at least 412 Northern Urban estates, or 202 Southern estates, or 37 Southern estates with guns in his 1765-90 sample. In fact, there are thousands of each type of case.

Without a database, without counts, mostly without sources, Bellesiles has not done a “study” of probate records in the conventional sense. Our futile efforts to get Bellesiles to release his data and sample sizes resulted in several friendly responses, some quite lengthy, describing how he kept no database, how he recorded his data as tick marks on legal pads, and how the sheets got flooded and were in his attic still wet months later.<sup>105</sup>

### 3. *Arming America's* San Francisco Probate Data

We have analyzed part of Bellesiles' 19<sup>th</sup> century probate data and are finding the same disturbing pattern as for the prior two centuries. In particular, in his Table 1<sup>106</sup> Bellesiles reports gun counts for forty counties,

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103. Michael A. Bellesiles, *The Origins of Gun Culture in the United States, 1760-1865*, 83 J. OF AMERICAN HISTORY 425, 428 (1996).

104. Taped interview of Michael Bellesiles by John Lofton, April 18, 2001 (Bellesiles claims that he counted 1765-66).

105. Correspondence from Michael Bellesiles to James Lindgren, Sept. 19, 2000.

106. See text and notes *supra* at notes 89-105.

including San Francisco County. In correspondence with us<sup>107</sup> and in a report on his website from February through early September, Bellesiles added the detail of having examined the San Francisco probate records at the San Francisco Superior Court. Repeated inquiries to the San Francisco Superior Court have all yielded a version of the same answer: they do not have the probate records that Bellesiles claimed to count there because they were destroyed in the 1906 San Francisco earthquake and fire.

Representatives of the History Center at the San Francisco Public Library, the Bancroft Library of the University of California, the Sutro Library, the Family History Center Libraries, and the California Genealogical Society agree that they know of no surviving runs of San Francisco probate inventories for the years Bellesiles claimed to have counted: 1849-50 and 1858-59—because (as most note) they were destroyed in 1906.<sup>108</sup> Kathy Beals, an author who has written a book on pre-1906 San Francisco probate records,<sup>109</sup> reports that a list of the names of those who left wills from 1850s exists, but no known runs of inventories or property lists.<sup>110</sup> Moreover, a few scraps of other probate records exist from 1880 through 1905, but nothing of substance before 1880.<sup>111</sup> Rick Sherman, the Research Director of the California Genealogical Society in Oakland, CA, confirmed the unanimous belief that such records do not exist. About Bellesiles' claim to have read San Francisco inventories from 1849-50 and 1858-59, Sherman wrote: "If this involves an out-of-body experience, I'd like to know how to pull it off."<sup>112</sup> Bellesiles has repeatedly stated that he used only complete runs of inventories, not a few inventories discovered here or there, as Alice Hanson Jones did for New York.<sup>113</sup>

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107. In correspondence with us last November (Nov. 30, 2000), Michael Bellesiles wrote that he examined the records for San Francisco at the San Francisco Superior Court.

108. Telephone interviews with various librarians at the History Center at the San Francisco Public Library, the Bancroft Library of the University of California, the Sutro Library, and the Family History Center Libraries, July 7, 2001 through Sept. 10, 2001; correspondence and telephone interviews with Rick Sherman of the California Genealogical Society, July 9, 2001 through Sept. 7, 2001.

109. Kathy Beals, *San Francisco Probate Index, 1880-1906, A Partial Reconstruction* (1996).

110. Correspondence with Kathy Beals, July 11, 2001.

111. *Id.*

112. Correspondence with Rick Sherman, July 9, 2001.

113. See *Odyssey* (with Gretchen Helfrich), WBEZ public radio, January 16, 2001 (audio available online at [www.WBEZ.org](http://www.WBEZ.org)); H-NET/H-OIEAHC, Jan. 9, 2001 (post from Michael A. Bellesiles to a history discussion list).

In January 2002, Michael Bellesiles announced that he had rediscovered the long-lost San Francisco probate records at the “California History Center” in Martinez, CA:

I was not hallucinating when I read the San Francisco probate files. They are housed in the California History Center. (Complicating matters is the fact that the center, where I read these files in 1993, moved last year, and it does not have a web site.) . . . I have sent photocopies (just the first few pages of three files, each of which contained dozens of pages) to several people, including [reporters] . . . . Additionally, the staff appeared unaware that they had any probate materials in their collection, though they actually have a great deal. But then my contention, like that of every historian I know, is that one must actually go to the archives in order to properly discover and examine historical documents.<sup>114</sup>

I received copies of 26 pages of supposed San Francisco records distributed by Bellesiles. None of them are records from San Francisco probate estates; all are from Contra Costa County estates. The History Center in Martinez released a statement that included these assertions about the supposed San Francisco estates:

Based on checking his 26 pages of evidence against our records, we have reached the following conclusions, which are of course, subject to revision based on further investigation:

1. Every identifiable estate in the 26 pages was a Contra Costa County estate, not a San Francisco County estate.
2. Every identifiable decedent in the 26 pages was a Contra Costa County resident, not a San Francisco County resident.
3. Every judge who signed orders in the 26 pages was a Contra Costa County judge, not a San Francisco County judge.

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<sup>114</sup>. Michael A. Bellesiles, *Bellesiles Further Responds to Critics, Says He Has Located Missing San Francisco Probate Records*, Emory Academic Exchange, Jan. 22, 2002 ([http://www.emory.edu/ACAD\\_EXCHANGE/2002/decjan/whatsnew.html](http://www.emory.edu/ACAD_EXCHANGE/2002/decjan/whatsnew.html)).

4. The only clerk who signed an order in the 26 pages signed as "Clerk" of the "Probate Court Contra Costa County."

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From what we know, it would appear to be impossible to count guns in San Francisco probate inventories from 1849-50 or 1858-59 in our collection, since we have no such inventories.

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Further, Bellesiles mistakenly calls us the "California History Center," which would suggest that we have records outside Contra Costa County. We are instead the Contra Costa County History Center, and our official name is the Contra Costa County Historical Society History Center, as is evident on our web site. Contrary to Bellesiles claim that we do not have a web site, we have had one since 1998.

Last, we cannot confirm that Professor Bellesiles did substantial research in our collection in 1993 (as he claims) or at any other time before his visit in January, 2002. We do not remember him visiting our collection before his recent visit. We have searched our log books and invoices for the years 1993, 1994, 1995 and 1996 and find no record for research fees or photocopies. Further, we are not cited or acknowledged in his book, something we always expect and receive. During Professor Bellesiles recent visit he did not reveal his primary reason for the visit. He did not tell us that he had been in our archives before and now wished to confirm aspects of his previous research. He did not say he was the author of a book and needed some help confirming his previous work. Had he done so we would have immediately begun a search of our invoices and log books.<sup>115</sup>

Apparently embarrassed by Bellesiles' actions, Jamie Melton, acting Chair of the History Department at Emory University, sent a letter of apology to the Contra Costa County History Center. The complete sets of San Francisco records that Bellesiles claimed to have read remain undiscovered, believed to have been consumed by fire nearly a century ago.

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<sup>115</sup>. Betty Maffei (Director), Notes on Supposed San Francisco Records in the Contra Costa County Historical Society History Center, Contra Costa County Historical Society History Center, Jan. 27, 2002 (<http://www.cocohistory.com/frm-news.html>).

#### 4. Confirmations of Our Criticisms

In *Reviews in American History*, Robert Churchill did his own independent count of the Jones database, coming up with counts very similar to ours.<sup>116</sup> Randolph Roth has recounted our counts of guns in Jones' Southern estates, confirming our counts exactly.<sup>117</sup> While Churchill also casually checked and confirmed our Providence claims,<sup>118</sup> Roth recounted our Providence data and confirmed that exactly.<sup>119</sup> Roth also confirmed our mathematical impossibility argument and in the *William & Mary Quarterly*, recounted our data in Vermont, again confirming it exactly.<sup>120</sup> In Vermont (1770-90) we find 40% of the estates listing guns, while Bellesiles in a report on his website lists only 14% guns. In his Vermont study, Bellesiles changes the condition of guns to make them appear to be in worse condition than they were and misses most of the guns listed. In Windsor County, Vermont, Bellesiles misses all 26 gun estates. Overall, Bellesiles' error rate in Vermont is over 60%. When Bellesiles wrote Roth, asking for his help, Roth offered to check Bellesiles' Vermont data against the originals. Bellesiles declined to supply his data. As this article goes to press, Bellesiles is still refusing to release his data from either Providence or Vermont, both jurisdictions whose data he discusses in *Arming America* and has recounted.

One oddity about the dispute over Bellesiles' probate data is that our main claims have never been specifically disputed by Bellesiles or anyone else; he has made only vague general denials that his critics are wrong. On the contrary, Bellesiles himself has twice stated to the press that our counts are accurate for the main published sources we used in this article.<sup>121</sup> As for our counts of the Jones database, he repeated this admission that our numbers are accurate counts of the source.<sup>122</sup>

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<sup>116</sup>. See Robert H. Churchill, *Guns and the Politics of History*, 29 *Reviews in American History* 329, 329-337 (2001).

<sup>117</sup>. See Randolph Roth, *Guns, Gun Culture, and Homicide: The Relationship between Firearms, the Uses of Firearms, and Interpersonal Violence*, *William & Mary Quarterly* (forthcoming, Jan. 2002).

<sup>118</sup>. See Churchill, *supra* note 116.

<sup>119</sup>. See Roth, *supra* note 117.

<sup>120</sup>. See *id.*

<sup>121</sup>. See Odyssey (with Gretchen Helfrich), WBEZ public radio, January 16, 2001 (audio available online at [www.WBEZ.org](http://www.WBEZ.org)); taped interview of Michael Bellesiles with reporter John Lofton, April 18, 2001.

<sup>122</sup>. See Odyssey, *supra* note 121. The only arguments that Bellesiles has "refuted" are ones that he previously made himself. For example, he recanted his published claim to have used the Jones database; partly recanted his published claim that

No one has tried to show that Bellesiles' 1765-90 national mean of 14.7% of estates with guns is mathematically possible. Bellesiles has never commented on this issue except to say that he doesn't understand it. Nor has anyone ever disputed any of our main claims about his miscount of the earlier Providence data (i.e., he counted about a hundred wills that never existed, repeatedly counted women as men, and claimed that the inventories evaluated most guns as old or broken when fewer than 10% were so listed).

If Bellesiles had discovered any significant mistakes in our discussion of Providence, it is likely that he would have pointed them out, since he posted a partial report of his recent recount of the Providence data on his website in May 2001 and in the recent paperback edition back off the claims we challenge here. He admits no errors, but provides information directly supporting our claims that only a small percentage of Providence gun estates are listed as old or broken (not "more than half" of the guns as he claims in *Arming America*<sup>123</sup>), that only one estate lists a Queen's Arm (not a "great many",<sup>124</sup>), and that edge weapons are relatively less common than guns. He is entirely silent about the rest of our claims and still has failed to comply with our November 2000 request for a list of the Providence cases that he used to determine his denominator.

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his sample set was the 1765-90 period (saying now that he excluded the 1774-75 years); recanted his twice-written claim to have done most of his probate research on microfilm in one federal depository library in Georgia (rather than with paper records in 30 or more county or state archives around the country); and recanted his claim to have counted San Francisco records in the Superior Court in San Francisco. Michael Bellesiles, Letters to the Editor, *Arms and the Ancestors*, WALL STREET JOURNAL, April 24, 2001, at A25. Each recantation was preceded by our reports of discrepancies between his prior claims and the evidence in those sources.

On whether he used the published volumes of Providence records, he has twice written clearly that he did, then suggested on public radio that he didn't, and recently apparently conceded that he did by using the published volumes for recounting those records. See *Arming America* at 485 n.133 ("This data is drawn from Horatio Rogers et al., eds., *The Early Records of the Town of Providence*, 21 vols. (Providence, RI, 1892-1915), vols. 6, 7, 16."); Correspondence from Michael Bellesiles to James Lindgren, Nov. 30, 2000 ("Finally, I am sorry to hear that you come up with different numbers from Horatio Rogers, et al., eds., *The Early Records of the Town of Providence* (21 vols. Providence, R.I., 1892-1915). I used these books at the Huntington Library [in California] six years ago and have not yet come across my notes."); *Odyssey*, *supra*.

123. AA at 109.

124. AA at 109 (Bellesiles claimed, "A great many inventories explicitly list "one of ye Queens armes," which officially still belonged to the government.")

## 5. Views on the Completeness of Probate Records

Bellesiles is virtually alone among historians who work with probate records in thinking that they are more or less complete:

It is vital to emphasize that these probate inventories scrupulously recorded every item in an estate, from broken glasses to speculative land titles to which the deceased claimed title, including those that had already passed on as bequests before death.<sup>125</sup>

Probate records list every piece of personal property, from acreage to broken cups. . . . Obviously guns could have been passed on to heirs before the death of the original owner. Yet wills generally mention previous bequests, even of minor items, and only four mentioned firearms.<sup>126</sup>

Some inventories are more meticulous than others, though they all reported each and every object, piece of property, debt, and credit belonging to the deceased.<sup>127</sup>

In response to critics of his extreme position on the completeness of probate inventories, Bellesiles argues:

One critic explained the paucity of firearms in probate inventories by stating that “it is well known that the inventory of an estate is what is left after family members pick over the items.” Maybe that is the way people behave in his family, but it was and remains highly illegal to ransack an estate before a court-appointed executor can conduct an inventory. Anyone who works with the probate court records from this early, perhaps more honest, period knows that exact reference was made to every item, no

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<sup>125</sup>. AA at 109. In *Arming America*, as you can see from the quotations in the text, he raises few hints that probate inventories are not complete. There is an eloquent general comment about the limitations in using quantitative records in AA at 262.

<sup>126</sup>. AA at 13.

<sup>127</sup>. AA at 266 (as this quotation suggests, this discussion in his book includes some qualifications about probate inventories, but they appear to refer to how meticulously the inventories describe the condition of the goods, not the existence of goods).



matter how trivial, that has been passed on to a friend or family member before the death of the testator.<sup>128</sup>

The *New York Times* described a similar response to a critic of Bellesiles' heavy reliance on the completeness of probate inventories:

As for Mr. Kleck's criticism, Mr. Bellesiles said, the probate records he examined appear to record every bequest and gift of value, including those made during the life of the deceased.<sup>129</sup>

Commenting on his public exchange with NRA President Charlton Heston, Bellesiles told *Salon Magazine*:

When someone died, every single item owned—everything, even broken things—was recorded. Guns had to be listed. So unless Charlton Heston can come up with evidence that they made an exception for guns, he should keep quiet. . . . There was actually greater value placed on recording firearms than any other single item.<sup>130</sup>

Bellesiles is mistaken.<sup>131</sup> First, land (or “acreage”) was so rarely included in inventories in the South and Middle Colonies that some experts claim that it was almost never included.<sup>132</sup> The general absence of land from inventories in the South and Middle Colonies has been widely noted by historians<sup>133</sup> and should be obvious to anyone who has read a substantial number of inventories.

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128. AA at 484-85 n.132.

129. Anthony Ramirez, *The Nation: The Lock and Load Myth; A Disarming Heritage*, NEW YORK TIMES (April 23, 2000), s.4, at 3, col. 1.

130. *Salon Magazine*.

131. His misuse of the words “personal property” and “bequests” are not significant to our inquiry. The only significant qualification he makes is one about source material generally (AA at 262): “Unarguably we can never be certain how accurate or thorough are any of the records upon which we draw, no matter what the agency or its province and level of authority.” When challenged specifically on the completeness of probate records, however, Bellesiles responded with the words, quoted in text *supra* at note 128.

132. Jones, *Estimating Wealth*, *supra* note 8, at 278 (“Real estate is not shown in the inventories of the Middle Colonies or the South.”).

133. See *id.*; Peter H. Lindert, *An Algorithm for Probate Sampling*, 11 J. OF INTERDISCIPLINARY HISTORY 649, 657 (1981).

Second, as noted earlier, inventories are far from complete lists of property owned at death.<sup>134</sup> Again, this should be obvious to anyone who has read a substantial number of inventories.

Third, although inventories occasionally list assets no longer in the estate, there is no reason to suppose that inventories or wills mention even a substantial percentage of lifetime gifts, let alone most of them. Bellesiles offers no support for his odd supposition. Most inventories do not even list all assets in an estate; why would they list most of the assets no longer in an estate? Similarly, most wills do not even itemize all the assets being conveyed by will, why would they list most of the lifetime gifts given before making the will? Bellesiles offers no support for his farfetched ideas about what inventories and wills contain.

As Peter Lindert noted:

Faced with the impressive detail of many inventories, one might be tempted to think that decedents' assets and liabilities have been well covered. They have not. Not only is real estate missing from most inventories, but there is also good evidence that the appraisers missed or misleadingly labeled significant parts of personal estate (i.e. total estate minus land and buildings) and most debts owed by the deceased.<sup>135</sup>

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<sup>134</sup>. See, e.g., See Anna Hawley, *The Meaning of Absence: Household Inventories in Surry County, Virginia, 1690-1715*, 28, in Peter Benes, ed., *EARLY AMERICAN PROBATE INVENTORIES, DUBLIN SEMINAR FOR NEW ENGLAND FOLKLORE: ANNUAL PROCEEDINGS 1987*; Jones, *Estimating Wealth*, *supra* note 8, at 280 (1982); Lois Green Carr & Lorena S. Walsh, *Inventories and the Analysis of Wealth and Consumption Patterns in St. Mary's County, Maryland, 1658-1777*, 13 *HISTORICAL METHODS* 81 (1980); Daniel Scott Smith, *Underregistration and Bias in Probate Records: An Analysis of Data From Eighteenth Century Hingham, Massachusetts*, 32 *WM. & MARY QUARTERLY* 100 (1975); Ross W. Beales, Jr., *Literacy and Reading in Eighteenth-Century Westborough, Massachusetts*, in Benes, *supra*; Bruce C. Daniels, *Probate Court Inventories and Colonial American History: Historiography, Problems, and Results*, 9 *SOCIAL HISTORY* 387 (1976); Lindert, *supra* note 8; Gary B. Nash, *Urban Wealth and Poverty in Pre-Revolutionary America*, 6 *J. OF INTERDISCIPLINARY HISTORY* 545 (1976); Price, *supra* note 7, at 701; Kevin M. Sweeney, *Using Tax Lists to Detect Biases in Probate Inventories*, in Benes, *supra*; Barbara McLean Ward, *Women's Property and Family Continuity in Eighteenth Century Connecticut*, in Benes, *supra*, at 74-76.

<sup>135</sup>. *Id.* at 657.

Appraisers might miss property, exclude it as not worth listing, or lump it with other items.<sup>136</sup>

Families might treat some items as family heirlooms or family property. Some items might be removed from the estate after death but before appraisal.<sup>137</sup> Indeed, 70% of estates in 1774 had no cash at all, not even one penny.<sup>138</sup> Since very few farms were really self-sufficient, at least some cash must have been owned by most estates. Even considering poverty and a well-known shortage of money in circulation, Lindert speculates: “This probably reflected not so much the chronic colonial shortage of specie as the frequency with which cash was simply allocated informally among survivors even before probate took place.”<sup>139</sup>

Last, Bellesiles does not indicate the source of his idea that guns were especially likely to be listed in probate inventories. In a symposium he cites in *Arming America*,<sup>140</sup> Anna Hawley says the opposite.<sup>141</sup> He may well have some reason to believe that guns were especially likely to be listed, yet here, as elsewhere, Bellesiles offers no support for his unlikely beliefs about what inventories and wills contain.

## 6. How Important are the Probate Records?

What would happen to the rest of *Arming America* if Bellesiles were to delete his entire discussion of probate data? In terms of pages, the probate study is only a small part of the book. The probate data are discussed on only about 13 pages in the book,<sup>142</sup> plus some additional footnotes. Yet it is the most dramatic and potentially persuasive evidence he offers. The probate data are the *only* data purporting to show systematic changes in gun ownership over long periods of time (1765-1859), a crucial part of *Arming America*'s

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<sup>136</sup>. See Hawley, *supra* note 8, at 28 (discussing the possibility of collusion with appraisers).

<sup>137</sup>. See *id.* at 28 (discussing criminal concealment); but see Lindert, *supra* note 8, at 658 (both downplaying criminal concealment and arguing that cash was removed from estates).

<sup>138</sup>. Lindert, *supra* note 8, at 657-658 (1981).

<sup>139</sup>. *Id.* at 657-658.

<sup>140</sup>. Benes, *supra* note 8.

<sup>141</sup>. See Hawley, *supra* note 8.

<sup>142</sup>. AA, pp. 13 (1 ¶), 74 (1 ¶), 79-80 (1 ¶), 109-10 (4 ¶s), 148-49 (1 ¶), 262 (1 ¶), 266-67 (2 ¶s), 386 (1 ¶), 445 (full page, table 1), plus footnotes supporting these claims.

central claim that gun ownership was very low in the 17<sup>th</sup> and 18<sup>th</sup> centuries and grew gradually in the few decades before the Civil War. Further, the probate data are by far the most important evidence purporting to show that guns in private hands were mostly in poor working condition—a claim that now seems questionable given the actual probate data.

Moreover, it would not be proper just to omit a discussion of probate data now that it is clear that they undercut the conclusion of *Arming America*—that would be the suppression of contrary evidence. One might wistfully speculate what the book might have been without the probate data, but one cannot just turn back the clock. The patterns in the actual probate data from colonial America are potentially devastating to *Arming America*'s central arguments. That gun ownership was much higher in the 17<sup>th</sup> and 18<sup>th</sup> centuries than Bellesiles claims it was on the eve of the Civil War renders the main story in *Arming America* incoherent. If guns were already more common in the 18<sup>th</sup> century than Bellesiles says they were on the eve of the Civil War, then his narrative of how we got from low gun ownership to high gun ownership collapses into the opposite story of going from high gun ownership to somewhat lower gun ownership.

Also potentially devastating to the arguments in *Arming America* is the condition of guns in probate records. In every database we have looked at (including the ones he cites in *Arming America*), at least 87% of estates with guns have guns that are not listed as old or in poor working condition. A more coherent story would have been that America went from fairly ineffective guns to fairly effective mass-produced guns, but that is not Bellesiles' main story; more to the point, such a story would have been largely uncontroversial.

The importance of the probate data is suggested in the reviews and press accounts. In a favorable article on the book, Anthony Ramirez of the *New York Times* calls probate records “Mr. Bellesiles's principal evidence.”<sup>143</sup> John Chambers in his *Washington Post* review of *Arming America* called probate records Bellesiles' “freshest and most interesting source.”<sup>144</sup> Edmund Morgan in his *New York Review of Books* review said, “The evidence is overwhelming. First of all are probate records.”<sup>145</sup> In his *New Republic*

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<sup>143</sup>. Anthony Ramirez, *The Nation: The Lock and Load Myth; A Disarming Heritage*, NEW YORK TIMES (April 23, 2000) at s. 4, p. 3, col. 1.

<sup>144</sup>. John Whiteclay Chambers II, *Lock and Load*, WASHINGTON POST (October 29, 2000), at X02.

<sup>145</sup>. Edmund Morgan, *In Love With Guns*, NEW YORK REVIEW OF BOOKS (Oct. 19, 2000).

review, Jackson Lears comments, “Despite his wide range, the core of his argument depends on statistics: government censuses of militia members and a sample of probate records . . . .”<sup>146</sup> Joyce Malcolm’s review in *Reason* states, “Bellesiles’ main proof for the absence of firearms is his analysis of more than 11,000 probate inventories from 1765 through 1859.”<sup>147</sup> A review in the *Minneapolis Star Tribune* summarizes, “Using probate records from the colonial period to 1859, Bellesiles explodes many myths about gun ownership in America.”<sup>148</sup>

Bellesiles’ himself emphasized probate records when he summarized his argument in a November 3, 1997 interview with the *Emory Record*, “‘Contrary to the popular image, few people in the United States owned guns prior to the 1850s,’ Bellesiles said. ‘Probate and militia records make clear that only between a tenth and a quarter of adult white males owned firearms.’”<sup>149</sup>

In articles on *Arming America* in both law reviews and especially in the popular press, Bellesiles’ evidence from probate records was the single most commonly mentioned source of quantitative evidence supporting his thesis. Scholars have quickly made use of Bellesiles’ undercounts of guns in probate records to support their views of the Second Amendment.<sup>150</sup>

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146. Jackson Lears, *The Shooting Game*, THE NEW REPUBLIC (Jan. 22, 2001) at 35.

147. Joyce Lee Malcolm, *Concealed Weapons*, 32 REASON 47 (Jan. 1, 2001).

148. Randolph Delahanty, *Causes And Effects; Two Well-Researched and Thoughtful Books Offer Insights on a Couple of America's Hot-Button Issues. Bang! Historian Explodes American Gun Myths*, MINN. STAR TRIB.(Sept. 24, 2000) at 16F.

149. EMORY RECORD, Nov. 3, 1997.

150. See, e.g., Michael C. Dorf, *What Does The Second Amendment Mean Today?* 76 CHI.-KENT L. REV. 291, 312 (2000) (notes omitted):

What of Madison’s assumption that the people would have arms? The short answer is that the assumption was inaccurate. Historian Michael Bellesiles has discovered that fewer than seven percent of white males in western New England and Pennsylvania owned working guns upon their deaths. As Garry Wills effectively argues, Bellesiles’s discovery is consistent with other evidence tending to show that the notion of founding-era militias comprising nearly all able-bodied adult white males was never more than a myth. The romantic attachment to the militia arose, Wills contends, because of their role in keeping order on the home front—protecting against, among other things, Indian attacks and slave revolts—while the Continental army won the war against the British.

