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(The references to Anoka throughout this publication refer to the county not to the town of the same name within the county.)

The Cost of Recreational Horses in Anoka County

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Horses are big business in Minnesota as part of the growing leisure and recreation industries on which Americans now spend \$250 billion a year (\$1,170 per capita) or about 20 percent of average disposable income. This is more than the amount spent on food [1]. The growth of personal income since World War II has reduced the relative importance of agriculture in U.S. consumption patterns but increased the pressure on land and water resources for recreational purposes.

The growth of recreation has had its problems. The most visible is the pressure on recreation resources evidenced by overcrowding at parks, campgrounds, and other facilities. Long waits are a part of most weekend trips to the golf course, tennis court or ski hill. Conflicts arise over the use of land and water resources since recreation is only one of several competing uses. A prime example is the current dispute in the Minnesota Boundary Waters Canoe Area (BWCA) over a purely recreational use of the area versus its use for logging and mining. Even within the recreational use of the BWCA there are conflicts over the type of recreation to be enjoyed (motor boats and snowmobiles versus canoes and skis).

Most attention has been focused on public outdoor recreation. How-

ever, private recreational industries (such as golf clubs, ski resorts, and horseback riding) can also create conflicts of interest over resource and land use. Little attention has been given to these private recreational industries. Research reported here examines some of these issues for a major private recreational industry—the system of privately owned and maintained recreational horses.

Horses in the United States

The existence of a large horse population in the U.S. has not always been associated with recreational activities. Originally the horse provided the main power source for agriculture and movement of people and goods. