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Alternative Copper Ammunition Availability and Cost Relative to Traditional Lead Ammunition

Summary:

This report summarizes the availability and price of traditional lead, and alternative copper centerfire ammunition offered by:

- (a) eight (8) internet vendors (ammo.com, ammunitiondepot.com, basspro.com, luckygunner.com, midwayusa.com, sheels.com, sportsmanswarehouse.com, trueshot.com),
- (b) four (4) Sportsman's Warehouse (Arizona, California, Michigan, New Mexico) and two Bass Pro Shops (Arizona, Texas) chain stores, and
- (c) fifteen (15) local retail stores (Alabama, Arizona, California, Kentucky, Michigan, Mississippi, New Mexico, Texas).

Regardless of the vendor, copper ammunition was more expensive than lead ammunition. More important, it was dramatically less available, not only across calibers, but also bullet weights and number of boxes on shelves.

Because centerfire ammunition price and availability are central determinants of hunting participation frequency and the likelihood that experienced hunters mentor novices, these results suggest that copper ammunition mandates (and perhaps even voluntary use programs), have considerable potential to negatively impact hunting and R3 activities. As well, because ammunition excise taxes are fundamental and significant components of the Pittman-Robertson Act revenues, copper bans/mandates (and perhaps even voluntary use programs) may harm future conservation funding available to state fish and wildlife agencies.

Introduction and Rationale:

Ingested lead is toxic to individual animals. However, there is little evidence that individual lead ingestion impact animal populations in an ecologically meaningful way. For example, although lead ingestion affects bald and golden eagle population growth rates, the impacts are small and both continue to increase at rates that are 94-99% of what they would have in the absence of lead (Hanley et al., 2021, Slabe et al., 2022). Notwithstanding, the U.S. Fish and Wildlife Service, some state agencies and a variety of wildlife organizations have expressed concern that lead ingestion is an important population-level concern. In turn, these concerns have been used to justify bans/mandates (Chesnut, 2024, Thomas and Kanstrup 2023) and voluntary programs (Armeno et al. 2019) that either prohibit the use of lead ammunition, or promote the substitution of copper for lead centerfire ammunition.

Surprisingly, there has been little discussion of the most practical questions related to copper ammunition use, namely, it's availability and price. This lack of consideration is problematic, because availability and price are key determinants of hunting participation frequencies and the likelihood that experienced hunters will engage in mentoring (Southwick, personal communication). Arguably, reduced ammunition excise taxes resulting from fewer hunting trips and less mentoring in response to copper mandates could be more important to wildlife conservation than relatively infrequent instances of individual lead intoxication because Pitman-Robertson revenues derived from ammunition excise taxes are central to wildlife management funding at the state level.

Here, we report the first national evaluation of the availability and price of copper centerfire rifle ammunition in a variety of calibers.

Methods.

Calibers.

We asked staff from Vista Outdoors (now The Kinetic Group) to recommend popular calibers of centerfire rifle ammunition for investigation. They recommended: .223, .243, .270, .280, .30-06, .25-06, .300 Win-Mag, .300 WSM, .300 Blackout, .30-30, .308, .338, 6.5 Creedmoor, 6.5 PRC, 7mm, 7mm PRC, 7mm-08, and 303 British. We used these calibers to search internet vendor sites. Subsequently, we included them in searches of ammunition inventories of both chain and local retail outlets.

'Ammunition products' formed the basic unit of our investigation. These were operationally defined as boxes of 20 cartridges. In other words, if an ammunition caliber was produced by several manufacturers, each manufacturer's ammunition was considered an ammunition product. In those instances where a box contained more than 20 cartridges, a price/bullet was calculated and then multiplied by 20.

Internet Availability of Ammunition Products.

We used web-scraping software (Parse-Hub 2025) to extract information for all lead and copper products in the 23 selected calibers from nine ammunition retail websites:

- ammo.com,
- ammunitiondepot.com,
- basspro.com,
- luckygunner.com,
- midwayusa.com,
- sheels.com,
- sportsmanswarehouse.com,

- trueshotammo.com.

We recorded the caliber, price, bullet type (lead or copper), and bullet weight (i.e., grains) for each product. Basspro.com, midwayusa.com, scheels.com, and sportsmanswarehouse.com were searched three times (January, March, and April of 2025). Ammo.com, ammunitiondepot.com, luckygunner.com, and trueshotammo.com were each searched once in June, 2025. Noteworthy, although both sportsmanswarehouse.com and basspro.com provided a “lead-free” search option, the tool failed to identify more than half (57%) of the copper ammunition products available from these websites. None of the other websites provided a copper product (i.e., non-lead or lead-free) filter.

In-Store Chain and Local Retail Availability of Ammunition Products.

Between December, 2024 and June 2025, we visited Bass Pro and Sportsmen’s Warehouse stores in Arizona, California, Michigan, New Mexico, and Texas. Over the same time period, we visited 15 local retail stores in Alabama, Arizona, California, Kentucky, Michigan, Mississippi, New Mexico, and Texas. At each location, for every shelved ammunition product regardless of caliber, we recorded the caliber, bullet type (lead or copper) and bullet weight (i.e., grains).

Results.

Internet Availability of Ammunition Products.

Collapsed over calibers, the availability of alternative copper ammunition products was dramatically less than that of traditional lead ammunition products (Table 1). Ammunitiondepot.com offered the most copper ammunition (24.3%) while Scheels offered the least (0%). On average, copper products represented 9.4% of the products available for sale.

Table 1. The total number of centerfire rifle ammunition products, number of copper ammunition products, and the proportion of total centerfire rifle ammunition products with copper bullets for each of nine online ammunition retailers.

Vendor	Total # products	Total # copper products	% copper products
<i>Ammo</i>	252	14	5.5
<i>Ammunition Depot</i>	399	97	24.3
<i>Bass Pro</i>	694	21	3.0
<i>Lucky Gunner</i>	608	35	5.8
<i>MidwayUSA</i>	2,263	184	8.1
<i>Scheels</i>	837	0	0
<i>Sportsman’s Warehouse</i>	1,115	150	13.5
<i>True Shot Ammo</i>	131	20	15.3

There also were differences in the proportion of copper ammunition products offered relative to total product inventory. For example, ammunitiondepot.com offered the second lowest overall number of ammunition products but the most copper products in proportion to total ammunition inventory (24.3%). Conversely, MidwayUSA offered the greatest number of copper ammunition products overall (n=184), although these products represented only 8.1% of the available ammunition.

Besides less overall availability, copper ammunition products were available in fewer calibers (Table 2). Across web vendors, copper bullet options were only available for 60% of the Vista recommended calibers.

Table 2. Number of centerfire rifle calibers with a copper bullet option relative to the number of calibers with a lead bullet option for the Vista recommended calibers.

<i>Vendor</i>	<i>Total number of calibers with a copper bullet</i>	<i>Total number of calibers with a lead bullet</i>
<i>Ammo.com</i>	<i>6</i>	<i>13</i>
<i>Ammunitiondepot.com</i>	<i>13</i>	<i>18</i>
<i>Basspro.com</i>	<i>6</i>	<i>18</i>
<i>Luckygunner.com</i>	<i>13</i>	<i>17</i>
<i>Midwayusa.com</i>	<i>15</i>	<i>18</i>
<i>Scheels.com</i>	<i>0</i>	<i>17</i>
<i>Sportsmanwarehouse.com</i>	<i>15</i>	<i>17</i>
<i>True Shot</i>	<i>13</i>	<i>16</i>

Finally, the range of available copper bullet weights per caliber was considerably less than the range of available lead bullet weights per caliber. Table 3 illustrates this difference for 30.06, .223, and .308 bullets offered by midwayusa.com and sportsmanswarehouse.com, the two websites with the greatest overall selection of ammunition.

