

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Wildlife Division Report No. 2796

October 1977

SEX AND AGE AS PARAMETERS IN THE
POPULATION DYNAMICS OF MICHIGAN HUNTERS

By

Mary E. Bouchard, Forest Wildlife Research, DNR
John M. Lerg, Farm Wildlife Research, DNR

ABSTRACT

Michigan population projections for 1975 were compiled by sex and age. Residents who purchased Michigan hunting licenses were also compiled by sex and age. The percentage of males and females who bought 1975 hunting licenses was then calculated for every age from 12 to 85+.

Teenagers bought proportionately more licenses than adults. Males bought proportionately more licenses than females.

Michigan residents of ages 17-18 and 24-26 bought proportionately more licenses than other age groups. This may coincide with two different types of hunting recruitment; family and peer group. License sales dropped most after the ages 43-46.

Less than 5 percent of the licenses were sold to females, however recruitment of females to the hunting population has been increasing in recent years. Females usually started hunting later and stopped earlier than males. Adult females bought proportionately more licenses than teenaged females. In contrast, adult males bought proportionately less licenses than teenaged males.

ACKNOWLEDGEMENTS

We would like to thank Ed Langenau who saw the need for this information and provided suggestions, encouragement, and the benefit of his thoughts throughout the project. Gale Jamsen offered assistance in planning the study, and George Burgoyne provided statistical counsel. Julie Roof performed much of the basic computations and typed the manuscript.

Michigan population projections were supplied by the Michigan Department of Management and Budget, Office of the Budget, Information Systems Section. Total hunting license sales for 1975 by license type were provided by License Control, Administrative Services Division. Samples of license buyers were provided by the Office of Surveys and Statistical Services.

A contribution from Federal Aid to Wildlife Restoration, Michigan
Pittman-Robertson Projects W-117-R and W-118-R.

INTRODUCTION

Modern wildlife management is, in part, people management. With increasing demands upon a limited resource, the manager is no longer free to consider only the biology of wildlife species. The needs and wants of people must also be considered in relation to what the resource can provide. In order to do this, the needs and wants of the people must first be identified. The next step is to describe the population characteristics and population dynamics. The sub-populations should then be identified and assessed. Finally, the needs and wants of people can be specified in terms of their membership in these sub-groups.

Several papers have been written about the characteristics of hunters with reference to geographic area or species hunted. (Hendee and Potter, 1976, list 33 of these papers.) Fewer papers include a discussion of sub-populations (young people, women, etc.), and little work has been done with the dynamics of these groups (Applegate 1976). Yet it is to these smaller, more uniform groups that management efforts can best be selectively applied. In this report, groups of hunters by sex and age were developed from an analysis of 1975 hunting license and population data.

METHODS

There were four major types of hunting licenses sold to hunters in 1975. The firearm deer license permitted the hunter to hunt deer during the 16-day season. The archery deer license permitted the hunter to hunt deer with a bow during the 76-day season. The small game license permitted the hunter to hunt upland game during the 168-day season. The sportsman's license permitted the hunter to hunt in any of the above seasons.

A hunter must have been at least 12 years old to purchase a small game or archery deer license and at least 14 years old to have purchased a sportsman's or firearm deer license in 1975. Special fee rates were provided for senior hunters aged 65 or older.

Data, derived from three sources, were used to develop this report. Michigan population projections for 1975 listed the number of individuals within sex and age classes. The total number of hunting licenses sold to Michigan residents was given for each of four major types of licenses sold. Samples of license buyers were then used to determine the number of individuals within each sex and age class for the four license types. (See appendix)

Systematic random samples of 2.50 percent of the 1975 resident firearm deer licenses, 3.33 percent of the 1975 resident archery deer licenses, 1.00 percent of the 1975 resident small game licenses, and 6.83 percent of the 1975 resident sportsman's licenses were obtained from the Office of Surveys and Statistical Services. These data included the sex and age of license buyers. Data from the sale of special licenses, available to senior residents at reduced rates, were also included in each of the four major license types.

RESULTS

During 1975, 562,702 firearm deer, 54,180 archery deer, 543,631 small

game, and 140,643 sportsman's licenses were sold to 8.2, 0.8, 7.6 and 2.1 percent of the 1975 Michigan population. Teenaged hunters (twelve to eighteen years old) bought 16.2, 19.0, 24.0 and 5.1 percent of the licenses sold in each type respectively. Females accounted for an estimated 7.3, 6.0, 3.1 and 0.6 percent of the sales of the different license types respectively (Table 1).

Hunter Distribution by Sex

Females bought proportionately fewer licenses than males. The difference was most noticeable among sportsman's license buyers (Table 1).

Hunter Distribution by Age

The percentage of people who bought hunting licenses within each age class was not constant. When these percentages were plotted against age (Figs. 1-6), there were two peaks among all four types of license holders; proportionately more 17-18 and 24-26 year-olds bought hunting licenses.