Robert E. Shalhope, *To Keep And Bear Arms In The Early Republic*, 16 CONST. COMMENTARY 269, 274 (1999) (notes omitted):

In another essay Bellesiles explodes the myth of near universal gun ownership and the skilled usage of firearms in the late eighteenth and early nineteenth centuries, a

Thus, while the probate data represent only a small part of the book in pages, they are the heart of the book—recognized by some reviewers as the single most important class of evidence among the many classes of evidence that Bellesiles discusses. Admittedly, others put more weight on this evidence than Bellesiles does. Not surprisingly, his supporters are now claiming that the probate data are relatively unimportant. Yet without the probate data, his book runs the risk of falling into the genre that Bellesiles has called “dueling quotations.”<sup>151</sup> One cannot just wish the probate data away; it points strongly against the main narrative of *Arming America*.

Indeed, the evidence that colonial America did not have a gun culture is questionable on the evidence of gun ownership alone. Compared to the 17<sup>th</sup> and 18<sup>th</sup> centuries, guns are not as widely owned today. Whereas individual gun ownership in every published study of early probate records that we have located (except Bellesiles’) ranges from 50 to 79%, only 32.5% of households today own a gun.<sup>152</sup> This appears to be a much smaller percentage than in

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myth so important to Standard Modelers in their efforts to protect a “traditional” right. In fact, during an investigation of late eighteenth-century probate records and militia archives extending into the early nineteenth century, Bellesiles discovered that only fourteen percent of probate inventories exhibited any type of gun within frontier households of northern New England and western Pennsylvania.

Koren Wai Wong-Ervin, *The Second Amendment and the Incorporation Conundrum: Towards a Workable Jurisprudence*, 50 HASTINGS L.J. 177, 184–85 (1998) (notes omitted):

Bellesiles notes that county probate records (inventories of property after a death) show that gun ownership was the exception in the eighteenth and early nineteenth centuries and that gun ownership did not become common until industrialization, and even then ownership was prevalent only in urban areas. Bellesiles admits that he was “puzzled by the absence of what [he] assumed would be found in every record: guns.” In other words, contrary to the picture painted by the National Rifle Association and others who favor an individual rights reading of the amendment, gun ownership was not universal, or even close to universal, in the eighteenth century. Bellesiles argues that the common belief that guns are deeply rooted in our nation’s history and psyche is an erroneous belief and that history indicates that “the gun culture grew with the gun industry.”

<sup>151</sup>. AA at 262 (“Without such efforts at quantification, we are left to repeat the unverifiable assumptions of other historians, or to descend into a pointless game of dueling quotations—matching one literary allusion against another.”).

<sup>152</sup>. This results from my analysis of the March 2001 release of the NORC General Social Survey, 2000. Household gun ownership breaks down as follows: any gun (32.5%), rifle (19.7%), shotgun (18.6%), pistol or revolver (19.7%). Only 1.2% of respondents refused to respond to the question.

early America—in part because the mean household size in the late 18<sup>th</sup> century was six people,<sup>153</sup> while today it is just under two people.<sup>154</sup>

## VI. Conclusion

Our hope here is to do much more than explode recently created myths about gun ownership in probate records. As we show, in probate inventories (1) there were high numbers of guns in early America, (2) guns were much more common than swords or other edge weapons, (3) women owned guns, and (4) the great majority of gun-owning estates listed no old or broken guns. Our estimates that at least 50% of male and female wealthholders combined owned guns in 1774 colonial America are the first carefully weighted national probate-based estimates for gun ownership in 18<sup>th</sup> century America. If we exclude estates that have no significant itemization of personal property, 54% of male wealthholders have guns, as do 19% of female wealthholders. We also provide the first weighted regional estimates of colonial gun ownership: 69% in the South, 50% in New England, and 41% in the Middle Colonies. Given that these counts are based on incomplete probate inventories, unless nudity was also widely practiced,<sup>155</sup> these gun counts are likely to be substantial underestimates.

As for the methodology of drawing inferences from probate records, we suggest that the ownership of any item of interest should be compared to the ownership of other commonly owned items, since probate inventories are inherently and differentially incomplete. This insight, which was not original with us, was the impetus for our study. At the time we began work on this project, we had not the slightest idea that *Arming America's* data could be wrong. As examples of comparisons, guns are more common than Bibles or religious books in both the Providence and the national Jones database. Further, guns are found in nearly as many probate estates as books of any kind, a finding suggesting that guns, like books, were very commonly owned by early American families. Based on 1774 probate records, the frequency of gun ownership (50%) was roughly midway between the ownership of any coins or other money (about 30%) and the ownership of clothes (about 77%). If gun ownership really was about 2/3<sup>rds</sup> of the level of clothes ownership (and

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153. U.S. Census, 1790.

154. 2000 NORC GSS, *supra* note 152.