Table 3. Available bullet weights for three Vista recommended centerfire rifle calibers at the two largest online ammunition retailers, Midway USA and Sportsman's Warehouse, assessed in this study.

	<i>30.06</i>		<i>.223</i>		<i>.308 Winchester</i>	
	<i>lead</i>	<i>copper</i>	<i>lead</i>	<i>copper</i>	<i>lead</i>	<i>copper</i>
<i>MidwayUSA</i>	<i>123, 125, 147, 150, 165, 168, 170, 172, 175, 178, 180, 185, 190, 200, 210, 220</i>	<i>130, 150, 165, 168, 175, 180</i>	<i>12, 40, 45, 50, 52, 53, 55, 60, 62, 64, 65, 68, 69, 70, 73, 75, 77</i>	<i>35, 36, 40, 45, 50, 54, 55, 60, 62</i>	<i>110, 123, 125, 147, 150, 155, 165, 168, 169, 170, 172, 175, 178, 180, 185, 200, 260, 275</i>	<i>110, 130, 145, 150, 152, 155, 165, 168, 175</i>

<i>Sportsman's Warehouse</i>	125, 150, 165, 168, 172, 175, 178, 180, 190, 210, 220	150, 165, 168, 170, 180	35, 40, 42, 45, 50, 52, 53, 55, 62, 64, 68, 69, 70, 73, 75, 77, 79, 90	35, 40, 42, 50, 55, 62, 77	110, 125, 130, 147, 150, 152, 155, 165, 168, 172, 175, 178, 180, 185	130, 150, 165, 168, 175
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Internet Pricing of Ammunition.

For calibers where comparisons were possible, copper products were $15 \pm 18\%$ (mean $\pm$ standard deviation) more expensive than lead ammunition products (Table 4). There was substantial variability among websites and calibers.

Table 4. The average cost of lead and copper ammunition products sold by the eight internet vendors. Instances where the average price of copper ammunition was less than that of lead ammunition are indicated in red.

<i>Caliber</i>	<i>Vendor</i>	<i>Average Lead Price</i>	<i>Average Copper Price</i>	<i>Percent Difference</i>
<i>.223</i>				
	<i>Ammo.com</i>	<i>11.11</i>	--	--
	<i>Ammunitondepot.com</i>	<i>35.10</i>	<i>29.99</i>	<i>16</i>
	<i>Basspro.com</i>	<i>27.25</i>	--	--
	<i>Luckygunner.com</i>	<i>15.74</i>	--	--
	<i>Midwayusa.com</i>	<i>31.34</i>	<i>39.70</i>	<i>23</i>
	<i>Sportsmanswarehouse.com</i>	<i>31.40</i>	<i>41.82</i>	<i>28</i>
	<i>Trueshot.com</i>	<i>16.03</i>	<i>26.70</i>	<i>50</i>
<i>.243</i>				
	<i>Ammo.com</i>	<i>33.29</i>	<i>29.49</i>	<i>(9)</i>
	<i>Ammunitiondepot.com</i>	<i>40.55</i>	<i>42.40</i>	<i>4</i>
	<i>Basspro.com</i>	<i>39.96</i>	<i>40.49</i>	<i>1</i>
	<i>Luckygunner.com</i>	<i>33.03</i>	<i>41.00</i>	<i>21</i>
	<i>Midwayusa.com</i>	<i>40.91</i>	<i>45.10</i>	<i>10</i>
	<i>Sportsmanswarehouse.com</i>	<i>40.92</i>	<i>47.77</i>	<i>15</i>
	<i>Trueshot.com</i>	<i>31.48</i>	<i>40.50</i>	<i>25</i>
<i>.25-06</i>				
	<i>Ammo.com</i>	<i>34.33</i>	--	--
	<i>Ammunitiondepot.com</i>	<i>45.44</i>	<i>46.49</i>	<i>2</i>
	<i>Basspro.com</i>	<i>44.75</i>	--	--
	<i>Luckygunner.com</i>	<i>36.89</i>	<i>45.00</i>	<i>20</i>
	<i>Midwayusa.com</i>	<i>41.05</i>	<i>56.66</i>	<i>32</i>
	<i>Sportsmanswarehouse.com</i>	<i>46.15</i>	<i>55.99</i>	<i>19</i>

	<i>Trueshot.com</i>	37.40	46.20	21
<i>.270</i>				
	<i>Ammo.com</i>	32.94	40.99	22
	<i>Ammunitiondepot.com</i>	44.20	46.09	4
	<i>Basspro.com</i>	42.47	44.99	6
	<i>Luckygunner.com</i>	34.82	41.50	17
	<i>Midwayusa.com</i>	44.13	50.53	13
	<i>Sportsmanswarehouse.com</i>	43.89	53.82	20
	<i>Trueshot.com</i>	42.13	35.38	(17)
<i>.280</i>				
	<i>Ammo.com</i>	--	--	--
	<i>Ammunitiondepot.com</i>	51.77	--	--
	<i>Basspro.com</i>	56.19	--	--
	<i>Luckygunner.com</i>	--	--	--
	<i>Midwayusa.com</i>	49.62	53.99	8
	<i>Sportsmanswarehouse.com</i>	53.49	64.99	19
	<i>Trueshot.com</i>	--	--	--
<i>.300 Win-Mag</i>				
	<i>Ammo.com</i>	46.87	40.99	(13)
	<i>Ammunitiondeport.com</i>	54.15	53.39	(1)
	<i>Basspro.com</i>	49.02	58.32	17
	<i>Luckygunner.com</i>	50.47	54.50	8
	<i>Midwayusa.com</i>	59.69	61.88	4
	<i>Sportsmanswarehouse.com</i>	62.61	65.29	4
	<i>Trueshot.com</i>	47.85	53.20	11
<i>.300 Blackout</i>				
	<i>Ammo.com</i>	--	--	--
	<i>Ammunitiondepot.com</i>	36.86	--	--
<i>.300 Blackout</i>	<i>Basspro.com</i>	31.32	30.99	(1)
	<i>Luckygunner.com</i>	24.04	38.50	46
	<i>Midwayusa.com</i>	44.20	26.32	(51)
	<i>Sportsmanswarehouse.com</i>	33.94	43.74	25
	<i>Trueshot.com</i>	--	--	--
<i>.30-06</i>				
	<i>Ammo.com</i>	30.31	43.25	35
	<i>Ammunitiondepot.com</i>	42.48	46.91	10
	<i>Basspro.com</i>	43.38	42.66	2
	<i>Luckygunner.com</i>	31.09	40.05	25
	<i>Midwayusa.com</i>	41.71	50.90	20
	<i>Sportsmanswarehouse.com</i>	44.00	53.20	19
	<i>Trueshot.com</i>	43.93	42.90	(2)
<i>.30-30</i>				
	<i>Ammo.com</i>	28.12	39.99	35
	<i>Ammunitiondepot.com</i>	42.56	40.60	5