The slope of the distributions changed about the ages 43-46. Older residents bought proportionately fewer licenses. Inconsistencies in the distributions at age 65 are probably due to the special fee rates provided for senior hunters. Marked differences about the age 75 were due to irreconcilable computer coding errors and should be ignored.

License buyers purchasing each license type were divided into two groups; teenage hunters, and older hunters. Proportionately more teenagers bought hunting licenses than their adult counterparts (Table 1). This situation held true for all but the sportsman's license buyers. The proportion of license buyers within an age group generally increased through age 17, decreased through age 21, and then began increasing again.

Hunter Distribution by Sex X Age

Females bought hunting licenses at different ages than males. Adult females bought proportionately more licenses than teenaged females. Males, however, bought licenses at a higher rate as teenagers than as adults.

Females stopped buying licenses at earlier ages than males. Kolmogorov-Smirnov tests (Siegel 1966) were calculated for male and female license buyers as a proportion of their respective age classes for all four license types. The differences between males and females were found significant ($p < 0.05$) among those populations buying firearm deer and archery deer licenses. Differences were not found significant ($p > 0.05$) among those buying small game or sportsman's licenses.

DISCUSSION

From this and similar previous studies (Jansen 1967; Ryel et al. 1970), two trends are evident. License sales have increased in recent years, and many of these additional licenses are being bought by teenaged hunters. The modal age class for the firearm deer hunters has shifted from the 35-39 year age group in 1949 to the 19 years and under age group in recent years. During this time the license sales to the 19 and under age group have increased from 6.9% of the total license sales in 1949 to 19.9% in 1975. A similar

pattern was found in the population of small game hunters. The population of archery deer hunters exhibited neither of these trends and was stable throughout the years between 1949 and 1975.

For the 1975 data, sales by license type were expressed as a proportion of the number of available people within that age class. Two periods of recruitment of the hunting population may be present; one at ages 17-18 and one at ages 24-26. Those people probably being recruited during the peak at ages 17-18 may be more influenced by an older family member. Those hunters probably being recruited at ages 24-26 may be more influenced by peers.

One decrease in the rate of hunting from the population of hunters was evident in the distributions of all four license types. This decrease occurred about the ages 43 to 46. It is at this age that family hunting groups may start to break up due to the desertion of a son. If this does indeed happen, then this may suggest that older hunters derive considerable satisfaction from social aspects of the hunt. These satisfactions may be essential to keeping the 40-45 year old an active hunter.

The number of female hunters has increased in recent years (Ryel, unpublished data). However, women are recruited to hunting later in life. This leads one to speculate that they are more often recruited to the sport by members of their peer group (probably more specifically their boyfriend or husband) than by a parent or relative. From casual observations women, when hunting, are almost always found in the company of male hunters as opposed to alone or exclusively with other women.

These findings provide certain cues for managers. Different sub-groups of the hunting population may have different needs and wants. Management efforts should be specific to these different groups in order to provide maximum benefits.

REFERENCES CITED

- Applegate, J. E. 1976. Dynamics of the New Jersey hunter population. Trans. N. Am. Wildl. Nat. Resour. Conf. 41:(In press).
- Hendee, J. C., and D. R. Potter. 1976. Hunters and hunting: Management implications of research. U.S.D.A. Forest Service General Technical Report SE-9:137-161.
- Jamsen, G. C. 1967. Sex and age structure of licensed hunters, trappers and fishermen in Michigan. Michigan Dept. of Conservation. Res. and Develop. Rep. No. 125. 14pp.
- Ryel, L. A., G. C. Jamsen, and L. J. Hawn. 1970. Some facts about Michigan hunters. Michigan Dept. of Nat. Resour. Res. and Develop. Rep. No. 197. 25pp.
- Siegel, S. 1956. Nonparametric statistics for the behavioral sciences. McGraw-Hill Book Co., New York. 312pp.

Table 1. Percentage of the Michigan population buying hunting licenses in 1975 by age and sex.