155. A weighted average of 23% estates in Jones' 1774 database did not include any clothes.

about 5/3<sup>rds</sup> of the level of cash ownership), then gun ownership was roughly as common as one should have expected before this debate took its recent revisionist turn.

Using hierarchical loglinear modeling, we show that guns are more common in early American inventories where the decedent was male, Southern, rural, slave-owning, or above the lowest social class—or where the inventories were more detailed. In 1774, large slave-owners have 4.3 times as high odds of owning a gun as small slave-owners or those who own no slaves. Those who own livestock have odds of gun-owning that are 6.7 times as high as those who do not. This suggests that active farming and large slave-owning are good predictors of owning guns.

There are some indications in the data that incompleteness is correlated with fewer guns. In the 1774 national data, the odds that men with an occupation listed in the inventory will own a gun are about 12 times as high as the odds that men missing occupational information will own a gun. In the Gunston Hall database, those estates listing the contents of closets and cellars have 2.4 to 3.1 times as high odds of also listing guns as estates without such lists. One finds more guns when the inventories are more complete, even controlling for social class. Unless one compares the frequency of guns to other common items, one would confuse the incompleteness of inventories with a lack of ownership.

Further, bladed weapons were much rarer than guns in probate records. In the male estates in Jones' 1774 database, the odds of finding a gun are 7 times as high as the odds of finding a bladed weapon. For the Gunston Hall database, the odds of finding a gun are 6.4 times as high as finding a bladed weapon; for the Providence database, the odds of finding a gun are 4.1 times as high as finding a bladed weapon.

That guns would be so widely owned once men could afford them is consistent with the view that gun ownership was an important tool—and perhaps part of male identity at the time. As Gloria Main's work suggests, in the late 17<sup>th</sup> century and early 18<sup>th</sup> century, guns were next in importance after beds, cooking utensils, and pewter—and ahead of chairs and books.<sup>156</sup> Anna Hawley found that guns were more common than chairs or hoes in a poor agricultural county.<sup>157</sup> Judith McGaw found that among 18<sup>th</sup> century mid-Atlantic farmers, guns were as common as plows.<sup>158</sup>

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156. In the Northern data we have examined, books are roughly as common (or slightly more common) than guns.

157. Hawley, *supra* note 8.

158. McGaw, *supra* note 8, at 340.



Guns appear to have been highly desired and an important part of the culture of the day. If guns were merely a luxury or a relatively useless tool, one would not expect to find roughly as many or more guns than chairs, but that is precisely what those of us who count items in probate inventories find. Further, if guns were not useful, one might expect to find most guns listed as old or in poor working condition, but fully 87-91% of gun estates in the three databases we examined at length here listed at least one gun that was not pejoratively described as old or broken.

As our comparative analyses suggest, our data are consistent with other published counts of guns in probate estates, such as Jones',<sup>159</sup> Main's,<sup>160</sup> Hawley's,<sup>161</sup> and McGaw's.<sup>162</sup> Indeed, this high level of gun ownership shows up in the earliest large set of transcribed American probate inventories, George Dow's from Essex County, MA. In the 1636-1650 period in Essex, gun ownership in probate estates was 71% for men and 25% for women.<sup>163</sup> We have examined thousands of unpublished handwritten inventories, which are roughly consistent with the published inventories we analyze here.

Thus, everywhere and in every time period from 1636 through 1810, we found high percentages of gun ownership in probate inventories. Approximately 50-79% of itemized male inventories contained guns in all eight databases we discuss here—Jones (National, mostly 1774), Providence (RI, 1670, 1679-1726), Gunston Hall (MD & VA, 1740-1810), Essex County (MA, 1636-50), Hawley (VA, 1690-1715), Main (MD, 1657-1719), McGaw (NJ & PA, 1714-1789), and Gill (colonial VA).

Outside of Bellesiles' counts, these studies include all the published counts of guns in early probate records that we located. Guns are found in 6-38% of the female estates in each of the first four databases. We and seven other historians and economists working independently over the last 25 years (Alice Jones, Anna Hawley, Gloria Main, Judith McGaw, Randolph Roth,

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<sup>159</sup>. See 3 Jones, *supra* note 2, at 1651. Jones has itemized tables only for the Middle Colonies. Tables for the Middle Colonies—the region with the lowest gun ownership—appear to show that guns are the most common weapon, that 66 of 217 estates have guns, and that another 31 estates might have both a gun and another weapon. ID.

<sup>160</sup>. Main, *supra* note 24.

<sup>161</sup>. Hawley, *supra* note 8.

<sup>162</sup>. McGaw, *supra* note 8, at 340.

<sup>163</sup>. In the earliest years of those estates, 1636-1650, we count 61 probate inventories—all but two of which were sufficiently itemized to be used. Fully 25% of the 8 female inventories had guns. Among the 51 itemized male inventories, 71% contained guns. 1 PROBATE RECORDS OF ESSEX COUNTY, MASSACHUSETTS, 1635-1664, at 3-130 (George Dow ed. 1916).