	<i>Basspro.com</i>	34.80	--	--
	<i>Luckygunner.com</i>	27.52	39.00	34
	<i>Midwayusa.com</i>	32.90	46.10	33
	<i>Sportsmanswarehouse.com</i>	35.11	45.32	25
	<i>Trueshot.com</i>	27.20	41.00	40
<i>.303 British</i>				
	<i>Ammo.com</i>	28.19	--	--
	<i>Ammunitiondepot.com</i>	36.87	--	--
	<i>Basspro.com</i>	38.66	--	--
	<i>Luckygunner.com</i>	31.40	--	--
	<i>Midwayusa.com</i>	38.54	--	--
	<i>Sportsmanswarehouse.com</i>	34.39	--	--
	<i>Trueshot.com</i>	73.70	57.70	(24)
<i>.308</i>				
	<i>Ammo.com</i>	23.54	54.99	80
	<i>Ammunitiondepot.com</i>	41.23	45.53	10
	<i>Basspro.com</i>	44.08	43.49	1
	<i>Luckygunner.com</i>	28.41	35.00	21
	<i>Midwayusa.com</i>	41.41	53.86	26
	<i>Sportsmanswarehouse.com</i>	42.79	52.57	20
	<i>Trueshot.com</i>	28.87	43.70	38
<i>6.5 Creedmoor</i>				
	<i>Ammo.com</i>	33.24	--	--
	<i>Ammunitiondepot.com</i>	42.47	43.38	2
	<i>Basspro.com</i>	43.68	--	--
	<i>Luckygunner.com</i>	33.55	42.00	22
	<i>Midwayusa.com</i>	43.02	49.40	14
	<i>Sportsmanswarehouse.com</i>	46.88	50.11	7
	<i>Trueshot.com</i>	29.81	43.70	38
<i>6.5 PRC</i>				
	<i>Ammo.com</i>	--	--	--
	<i>Ammunitiondepot.com</i>	66.09	67.10	1
	<i>Basspro.com</i>	66.37	--	--
	<i>Luckygunner.com</i>	51.57	52.00	1
	<i>Midwayusa.com</i>	59.90	65.96	10
	<i>Sportsmanswarehouse.com</i>	63.63	80.98	24
	<i>Trueshot.com</i>	--	54.00	--
<i>7mm</i>				
	<i>Ammo.com</i>	39.86	--	--
	<i>Ammunitiondepot.com</i>	56.11	60.96	8
	<i>Basspro.com</i>	55.96	--	--
	<i>Luckygunner.com</i>	44.43	51.67	15
	<i>Midwayusa.com</i>	56.83	67.10	17
	<i>Sportsmanswarehouse.com</i>	56.27	63.10	11
	<i>Trueshot.com</i>	--	41.97	--

7mm-08				
	Ammo.com	39.00	--	--
	Ammunitiondepot.com	43.20	46.67	8
	Basspro.com	41.92	--	--
	Luckygunner.com	38.33	--	--
	Midwayusa.com	44.55	55.85	22
	Sportsmanswarehouse.com	46.91	54.15	14
	Trueshot.com	--	38.60	--

Chain In-Store Availability of Ammunition.

Similar to (but noticeably more pronounced than) internet data patterns, overall alternative copper ammunition products were 154 ± 33 times less available than traditional lead ammunition products (Table 5).

Table 5. The total number of centerfire rifle products collapsed across calibers, and the percent difference between lead and copper products.

<i>Retailer</i>	<i># of lead products</i>	<i># of copper products</i>	<i>Percent Difference</i>
<i>Sportsman's Warehouse</i>			
<i>Lansing, Michigan</i>	99	4	184
<i>Las Cruces, New Mexico</i>	127	10	171
<i>Tucson, Arizona</i>	161	12	172
<i>Riverside, California</i>	164	67	84
<i>Bass Pro</i>			
<i>Phoenix, Arizona</i>	195	28	150
<i>San Antonio, Texas</i>	237	22	166

Tables 6-11 provide the number of lead and copper bullet products per caliber available at surveyed chain retail outlets. Copper products were more available than lead products only 5% of the time.

*Table 6. Number of lead and copper products per caliber at a Lansing, Michigan Sportsmen's Warehouse store. Lead ammunition was available in 14 calibers that were stocked whereas copper ammunition was available in only two. Lead ammunition was 564 ± 294 times more available. Calibers in **bold** were among those nominated as most popular by Vista Outdoors.*

<i>Caliber</i>	<i>Lead Bullet Products</i>	<i>Copper Bullet Products</i>	<i>Percent Difference</i>
.223	6	0	600
.243	10	0	1000
.25-06	4	0	400
.270	8	0	800
.300 Win-Mag	9	0	900
.300 Blackout	5	0	500

.30-06	9	0	900
.30-30	9	1	160
.308	10	0	1000
.338 Win-Mag	3	0	300
6.5 Creedmoor	15	3	133
6.5 PRC	3	0	300
7mm	4	0	400
7mm-08	5	0	500

Table 7. Number of lead and copper products per caliber at a Las Cruces, New Mexico Sportsmen's Warehouse store. Lead ammunition was available in 25 calibers whereas copper ammunition was available in only three. Lead ammunition was 373 ± 367 times more available. Calibers in **bold** were among those nominated as most popular by Vista Outdoors.

Caliber	Lead Bullet Products	Copper Bullet Products	Percent Difference
.220	2	0	200
.223	4	0	400
.224	2	0	200
.243	11	0	1100
.25-06	1	0	100
.270	18	1	179
.280	2	0	200
.300 Win-Mag	7	4	54
.300 Blackout	4	0	400
.30-06	9	0	900
.30-30	8	0	800
.308	6	0	600
.338 Win-Mag	4	0	400
.338 Lapua	1	0	100
.350	4	0	400
.35 Whelen	1	0	100
.375	1	0	100
.450	2	0	200
.45-70	2	0	200
5.56 NATO	1	0	100
6 mm	1	0	100
6.5 Creedmoor	16	0	1600
6.5 PRC	4	0	400
7mm	9	3	100
7mm-08	4	0	400

Table 8. Number of lead and copper products per caliber at a Tucson, Arizona Sportsmen's Warehouse store. Lead ammunition was available in 24 calibers whereas copper ammunition was available in only

five. Lead ammunition was 408 ± 436 times more available. Calibers in **bold** were among those nominated as most popular by Vista Outdoors.

Caliber	Lead Bullet Products	Copper Bullet Products	Percent Difference
.220	3	0	300
.22-250	2	0	200
.223	19	0	1900
.224	8	0	800
.243	14	2	150
.25-06	6	1	143
.260	3	0	300
.270	8	1	156
.300 Win-Mag	4	0	400
.30-06	14	0	1400
.30-30	5	0	500
.308	26	1	185
.350	2	0	200
.35 Whelen	1	0	100
.375	1	0	100
.450	4	0	400
.45-70	1	0	100
5.56 NATO	2	0	200
6 Creedmoor	9	0	900
6.5 Creedmoor	16	2	156
6.5 Grendel	1	0	100
6.5 PRC	1	0	100
7mm	5	0	500
7mm-08	5	0	500

Table 9. Number of lead and copper products per caliber at a Riverside California Sportsmen's Warehouse store. Despite California's mandated use of copper ammunition for hunting, lead ammunition was available in 34 calibers whereas copper ammunition was available in 19. Lead ammunition was 147 ± 269 times more available. Calibers in **bold** were among those nominated as most popular by Vista Outdoors. Copper products outnumbered lead products in calibers highlighted in **red**.