Age Class	License Type									
	Firearm Deer		Archery Deer		Small Game		Sportsman's			
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
12			0.53	0.00	0.27	10.30	0.59	5.52		
13			1.14	0.10	0.63	16.77	0.24	8.67		
14	16.65	0.48	8.70	0.00	0.84	18.85	0.16	9.63	0.40	0.00
15	19.01	0.34	9.83	0.00	0.75	21.80	0.23	11.19	0.61	0.00
16	19.11	0.40	9.92	0.03	0.96	19.21	0.58	10.10	1.35	0.02
17	19.29	0.79	10.20	0.10	1.03	21.14	0.11	10.82	2.61	0.00
18	16.80	0.95	9.05	0.09	0.94	23.79	0.76	12.52	2.39	0.02
18 years and under	18.16	0.59	9.54	0.04	0.84	18.92	0.38	10.60	1.48	0.01
Over 18 years	15.42	1.17	8.03	0.09	0.75	14.12	0.46	7.04	4.69	0.03
Total all ages	15.82	1.09	8.24	0.08	0.75	15.05	0.45	7.55	4.22	0.02

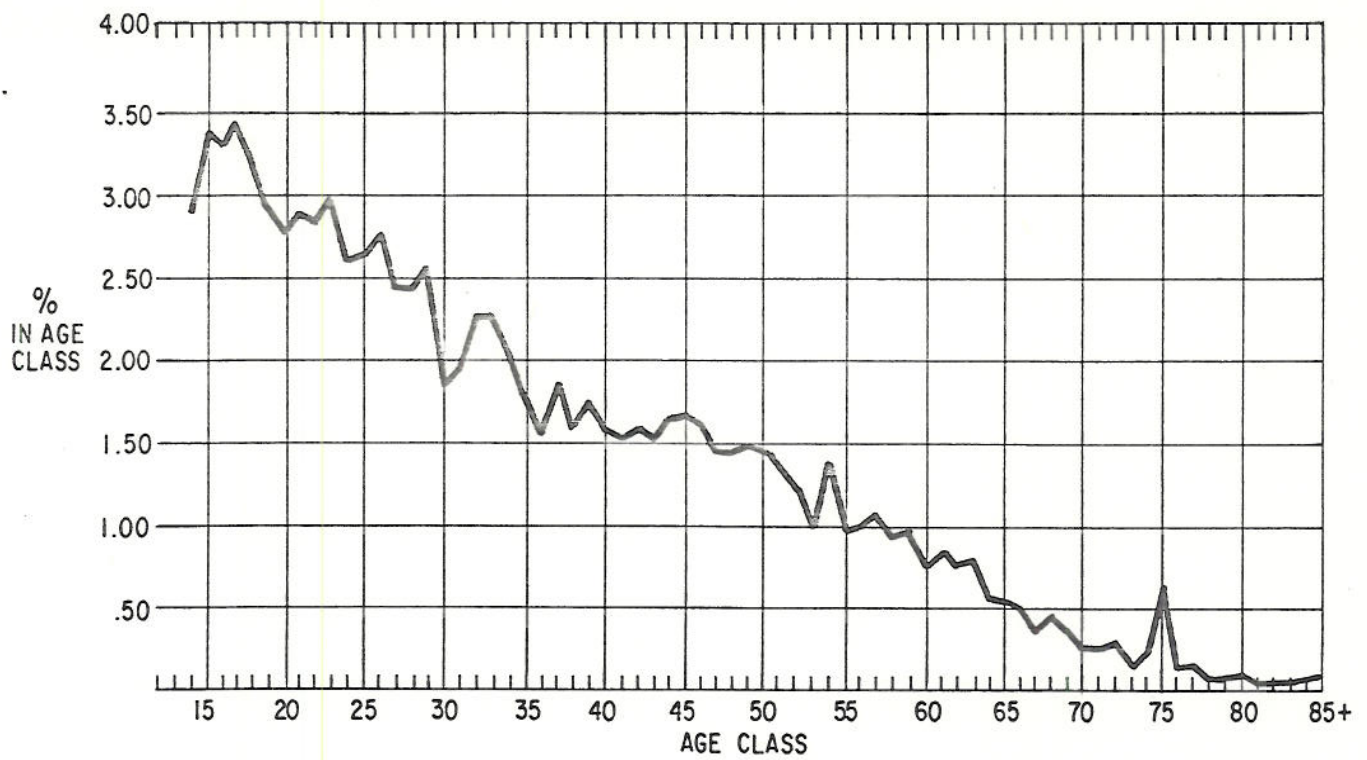


Fig. 1. Distribution of 1975 firearm deer license buyers by age.