Robert Churchill, and Harold Gill<sup>164</sup>) have now analyzed and reported on guns in a total of over 5,000 early probate inventories and nowhere do we report the patterns Bellesiles describes as being pervasive. Moreover, as we have shown here using simple arithmetic, Bellesiles' 1765-90 data are mathematically impossible.<sup>165</sup> Further, an archive of probate inventories from San Francisco in which Bellesiles claims to have counted guns apparently does not exist. By all accounts, the entire archive before 1860 was destroyed in the San Francisco earthquake and fire. Thus, the three columns in Bellesiles' main table of probate data that we have examined so far—1765-90, 1849-50, and 1858-59—are not only false, they are impossible. The data in the table bear no relation to the actual records that they purport to count.

The importance of the probate data to the thesis of *Arming America* is obvious. The actual probate data show that guns were widely owned and Americans were familiar with them. The probate data reveal that, as soon as many families could afford a gun, they bought one, often before even a chair or a stool. Guns were shown to be much more common than bladed weapons. Privately owned guns were kept in the home, not in central armories as *Arming America* claims.<sup>166</sup> Further, the probate data suggest that guns in private possession were mostly in good condition, contrary to *Arming America's* claims that most guns on the frontier were actually *listed* as old or broken in probate records.<sup>167</sup> Probate data show that guns were not particularly expensive<sup>168</sup> (a fact confirmed by auction data,<sup>169</sup> newspaper advertisements,<sup>170</sup> and statutory provisions)—priced in 1774 similarly to a

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<sup>164</sup>. Joyce Malcolm reports that in 572 colonial Virginia inventories examined by the historian Harold Gill, guns are present in about 79% of the male estates and about 25% of the female estates. See Joyce Lee Malcolm, Book Review Colloquium: Review: *Arming America*, 79 *Texas Law Review* 1657, 1672-73 (2001). The samples are drawn from York and Louisa Counties, as well as room by room inventories from throughout Virginia. Id. These are probably skewed somewhat in favor of greater itemization or greater wealth, which may explain the slightly higher percentages.

<sup>165</sup>. See text and notes *supra* at notes 89-105.

<sup>166</sup>. AA at 73.

<sup>167</sup>. AA, pp. 13, 266-67 (an analysis of complete data from 4 of his 6 frontier counties and partial data from the other 2 frontier counties suggests that fewer than 15% of 1765-90 frontier estates list old or broken guns). Bellesiles makes a similar false claim about the condition of guns in Providence. AA at 109.

<sup>168</sup>. In various probate records, guns not listed as old or broken usually average about £0.8 to £1.5 in value.

<sup>169</sup>. See 3 Jones, *supra* note 2.

<sup>170</sup>. See Roth, *supra* note 117.

table, a chair, a dictionary, or a great coat.<sup>171</sup> Women in 1774 owned guns (18% of female estates) at higher levels than Bellesiles claimed men did in 1765-90 (14.7%). Indeed, Bellesiles falsely claimed that no women owned guns in his samples,<sup>172</sup> incredibly missing every female gun estate. The probate data go to the heart of the book—who owned guns, how many there were, what condition they were in, where they were kept, how much they cost, and how culturally desired they were. In 18<sup>th</sup> century America, there was a very substantial gun culture. Just what sort of gun culture it was, and how it differed from the gun cultures a century or two later, will undoubtedly be the subject of future research in the field.

We are not writing on a clean slate; good researchers before us have counted guns and come up with totals that roughly match ours. Further, our counts of guns in Providence and in the Jones database have been replicated in one or both of two reviews in history journals.<sup>173</sup> Gun owning was so common in colonial America (especially in comparison with other commonly owned items) that any claim that 18<sup>th</sup> century America did not have a “gun culture” is implausible, just as one could not plausibly claim that early Americans did not have a culture of reading or wearing clothes or riding horses.

Everybody makes mistakes (certainly we do). What we urge here is open research standards, replicability of results, citations to sources, and a little common sense. When someone makes unlikely statistical claims about something, provides no sample sizes or cell counts, does not cite the sources used, and makes one implausible statement after another about the completeness of archival records, scholars should be pointing this out, not climbing over one another to jump on the bandwagon. Skepticism should deepen when the scholar discloses that he never had a database and that his original “data” consisted of just thousands of tick marks on legal pads (and that he discarded even these records because they got wet). We may ultimately learn more from considering why many qualitative historians suspended their critical judgment than from guessing precisely how and why Michael Bellesiles published mistaken data.

Something good may yet come from this unfortunate episode, besides just inspiring more careful counts of guns in early America. Perhaps we can

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<sup>171</sup>. 3 Jones, *supra* note 2.

<sup>172</sup>. AA, p. 267.

<sup>173</sup>. See Randolph Roth, *Guns, Gun Culture, and Homicide: The Relationship between Firearms, the Uses of Firearms, and Interpersonal Violence*, *William & Mary Quarterly* (forthcoming, Jan. 2002); Robert H. Churchill, *Guns and the Politics of History*, 29 *Reviews in American History* 329, 329-337 (2001).

look forward to reforms in legal history—wider training in quantitative methods, a commitment to reproducible results (rather than idiosyncratic ones), a general reduction in unconsciously using politics as a substitute for evidence, and a greater respect and generosity of spirit toward expertise in other fields. Most of all, legal history and social history need the same healthy skepticism about highly implausible work that the social sciences and hard sciences usually show. Last, a little common sense might help.