Caliber	Lead Bullet Products	Copper Bullet Products	Percent Difference
.220	1	2	(67)
.22-250	3	0	300
.223	11	7	44
.224	1	0	100
.243	5	6	(18)
.25-06	4	0	400
.260	1	3	(100)
.270	3	9	(100)
.280	6	1	143

.30 Carbine	2	0	200
.300 Win-Mag	12	3	120
.300 PRC	3	0	300
.300 Blackout	15	3	133
.30-06	6	3	67
.30-30	14		1400
.308	11	6	59
.338 Win-Mag	0	1	(100)
.350	1	0	100
.450	1	0	100
.45-70	1	0	100
5.56 NATO	5	9	(57)
5.56x45	0	1	(100)
6 mm	4	0	400
6 Creedmoor	1	1	0
6.5 Creedmoor	16	6	91
6.5 Grendel	3	0	300
6.5 PRC	1	0	100
6.8	0	1	(100)
7mm	14	2	150
7mm PRC	2	0	100
7mm-08	5	1	133
7.62	2	0	100
7.62x39	6	0	600
7.62x51	1	0	100

Table 10. Number of lead and copper products per caliber at a San Antonio, Texas Bass Pro store. Lead ammunition was available in 36 calibers whereas copper ammunition was available in nine. Lead ammunition was 309 ± 297 times more available. Calibers in **bold** were among those nominated as most popular by Vista Outdoors.

Caliber	Lead Bullet Products	Copper Bullet Products	Percent Difference
.204	1	0	100
.220	2	0	200
.22-250	7	0	700
.223	14	0	1400
.224	2	0	200
.243	12	3	120
.25-06	5	0	500
.260	3	0	300
.270	18	2	160
.30 Carbine	1	0	100
.300 Win-Mag	19	2	162
.300 PRC	4	1	120
.300 Blackout	5	0	500

.30-06	29	4	151
.30-30	12	0	1200
.303 British	3	0	300
.308	11	1	167
.338 Win-Mag	1	0	100
.350	8	0	800
.444	2	0	200
.450	4	0	400
.45-70	4	0	400
5.56 NATO	5	0	500
6 mm	3	0	300
6 Creedmoor	2	0	200
6.5 Creedmoor	18	1	179
6.5 Grendel	4	0	400
6.5 PRC	4	1	120
6.8	4	1	120
7mm	14	3	129
7mm PRC	2	2	0
7mm-08	2	0	200
7x57	1	0	100
7.62x39	3	0	300
7.62x54	1	0	100
8mm	2	0	200

Table 11. Number of lead and copper products per caliber at a Phoenix, Arizona Bass Pro store. Lead ammunition was available in 31 calibers whereas copper products were available in 11. Lead ammunition was 205 ± 159 times more available. Calibers in **bold** were among those nominated as most popular by Vista Outdoors.

Caliber	Lead Bullet Products	Copper Bullet Products	Percent Difference
.204	1	0	100
.220	4	0	400
.22-250	8	0	800
.243	10	2	133
.25-06	4	1	120
.257	1	0	100
.260	1	0	100
.270	23	3	154
.280	1	0	100
.30 Carbine	2	0	200
.300 Win-Mag	20	3	148
.300 PRC	2	1	67
.300 Blackout	2	0	200
.30-06	21	2	165
.30-30	4	0	400

.308	26	3	159
.338 Win-Mag	1	1	0
.350	5	0	500
.444	2	0	200
.450	4	0	400
6 Creedmoor	5	2	86
6.5	1	0	100
6.5 Creedmoor	15	3	133
6.5 Grendel	4	1	120
6.5 PRC	2	0	200
6.5x55	2	0	200
6.8	3	0	300
7mm	11	1	167
7mm-08	4	1	120
7x57	1	0	100
7.62x51	4	0	400

Chain Retail Pricing of Ammunition.

Tables 12-16 display the average price of ammunition sold in-store at Sportsman's Warehouse stores in Tucson, Arizona; Riverside, California; Lansing, Michigan; and Las Cruces, New Mexico, as well as at Bass Pro stores in Phoenix, Arizona and San Antonio, Texas. Relative to lead ammunition, copper ammunition was 13 ± 24 % more expensive. Excluding California, where copper ammunition is legally mandated for hunting, copper bullets was 23% more expensive.

*Table 12. Average price of available lead and copper ammunition products at a Lansing, Michigan Sportsman's Warehouse. For the two calibers that had both lead and copper bullets available, lead cartridges were, on average, 29 ± 14 % less expensive. Calibers **in bold** were among those nominated as most popular by Vista Outdoors.*

Caliber	Average Lead Bullet Prices	Average Copper Bullet Prices	Percent Difference
.223	21.86	--	--
.243	34.39	--	--
.25-06	43.24	--	--
.270	46.24	--	--
.300 Win-Mag	49.11	--	--
.300 Blackout	30.59	--	--
.30-06	42.16	--	--
.30-30	27.76	44.99	48
.308	46.09	--	--
.338 Win-Mag	110.99	--	--
6.5 Creedmoor	45.09	49.99	10
6.5 PRC	53.65	--	--
7mm	49.24	--	--

7mm-08	51.99	--	--
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Table 13. Average price of available lead and copper ammunition products at a Tucson, Arizona Sportsman's Warehouse. For the four calibers that had both lead and copper bullets available, lead cartridges were, on average, $23 \pm 11\%$ less expensive. Calibers **in bold** were among those nominated as most popular by Vista Outdoors.

Caliber	Average Lead Bullet Prices	Average Copper Bullet Prices	Percent Difference
.220	35.05	--	--
.22-250	34.99	--	--
.223	34.79	--	--
.224	34.99	--	--
.243	33.64	49.99	39
.25-06	44.83	51.99	15
.260	58.43	--	--
.270	36.87	47.99	26
.300 Win-Mag	41.00	--	--
.30-06	29.34	--	--
.30-30	29.80	--	--
.308	38.61	49.99	26
.350	32.49	--	--
.35 Whelen	49.99	--	--
.375	104.99	--	--
.450	49.00	--	--
.45-70	58.99	--	--
5.56 NATO	32.00	--	--
6 Creedmoor	50.57	--	--
6.5 Creedmoor	46.55	49.99	7
6.5 Grendel	39.25	--	--
6.5 PRC	83.38	--	--
7mm	45.59	--	--
7mm-08	43.00	--	--

Table 14. Average price of lead and copper ammunition at a Riverside, California Sportsman's Warehouse. For the 13 calibers that had both lead and copper bullets available, lead cartridges were $24 \pm 21\%$ less expensive. Calibers **in bold** were among those nominated as most popular by Vista Outdoors. Copper products that were less expensive than lead products for calibers highlighted in **red**.

Caliber	Average Lead Bullet Prices	Average Copper Bullet Prices	Percent Difference
.220	37.99	39.99	67
.22-250	35.30	--	--
.223	23.57	31.65	29
.224	34.99	--	--

.243	42.19	47.49	12
.25-06	44.99	--	--
.260	49.97	62.48	12
.270	39.68	50.07	23
.280	89.99	93.99	4
.30 Carbine	68.99	--	--
.300 Win-Mag	66.48	66.65	0
.300 PRC	63.99	66.99	5
.300 Blackout	28.70	44.99	44
.30-06	48.36	53.59	10
.30-30	31.99	--	--
.308	40.79	53.32	27
.338 Win-Mag	--	68.99	--
.350	34.99	--	--
.450	44.97	--	--
.45-70	64.99	--	--
5.56 NATO	14.35	31.99	76
5.56x45	--	27.99	--
6 mm	38.49	55.49	36
6 Creedmoor	45.99	55.99	20
6.5 Creedmoor	46.75	52.99	12
6.5 Grendel	3899-3499-4497-	0	--
6.5 PRC	5999	0	--
6.8	6499	0	--
7mm	50.80	69.99	32
7mm PRC	60.99	62.99	3
7mm-08	46.99	47.99	2
7.62	24.49	0	--
7.62x39	24.99	0	--
7.62x51	24.99	0	--

Table 15. Average price of lead and copper ammunition at a San Antonio, Texas Bass Pro store. For the 10 calibers that had both lead and copper bullets available, lead cartridges were, on average, $25 \pm 8\%$ less expensive. Calibers **in bold** were among those nominated by Vista Outdoors.