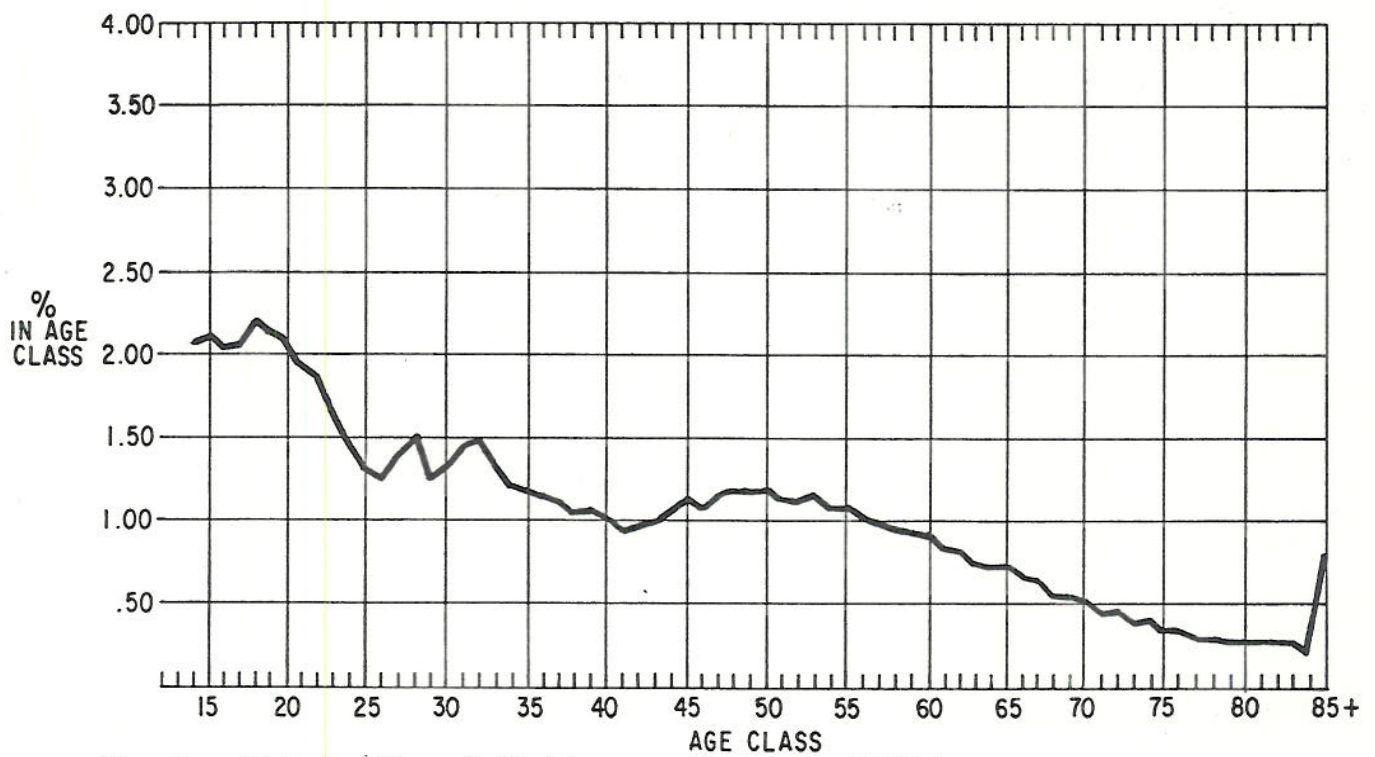


Fig. 2. Distribution of Michigan residents in 1975 by age.