Caliber	Average Lead Bullet Prices	Average Copper Bullet Prices	Percent Difference
.204	31.00	--	--
.220	32.25	--	--
.22-250	36.00	--	--
.223	26.07	--	--
.224	24.50	--	--
.243	35.08	46.66	28
.25-06	24.60	--	--
.260	42.00	--	--

.270	41.67	60.00	36
.30 Carbine	45.00	--	--
.300 Win-Mag	52.10	58.33	11
.300 PRC	63.00	65.00	3
.300 Blackout	26.80	--	--
.30-06	37.06	49.50	29
.30-30	29.33	--	--
.303 British	29.00	--	--
.308	40.09	50.00	22
.338 Win-Mag	70.00	--	--
.350	38.00	--	--
.444	71-60-	--	--
.450	46.00	--	--
.45-70	57.50	--	--
5.56 NATO	14.10	--	--
6 mm	35.33	--	--
6 Creedmoor	42.75	--	
6.5 Creedmoor	37.50	48.00	25
6.5 Grendel	32.25	--	--
6.5 PRC	43.00	54.66	24
6.8	44.40	--	--
7mm	52.43	67.67	25
7mm PRC	59.50	57.00	4
7mm-08	38.00	--	--
7x57	38.00	--	--
7.62x39	18.00	--	--
7.62x54	28.00	--	--
8mm	30.00	--	--

Table 16. Average price of lead and copper ammunition at a Tucson, Arizona Bass Pro store. For the 12 calibers that had both lead and copper bullets available, lead cartridges were, on average, $16 \pm 16\%$ less expensive. Calibers **in bold** were among those nominated by Vista Outdoors. Copper products that were less expensive than lead products for calibers highlighted in **red**.

Caliber	Average Lead Bullet Prices	Average Copper Bullet Prices	Percent Difference
.204	31.00	--	--
.220	31.00	--	--
.22-250	33.67	--	--
.243	34.18	46.33	30
.25-06	45.50	59.00	26
.260	45.00	--	--
.270	39.00	42.50	9
.280	78.00	--	--
.30 Carbine	50.00	--	--

.300 Win-Mag	52.53	63.00	18
.300 PRC	60.00	59.00	(2)
.300 Blackout	38.00	--	--
.30-06	37.20	46.00	21
.30-30	29.80	--	--
.308	41.85	49.66	17
.338 Win-Mag	60.00	60.00	0
.350	33.75	--	--
.444	46.50	--	--
.450	45.75	--	--
6 Creedmoor	44.20	46.00	4
6.5	45.00	--	--
6.5 Creedmoor	41.43	45.00	8
6.5 Grendel	32.50	60.00	59
6.5 PRC	59.25	60.00	1
6.5x55	30.00	--	--
6.8	44.33	38.00	15
7mm	43.60	60.00	32
7mm-08	40.40	42.00	4
7x57	56.00	--	--
7.62x51	27.25	--	--

When available, the number of boxes of copper ammunition on shelves were, on average, 156 ± 57 times less available than the number of boxes of lead ammunition. To illustrate this difference, Table 17 displays the number of boxes of lead and copper ammunition available at chain retail stores in calibers recommended by Vista Outdoors.

Table 17. Number of boxes of lead and copper ammunition on shelves in four Sportsman's Warehouse and two Bass Pro retail stores. Calibers were those nominated as most popular by Vista Outdoors. California stores are highlighted in blue.

<i>Caliber</i>	<i>Number of boxes of shelved lead products in each store</i>	<i>Average number of boxes of shelved lead products</i>	<i>Number of boxes of shelved copper products in each store</i>	<i>Average number of boxes of shelved copper products</i>	<i>Percent Difference</i>
.223	13+132+183+73+0+18	70	0+204+0+0+0+0	34	69
.243	80+20+134+113+73+30	75	0+27+7+11+9+0	9	157
.25-06	2+11+35+9+0+12	11	0+0+3+0+0+0	0.5	183
.270	142+13+75+94+144+24	82	1+36+2+4+22+0	11	153
.280	28+52+0+0+1+0	13	0+1+0+0+0+0	0.2	194
.300 Win-Mag	71+33+76+94+60+27	60	21+35+8+15+7+0	14	124

.300 WSM	0+0+0+14+3+0	3	0+0+0+0+2+0	0.3	164
.300 Blackout	15+50+0+53+19+15	25	5+83+0+0+0+0	15	50
.30-06	103+30+93+155+147+21	91	0+20+6+17+10+0	9	164
.303 British	0+0+0+16+0+0	3	0+0+0+0+0+0	0	300
.308	108+55+186+96+191+30	111	0+34+12+3+17+0	2	193
.30-30	134+77+33+147+37+27	76	0+0+0+0+0+3	0.5	197
.338 Win- Mag	14+0+0+0+4+9	4	0+3+0+0+8+0	2	67
6.5 Creedmoor	83+70+96+77+89+45	77	0+23+19+13+19+12	14	138
6.5 PRC	18+0+24+18+17+9	14	0+0+0+6+2+0	1	173
7mm	79+15+54+55+52+12	44	1+6+0+8+9+0	4	167
7mm-08	28+20+39+9+20+16	22	0+4+5+0+2+0	2	167

Local Retail In-Store Availability of Ammunition.

Fifteen local retail stores were visited in Alabama (n=1), Arizona (n=2), California (n=2), Kentucky (n=1), Michigan (n=3), Mississippi (n=1), New Mexico (n=1), and Texas (n=5). In each case, all stocked calibers of available ammunition were recorded.

Table 18 indicates the relative availability of lead and copper ammunition products at these local retail stores, collapsed across calibers. Overall, lead ammunition was $117 \pm 71\%$ more available in stores. Excluding California stores (where copper ammunition is mandated), lead ammunition was $133 \pm 40\%$ more available.

Table 18. Total number of lead and copper products collapsed across all calibers available at local retail stores in eight states (Alabama, Arizona, California, Kentucky, Michigan, Mississippi, New Mexico, and Texas). In cases where copper or lead products were unavailable for comparison, a percent difference value of 100 was assigned. Overall, lead was 117 ± 71 times more available although copper ammunition products were more available at one store in Blythe, California, highlighted in red.

Retail Store	Total number of Lead Products	Total number of Copper Products	Percent Difference
Tuscaloosa, Alabama	129	7	180
Anthem, Arizona	16	0	100
Show Low, Arizona	103	17	143
Blythe, California	3	11	(114)
Moreno Valley, California	20	12	50
Murray Kentucky	53	3	179
Davison, Michigan	55	14	119
St. Charles Michigan	43	1	191
Lansing Michigan	23	0	100
Starkville, Mississippi	9	0	100
Las Cruces, New Mexico	3	0	100

Hondo, Texas	9	0	100
Kerrville Texas	175	21	157
San Angelo, Texas	43	5	158
San Antonio Texas	227	52	125
San Antonio Texas	67	2	188

Tables 19-26 provide the number of bullet weights per caliber available for purchase at local retail stores in Alabama, Arizona, California, Kentucky, Michigan, Mississippi, New Mexico, and Texas. Neither the Mississippi or New Mexico stores stocked any copper ammunition.