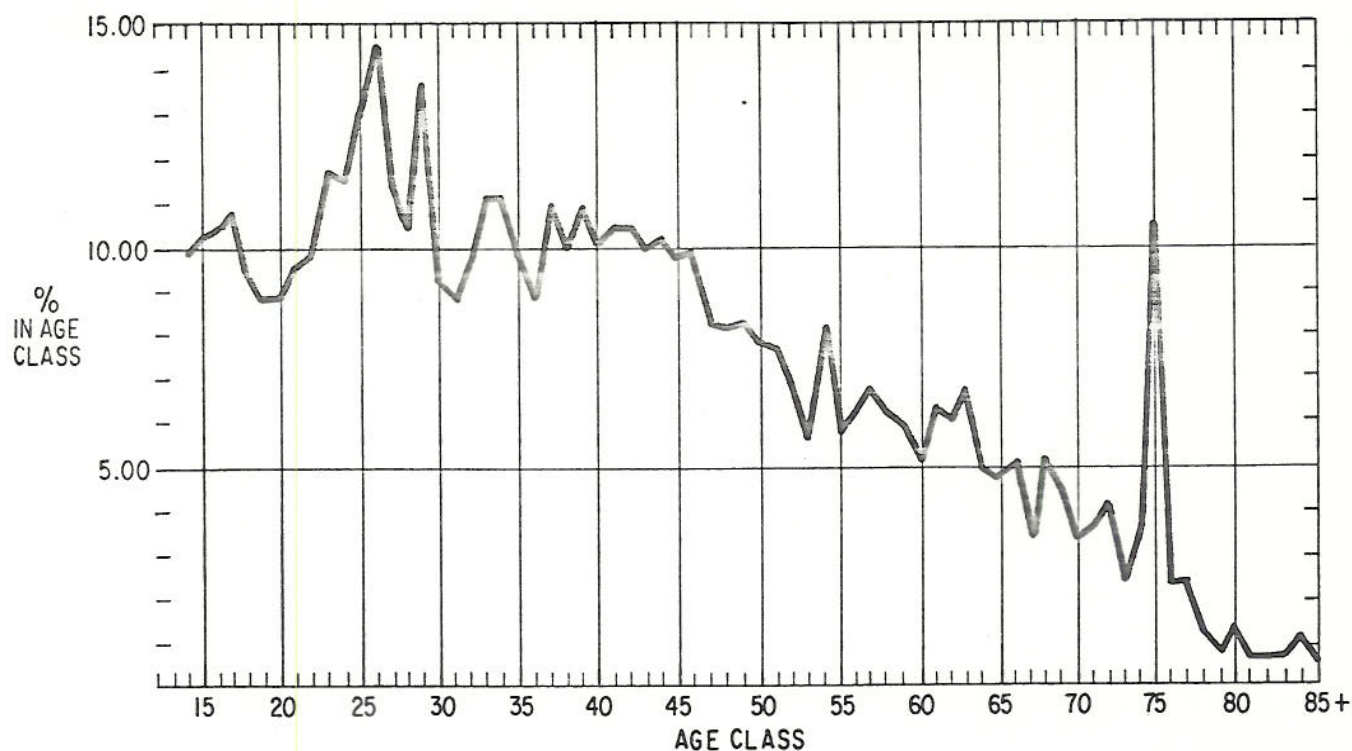


Fig. 3. Percentages of Michigan residents buying 1975 firearm deer licenses by age.

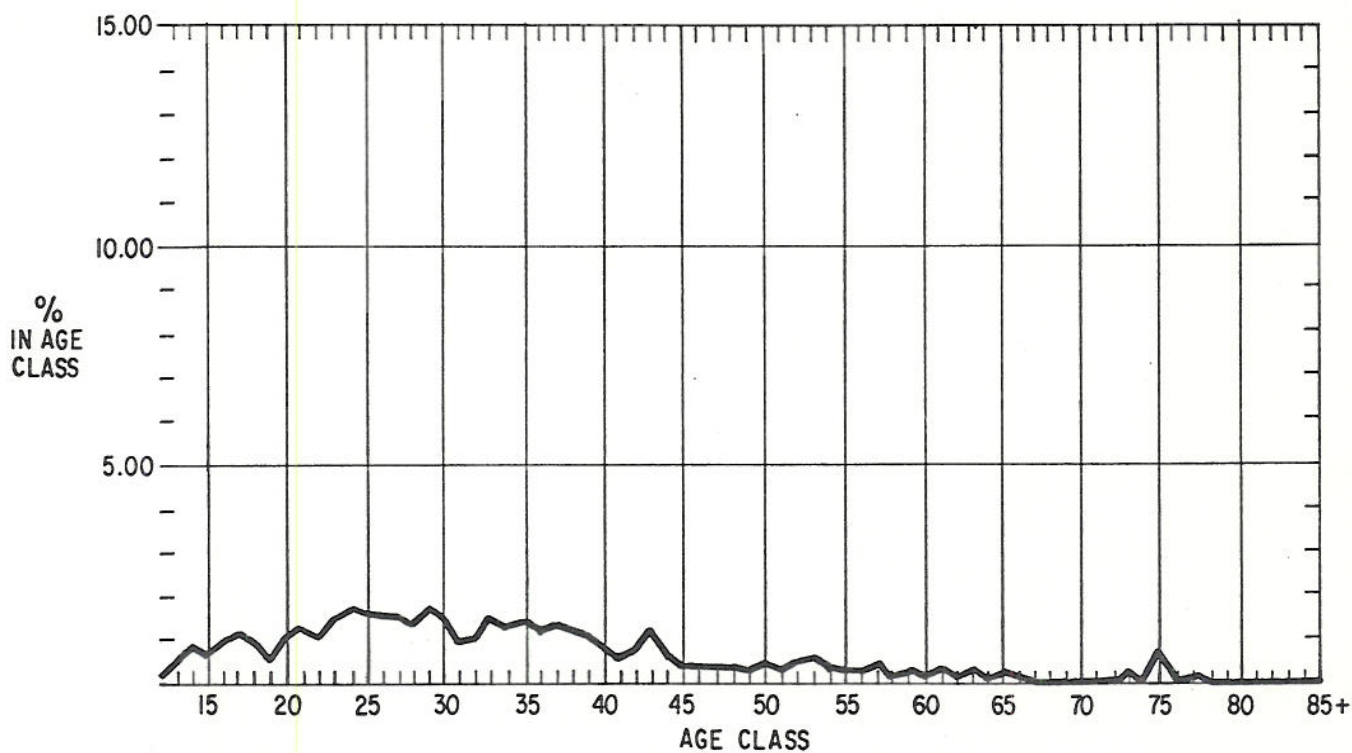


Fig. 4. Percentages of Michigan residents buying 1975 archery deer licenses by age.

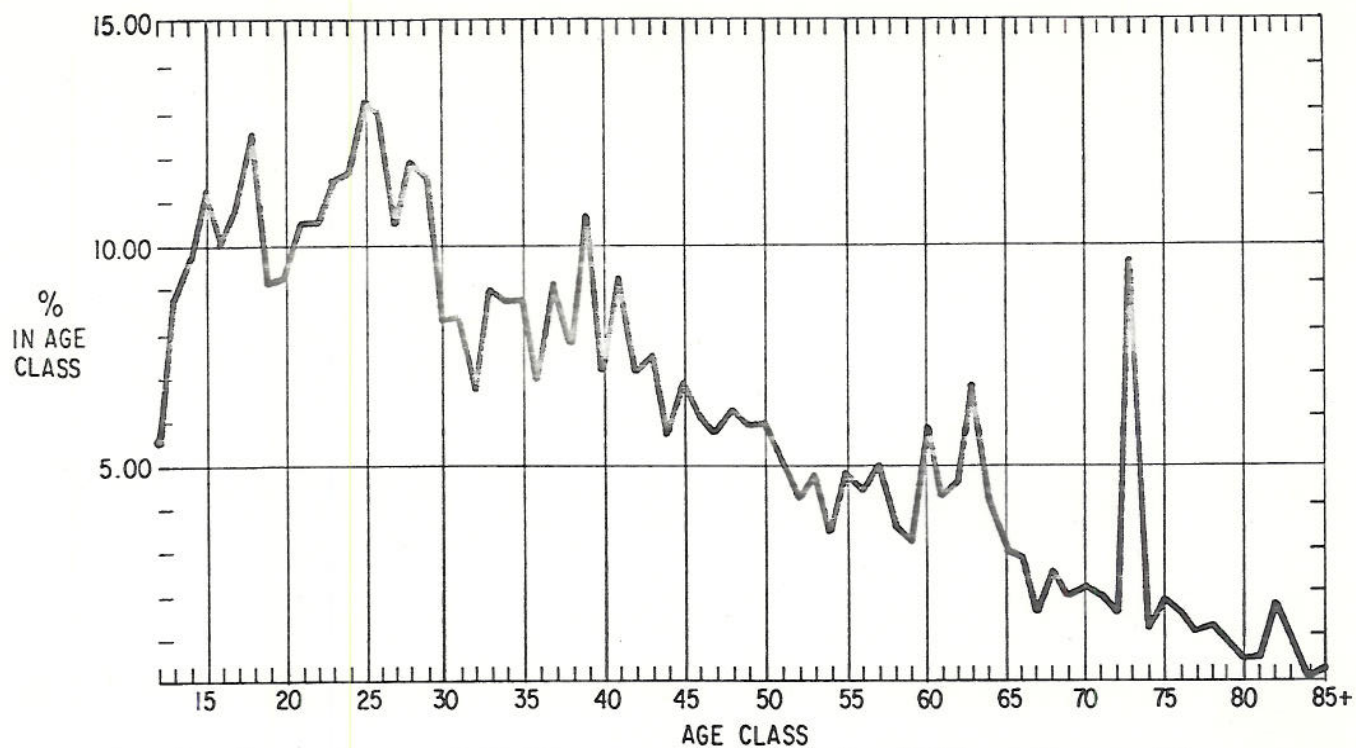


Fig. 5. Percentages of Michigan residents buying 1975 small game licenses by age.