Table 19. Number of bullet weights (i.e., grains) per caliber at a Tuskaloosa, Alabama local retail store for calibers for which both lead and copper ammunition were available. Lead ammunition was $87 \pm 35\%$ times more available. Calibers in **bold** were among those nominated as most popular by Vista Outdoors.

Calibers	Number of Lead Bullet Weights	Number of Copper Bullet Weights	Percent Difference
7mm-08	2	1	67
6.5 PRC	4	1	120
270	4	1	120
7 mm Rem-Mag	3	1	100
.300 Win-Mag	4	3	29

Table 20. Number of bullet weights (i.e., grains) per caliber collapsed across Anthem and Show Lo, Arizona local retail stores for calibers for which both lead and copper ammunition were available. Lead ammunition was $93 \pm 54\%$ times more available. Calibers in **bold** were among those nominated as most popular by Vista Outdoors.

Calibers	Number of Lead Bullet Weights	Number of Copper Bullet Weights	Percent Difference
270	8	3	91
7mm Rem-Mag	7	2	111
44 Mag	4	1	120
6.5 Creedmoor	9	2	127
.300 Win-Mag	6	2	100
.300 WSM	1	1	0
.300 PRC	2	1	67
.308	10	1	164
.30-06	8	1	155
.338	1	1	0

Table 21. Number of bullet weights (i.e., grains) per caliber collapsed across Blyth and Moreno Valley, California local retail stores for calibers for which both lead and copper ammunition were available. Lead ammunition was $11 \pm 25\%$ times more available. Calibers in **bold** were among those nominated as most

popular by Vista Outdoors. Copper ammunition was more available than lead ammunition for one caliber, highlighted in **red**.

Calibers	Number of Lead Bullet Weights	Number of Copper Bullet Weights	Percent Difference
.223	1	2	(67)
.280	1	1	0
6.5 PRC	2	2	0
.30-30	1	1	0
7.62 NATO	1	1	0
.45-70	1	1	0

Table 22. Number of bullet weights (i.e., grains) per caliber at a Murray, Kentucky local retail store for which both lead and copper ammunition were available. Lead ammunition was $138 \pm 13\%$ times more available. Calibers in **bold** were among those nominated as most popular by Vista Outdoors.

Calibers	Number of Lead Bullet Weights	Number of Copper Bullet Weights	Percent Difference
6.5 Creedmoor	6	1	143
.300	4	1	120
.30-30	7	1	150

Table 23. Number of bullet weights (i.e., grains) per caliber collapsed across Lansing, St. Charles, and Davison, Michigan local retail stores in instances where both lead and copper ammunition were available. Lead ammunition was $93 \pm 49\%$ times more available. Calibers in **bold** were among those nominated as most popular by Vista Outdoors.

Calibers	Number of Lead Bullet Weights	Number of Copper Bullet Weights	Percent Difference
.308W lead	5	1	133
.300 Win-Mag lead	4	1	120
.300 WSM lead	3	1	100
.338 Win-Mag lead	3	1	100
.35 Whelan	2	1	67
.22-250	1	1	0
7mm Rem-Mag	4	1	120
6 mm Creedmoor	10	1	164
.243 Win	4	1	120
.260 Rem	1	1	0
6.5 Creedmoor	2	1	67
450 Bushmaster	4	1	120

Table 24. Number of bullet weights (i.e., grains) per caliber at a Starkville, Mississippi local retail store. No copper ammunition was available. Calibers in **bold** were among those nominated as most popular by Vista Outdoors.

Calibers	Number of Lead Bullet Weights	Number of Copper Bullet Weights	Percent Difference
.223	2	0	--
.22-250	1	0	--
.243	3	0	--
.25-06	1	0	--
.270	2	0	--
.300 Win-Mag	2	0	--
6.5 Creedmoor	3	0	--
7mm	2	0	--

Table 25. Number of bullet weights (i.e., grains) per caliber at a Las Cruces, New Mexico store. No copper ammunition was available. Calibers in **bold** were among those nominated as most popular by Vista Outdoors.

Calibers	Number of Lead Bullet Weights	Number of Copper Bullet Weights	Percent Difference
7.62X39	2	0	--
.223	4	0	--

Table 26. Number of bullet weights per caliber at San Angelo, San Antonio, Hondo, and Kerrville, Texas local retail stores in instances where both lead and copper bullets were available. Overall, 74 calibers were stocked; copper bullets were available for 14 of them. Lead ammunition was $49 \pm 51\%$ times more available. Calibers in **bold** were among those nominated as most popular by Vista Outdoors. Copper ammunition was more available than lead ammunition for one caliber, highlighted in **red**.

Calibers	Number of Lead Bullet Weights	Number of Copper Bullet Weights	Percent Difference
30.06	5	5	0
.300 Win-Mag	4	3	29
.300 WBY	2	1	67
.300 BO	2	1	67
.300 RUM	1	1	0
.300 WSM	4	2	67
.300 PRC	3	1	100
.35 Whelen	1	1	0
.416 Rem	1	1	0

.458	2	1	67
.375	2	1	67
.308	7	1	150
30-30	5	4	22
.260	4	2	67
.270	4	2	67
.270 WSM	1	1	0
.223	6	4	40
6 mm Creedmoor	3	1	100
.243	5	1	133
.257 WBY	1	2	(67)
22-250	4	1	120
6.5 Grendel	2	1	67
6.5 mm Creedmoor	8	2	120
6.5 mm PRC	1	1	0
6.5x300WBY	1	1	0
7 mm PRC	1	1	0
7 mm-08	3	3	0

Local In-Store Price of Ammunition.

Tables 27-32 display the prices of lead and copper ammunition at 13 local retail stores. Tables for stores in Mississippi and New Mexico are not presented because the surveyed outlets stocked no copper ammunition. Overall, copper ammunition was 13 ± 21 more expensive. Across calibers, there was considerable variability in price differences between lead and copper products (Tables 25-30). For example, at one Texas location, the average price among the six 7mm-08 lead products was \$29.16 while the average price of six 7mm-08 copper products was \$51.33 (55% more expensive). Conversely, at an Arizona store, the average price among the eight 7mm products was \$52.48 while the average price of the two copper products was \$52.49 (0.01% more expensive).

*Table 27. Average prices of lead and copper ammunition products at a Tuscaloosa, Alabama local retail store and the percent difference. On average, where both lead and copper products were available, copper products were $29 \pm 9\%$ more expensive. Calibers in **bold** were among those nominated as most popular by Vista Outdoors.*

Caliber	Number of Lead Products	Average Lead Product Price (\$)	Number of Copper Products	Average Copper Product Price (\$)	Percent Difference
.300 Win-Mag	9	47.77	3	76.66	46
.300 Savage	1	39.99	0	--	--
.300 WSM	3	67.99	0	--	--
.300 PRC	2	74.99	0	--	--
.300 WBY	1	119.99	0	--	--
.303 British	1	69.99	0	--	--

.308	6	61.66	0	--	--
.204	1	29.99	0	--	--
.223	3	33.66	0	--	--
.224	1	49.99	0	--	--
.257	1	149.99	0	--	--
.260	1	129.99	0	--	--
.270	9	52.21	1	64.99	22
.280 Ackley	3	76.66	0	--	--
.28 Nosler	1	74.99	0	--	--
22-250	4	56.24	0	--	--
.243	13	46.76	0	--	--
25-06	6	58.32	0	--	--
.30 Carbine	1	99.99	0	--	--
30.06	10	46.99	0	--	--
30-30	6	38.32	0	--	--
.35 Whelen	1	54.99	0	--	--
6mm	1	29.99	0	--	--
6mm Creedmoor	1	59.99	0	--	--
6.5 Grendel	1	59.99	0	--	--
6.5 PRC	5	77.99	1	59.99	26
6.5 Creedmoor	10	51.49	0	--	--
6.5-284	1	49.99	0	--	--
7mm-08	4	44.99	1	59.99	29
7mm PRC	2	79.99	0	--	--
7mm Rem-Mag	6	60.82	0	74.99	21
7.62x39 Win	1	32.99	0	--	--
.400 Legend	1	44.99	0	--	--
.444	1	69.99	0	--	--
.450	2	52.49	0	--	--
45-70	1	69.99	0	--	--

Table 28. Average prices of lead and copper ammunition products at two Arizona local retail stores in Anthem and Show Low, Arizona. On average, where both lead and copper products were available, copper products were $5 \pm 12\%$ more expensive. Calibers in **bold** were among those nominated as most popular by Vista Outdoors. Copper ammunition was less expensive than lead ammunition for calibers highlighted in **red**.