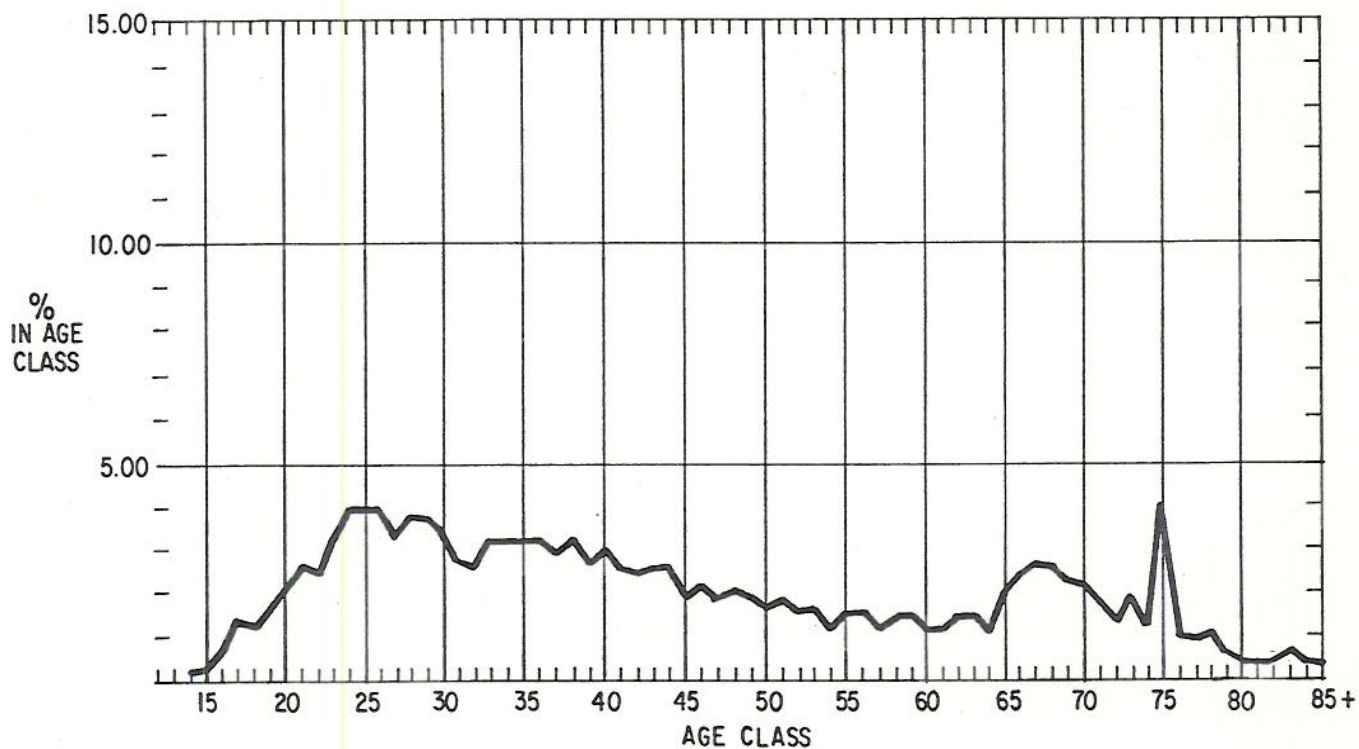


Fig. 6. Percentages of Michigan residents buying 1975 sportsman's licenses by age.

Appendix. Distribution of the 1975 Michigan population and buyers of four hunting license types by sex and age.

Age Class	Michigan Population		Hunting License Type								Sportsman's		Age Class
	Males	Females	Firearm Deer		Archery Deer		Small Game		Males	Females	Males	Females	
			Males	Females	Males	Females	Males	Females					
0-11	982,480	943,895	0	0	0	0	0	0	0	0	0	0	0-11
12	94,144	91,061	0	0	496	533	9,698	533	0	0	0	0	12
13	94,935	91,029	0	0	1,078	214	15,918	214	0	0	0	0	13
14	95,078	92,023	15,835	445	1,574	106	17,920	106	376	0	376	0	14
15	97,902	94,748	18,614	322	1,441	214	21,346	214	601	0	601	0	15
16	95,207	91,827	18,194	364	1,779	533	18,289	533	1,286	16	1,286	16	16
17	95,970	92,612	18,509	729	1,845	106	20,292	106	2,503	0	2,503	0	17
18	102,366	98,069	17,198	932	1,799	748	24,351	748	2,447	16	2,447	16	18
19	101,201	95,293	15,783	809	1,191	641	17,182	641	3,104	47	3,104	47	19
20	98,873	92,861	14,629	932	1,845	1,282	16,339	1,282	3,860	31	3,860	31	20
21	91,091	85,780	14,839	1,377	2,070	1,495	17,182	1,495	4,531	47	4,531	47	21
22	87,077	83,353	14,839	1,012	1,825	427	17,604	427	4,153	31	4,153	31	22
23	74,617	74,929	15,730	1,012	2,024	641	16,550	641	4,838	0	4,838	0	23
24	59,375	71,564	13,580	970	2,162	854	14,442	854	5,090	31	5,090	31	24
25	48,921	69,053	13,895	932	1,799	854	14,758	854	4,587	16	4,587	16	25
26	43,046	68,651	14,210	1,296	1,600	533	14,020	533	4,363	0	4,363	0	26
27	54,699	71,886	12,899	852	1,758	321	12,913	321	4,069	47	4,069	47	27
28	62,714	74,251	12,270	1,335	1,958	427	15,918	427	5,076	31	5,076	31	28
29	52,748	57,881	13,109	1,296	1,958	427	12,386	427	4,027	16	4,027	16	29
30	58,073	61,119	9,491	1,055	1,646	214	9,593	214	4,027	31	4,027	31	30
31	66,714	63,935	9,858	1,135	1,078	214	10,700	214	3,384	47	3,384	47	31
32	69,721	66,469	11,483	1,093	1,262	214	8,855	214	3,468	16	3,468	16	32
33	62,762	57,947	11,798	970	1,712	427	10,489	427	3,706	16	3,706	16	33
34	58,057	51,955	10,749	932	1,329	214	9,382	214	3,384	16	3,384	16	34
35	57,229	51,221	9,333	809	1,375	427	9,066	427	3,356	16	3,356	16	35
36	54,226	49,481	7,918	809	1,150	0	7,168	0	3,188	0	3,188	0	36
37	51,839	47,732	9,491	970	1,150	321	8,749	321	2,839	16	2,839	16	37
38	47,756	45,554	8,337	568	1,038	106	7,274	106	2,895	16	2,895	16	38
39	47,772	46,261	9,019	809	833	214	9,593	214	2,433	0	2,433	0	39
40	46,847	45,818	8,180	729	700	321	5,850	321	2,699	0	2,699	0	40
41	43,792	43,292	8,285	406	450	106	8,222	106	2,196	0	2,196	0	41
42	45,345	44,822	8,075	890	654	0	6,430	0	2,154	0	2,154	0	42
43	45,437	45,210	8,075	568	833	427	6,325	427	2,265	0	2,265	0	43
44	48,394	47,226	8,809	525	429	321	5,007	321	2,405	0	2,405	0	44
45	50,489	50,023	8,704	648	404	106	6,857	106	1,888	0	1,888	0	45
46	49,055	48,228	8,494	648	429	106	5,745	106	1,958	16	1,958	16	46
47	51,983	51,259	7,446	690	404	106	5,745	106	1,888	0	1,888	0	47
48	52,992	53,032	7,603	606	337	321	6,325	321	2,070	16	2,070	16	48