Caliber	Number of Lead Products	Average Lead Product Price (\$)	Number of Copper products	Average Copper Product Price (\$)	Percent Difference
.204	3	24.99	0	--	--
.220	3	37.49	0	--	--
.223	3	10.6	0	--	--
.224	3	22.12	0	--	--
.243	6	35.79	1	44.99	23

.260	1	44.99	0	--	--
.22-250	8	35.42	0	--	--
.25-06	5	43.74	0	--	--
.270	11	42.79	1	43.99,	3
.270 WSM	1	69.99	1	56.99	(20)
.280	3	59.99	0	--	--
.280 Ackley	3	61.99	0	--	--
.300 Win-Mag	7	50.13	3	60.99	19
.300 RUM	1	107.99	0	--	--
.300 WSM	4	57.24	2	62.99	10
.300 Blackout	7	26.65	0	--	--
.300 PRC	2	55.99	1	57.99	3
.30.06	10	40.29	1	42.99	6
.30-30	5	33.39	0	--	--
.308	11	34.45	1	41.99	20
.338 Win-Mag	2	62.49	1	59.99	(4)
.338 Lapua	1	129.99	0	--	--
.350	3	39.61	0	--	--
.35 Whelan	1	52.99,	0	--	--
.44	5	32.99	1	34.99	6
.450	1	39.99	0	--	--
.45-70	1	59.99	0	--	--
5.56x45	4	15.93	0	--	--
6mm	5	33.99	0	--	--
6mm Creedmoor	2	43.99	0	--	--
6.5 Creedmoor	13	40.52	2	35.73	(13)
6.5 Grendel	3	28.32	0	--	--
6.5 PRC	2	54.99	0	--	--
6.5x54	1	34.99	0	--	--
6.8mm	2	49.99	1	59.99	18
7mm	8	52.48	2	52.49	0
7mm WSM	1	56.99	0	--	--
7mm PRC	1	52.99	0	--	--
7mm-08	6	37.49	0	--	--
7x57mm	1	39.99	0	--	--
7.62x39mm	2	13.10	0	--	--
7.62x54mm	1	27.99	0	--	--

Table 29. Average prices of lead and copper ammunition products at two local retail stores in Blythe and Moreno Valley, California. On average, where both lead and copper products were available, lead products were $1 \pm 43\%$ more expensive. Calibers in **bold** were among those nominated as most popular by Vista Outdoors.

Caliber	Number of Lead Products	Average Lead Product Price (\$)	Number of Copper products	Average Copper Product Price (\$)	Percent Difference
.223	1	36.99	2	12.49	(99)
.243	--	--	2	45.49	--
.22-250	--	--	1	44.99	--
.270	--	--	1	49.99	--
.280	1	39.99	1	54.99	32
.300 Win-Mag	--	--	3	63.32	--
.300 WSM	1	37.99	0	--	--
.30.06	--	--	2	48.99	--
.30-30	1	47.99	1	44.99	(6)
.308	--	--	5	49.59	--
.338 Lapua	1	79.99	0	--	--
.416	2	118.99	0	--	--
.45-70	1	59.99	1	77.99	26
5.56x45mm	2	13.99	0	--	--
5.7x28mm	1	50.99	0	--	--
6.5 Creedmoor	1	39.99	1	59.99	40
6.5 Grendel	1	47.49	0	--	--
6.5 PRC	2	84.99	2	78.99	(7)
7mm PRC	1	69.99	0	--	--
7.62 NATO	2	22.99	1	23.99	4
7.62x39mm	3	19.65	0	--	--

Table 30. Average prices of lead and copper ammunition products at a Murray, Kentucky local retail store. On average, where both lead and copper products were available, copper products were 21 ± 11% more expensive. Calibers **in bold** were among those nominated as most popular by Vista Outdoors.

Caliber	Number of Lead Products	Avg. Lead Product Price (\$)	Number of Copper Products	Avg. Copper Product Price (\$)	Percent Difference
5.56mm	2	21.49	0	--	--
6.5 Creedmoor	7	37.31	1	49.99	29
7.62mm	2	29.99	0	--	--
.35 Whelen	1	44.00	0	--	--
.204	1	26.99	0	--	--
.223	8	17.74	0	--	--
.224	1	29.00	0	--	--
.243	5	37.39	0	--	--
.270	3	34.99	0	--	--
.300 Win-Mag	4	40.99	1	46.00	11
.308	6	40.33	0	--	--
.450	1	39.99	0	--	--

.30-30	7	30.42	1	43.00	34
.22-250	2	28.99	0	--	--
.30.06	3	37.99	0	--	--
.45-70	1	54.50	1	59.99	10
7mm-08	1	45.00	0	--	--

Table 31. Average prices of lead and copper ammunition at three Michigan local retail stores in Lansing, St. Charles, and Davison, Michigan. On average, where both lead and copper products were available, copper products were 11 ± 9% more expensive. Calibers **in bold** were among those nominated as most popular by Vista Outdoors.

Caliber	Number of Lead Products	Average Lead Product Price (\$)	Number of Copper Products	Average Copper Product Price (\$)	Percent Difference
.30.30 Win	8	32.82	0	--	--
6.5x55 SE	4	41.70	0	--	--
.308 Marlin	--	--	0	--	--
.300 Win-Mag	6	57.95	1	65.99	13
.300 PRC	2	70.95	0	--	--
.300WSM	4	62.70	1	60.95	3
.300WBY	3	80.28	0	--	--
.300RUM	1	91.95	0	--	--
.300Rem	2	84.45	0	--	--
.30.06 SPRG	9	44.72	0	--	--
.338 Win-Mag	4	59.20	1	81.95	32
.338 RCM	1	59.95	0	--	--
.338 Lapua	1	135.95	0	--	--
.35 Whelan	2	61.45	1	56.45	8
.35Rem	2	54.95	0	--	--
.240Mag	1	75.95	0	--	--
.257	2	96.45	0	--	--
6.5-300 Mag	2	69.40	0	--	--
.338 WBY-Mag	2	91.00	0	--	--
.30-378 WBY	2	136.95	0	--	--
.378 WBY Mag	1	92.95	0	--	--
.204 Ruger	4	29.70	0	--	--
.22-250	2	40.45	1	45.95	13
.223	4	34.20	0	--	--
.224	2	32.95	0	--	--
.280Rem	2	40.45	0	--	--
.280Ackley	3	8-4.62	0	--	
7mm-08	4	37.45	0	--	
7mm Rem-Mag	9	49.80	1	57.95	15
6mm Creedmoor	10	45.95	2	47.45	3
.243	2	41.00	0	--	--
.243 Win	8	41.70	0	--	--