Appendix. Distribution of the 1975 Michigan population and buyers of four hunting license types by sex and age.

Age Class	Michigan Population		Hunting License Type						Sportsman's		Age Class
	Males	Females	Firearm Deer		Archery Deer		Small Game		Males	Females	
			Males	Females	Males	Females	Males	Females			
49	51,662	54,479	7,550	771	204	45	5,956	321	1,916	0	49
50	52,057	55,621	7,288	771	429	0	6,430	0	1,706	0	50
51	49,992	53,251	7,184	406	204	90	5,113	106	1,846	0	51
52	49,580	53,076	6,292	445	378	45	4,164	214	1,580	0	52
53	49,978	54,213	5,243	364	542	0	4,902	0	1,636	0	53
54	47,068	50,895	6,816	809	271	0	3,110	214	1,147	0	54
55	46,536	51,674	5,086	284	245	0	4,691	0	1,370	16	55
56	43,722	48,894	5,086	487	158	67	3,953	106	1,356	0	56
57	42,822	47,239	5,348	487	271	45	4,480	0	1,021	16	57
58	41,644	45,261	5,034	161	66	0	2,793	214	1,189	0	58
59	40,660	44,248	4,981	445	133	0	2,688	0	1,161	16	59
60	40,008	43,309	3,932	161	46	0	4,902	0	909	16	60
61	37,606	40,775	4,457	203	271	0	3,320	0	881	0	61
62	35,691	39,594	4,247	123	46	0	3,426	0	979	16	62
63	33,270	36,404	4,142	322	133	0	4,691	0	1,007	0	63
64	31,032	35,347	2,936	123	20	0	2,793	0	685	16	64
65	30,976	35,161	2,412	568	0	0	1,792	106	1,244	31	65
66	27,518	31,767	2,726	161	92	0	1,689	0	1,356	31	66
67	26,676	30,785	1,573	284	20	0	843	0	1,412	16	67
68	23,857	27,989	2,150	406	0	0	1,160	106	1,258	16	68
69	22,882	27,229	1,992	80	0	0	843	106	1,105	0	69
70	21,265	25,672	1,363	123	0	0	949	0	937	0	70
71	19,806	23,971	1,311	203	0	0	632	0	685	16	71
72	18,272	23,000	1,521	80	0	0	632	106	517	0	72
73	15,500	20,463	786	42	46	0	843	106	671	0	73
74	15,376	21,375	1,101	161	0	0	316	0	406	16	74
75	14,224	20,407	3,146	322	245	0	2,899	214	1,356	0	75
76	12,268	17,894	629	42	0	0	527	0	280	0	76
77	11,333	16,546	629	0	0	0	316	0	233	0	77
78	10,939	16,198	262	42	20	0	211	106	266	0	78
79	10,327	15,609	210	0	0	0	211	0	140	0	79
80	9,918	15,534	315	0	0	0	105	0	98	0	80
81	9,377	15,148	157	0	0	0	105	0	56	0	81
82	9,276	15,240	157	0	0	0	422	0	42	0	82
83	8,100	14,107	157	0	0	0	211	0	84	0	83
84	7,341	13,380	262	0	0	0	0	0	42	0	84
85 and over	25,654	48,476	524	0	0	0	211	0	163	0	85+