.250 Savage	1	47.95	0	--	--
.257 Roberts	1	48.95	0	--	--
.260 Rem	1	48.95	1	58.95	10
.270 Win	5	43.15	0	--	--
7mm WSM	1	52.95	0	--	--
7mm PRC	4	66.95	0	--	--
7.62x54R	3	21.95	0	--	--
6.5 Creedmoor	3	45.95	1	45.95	0
6.5 Grendel	1	58.95	0	--	--
.25.06 Rem	5	43.55	0	--	--
.25 WSSM	2	58.45	0	--	--
.30 Carbine	1	34.95	0	--	--
.350 Legend	6	35.45	0	--	--
.360 Buckhammer	4	33.95	0	--	--
400 Legend	1	35.95	0	--	--
450 Bushmaster	6	36.00	1	42.95	18

Table 32. Average prices of lead and copper ammunition at five Texas local retail stores in San Angelo, San Antonio, Hondo, and Kerrville, Texas. On average, where both lead and copper products were available, copper products were $17 \pm 17\%$ more expensive. Calibers **in bold** were among those nominated as most popular by Vista Outdoors. Copper ammunition was more available than lead ammunition for calibers highlighted in **red**.

Caliber	Number of Lead Products	Average Lead Product Price (\$)	Number of Copper Products	Average Copper Product Price (\$)	Percent Difference
.204	3	32.99	0	--	--
.218	1	61.99,	0	--	--
.220	7	44.13	0	--	--
.22 Nosler	1	46.99	0	--	--
.22 Creedmoor	3	65.99	0	--	--
.221	1	46.99,	0	--	--
.222	1	31.99,	0	--	--
.22-250	18	36.50	2	50.49	32
.223	8	31.00	5	34.59	11
.224	3	34.32	0	--	--
.240	1	79.99	0	--	--
.243	21	38.60	3	43.00	11
.257 Roberts	5	63.00	0	--	--
.257 WBY	3	77.32	2	110.49	35
25-06	14	48.41	2	57.49	17
25-20	2	112.99	0	--	--
25-35	1	55.99	0	--	--
.260	6	51.99	2	65.99	24
.260 HDY	1	54.99	0	--	--
.26 Nosler	3	101.99	0	--	--

.264	4	86.24	0	--	--
.270	20	45.17	9	50.11	10
.270 WBY	3	105.50	1	112.99	7
.270 WSM	1	74.99	0	--	--
.275 Rigby	1	59.99	0	----	--
.277	1	77.99	0	--	--
.280	4	54.25	0	--	--
.280 Ackley	2	69.50	0	--	--
.284	1	74.99	0	--	--
.28 Nosler	2	74.50	0	--	--
.30 Nosler	1	101.99	0	--	--
.30 Carbine	2	85.50	0	--	--
30-378	1	179.99	0	--	--
.300 Savage	8	66.37	0	--	--
.300 Blackout	7	47.29	1	53.99	13
.300 Nosler	1	102.99	0	--	--
.300 Win Mag	16	57.31	4	69.00	18
.300 PRC	3	66.33	1	70.25	6
.300 WBY	4	104.99	1	122.99	16
.300 WSM	9	73.33	2	68.99	(6)
.300 RUM	3	110.66	1	99.99	(10)
.300 RCM	2	54.00	0	--	--
30-30	18	35.22	0	--	--
.303 British	6	53.50	0	--	--
.307	2	52.00	0	--	--
.308	9	40.33	1	57.99	36
.308 PMC	1	35.80	0	--	--
30-06	21	47.33	5	57.60	20
.32	--		1	55.99	--
.33 Nosler	1	107.99	0	--	--
.35	4	55.75	0	--	--
.338	2	47.50	1	78.99	20
.338 Win Mag	10	86.30	0	--	--
.338 Lapua	2	128.50	0	--	--
.338 RUM	--		1	97.99	--
.348	3	89.33	0	--	--
.350 Legend	5	29.00	0	--	--
.35	3	57.66	0	--	--
.35 Whelen	3	52.67	1	57.99	10
.350 Buckhammer	2	35.00	0	--	--
.358	2	79.99	0	--	--
.375	6	102.33	1	166.99	48
.375 RUM	1	92.99	0	--	--
.400 Legend	1	34.99,	0	--	--
.404	1	209.99	0	--	--

.405	1	94.99	0	--	--
.416 Rem-Mag	--	--	1	213.99	--
.416 Rigby	2	185.99	1	213.99	14
.444	1	79.99	0	--	--
.450	1	65.99	0	--	--
450-400	1	167.99	0	--	--
.450 Rigby	1	178.99	0	--	--
45-70	13	60.23	0	--	--
.458	2	119.00	1	126.99	6
5.56	--	--	1	14.50	--
6 mm	7	46.57	1	38.99	(18)
6.5 Creedmoor	26	43.96	5	54.40	21
6.5 PRC	5	56.60	1	87.99	43
6.5 WBY	1	98.99	0	--	--
6.5 Grendel	5	48.60	1	49.99	3
6.5 Swedish	1	51.99	0	--	--
6.5x 284	1	88.99,	0	--	--
6.5x300	2	75.99	1	109.99	37
6.5x53 Carcano	1	33.99	0	--	--
6.5x54	2	33.99	0	--	--
6.5x55 Swedish	2	62.50	0	--	--
6.8	8	50.61	0	--	--
7 mm	5	60.20	1	76.99	24
7mm Rem Mag	10	60.70	0	--	--
7mm RUM	1	93.99,	0	--	--
7mm PRC	3	61.99	1	61.99	0
7mm-08	6	29.16	6	51.33	55
7x57	--	--	1	43.33	--
7.62 x 51	2	23.00	0	--	--
7.62x54R	1	23.99	0	--	--
7.7 mm	1	56.99	0	--	--
8x57	1	71.99	0	--	--
8.6	1	62.99	0	--	--

Discussion and Implications.

Regardless of vendor (internet, chain retail, local retail), traditional lead ammunition was more available and less expensive than alternative copper ammunition. In some instances (e.g., scheels.com, various local retail stores), no copper ammunition products were available. Even in those instances where copper ammunition was available, the number of bullet weight alternatives was limited relative to lead bullet weights. Conversely, regardless of caliber, lead ammunition in a variety of bullet weights was generally available. Also affecting availability, there were significantly fewer boxes of copper product shelved relative to lead ammunition.

The management and economic implications of these results are clear. Most important, the current availability, and to a lesser extent the price, of copper ammunition is unlikely to mitigate the impacts of any mandatory ban on the use of lead ammunition. Hunting participation and R3 engagement are likely to be negatively impacted by ammunition mandates based on this lack of availability and higher cost of copper ammunition across the United States. Likewise, programs to encourage the voluntary use of copper ammunition are likely to be less impactful than if copper alternatives to lead ammunition were readily available and more comparable in cost.

More broadly, mandates (and perhaps even voluntary programs) that require or encourage the use of copper ammunition may have a meaningful negative impact on ammunition excise tax revenues due to reductions in ammunition sales. This, in turn, would compromise conservation and management of entire wildlife species, including nongame, by state agencies who depend on Pitman-Robertson funding to support their activities. Unless or until copper ammunition products become more available and offered in a wider number of calibers, efforts to switch hunters' use patterns from lead to copper ammunition are both premature and likely to negatively impact state-based wildlife conservation funding.

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Additional research available at <https://www.outdoorstewards.org/resources-for-hats/>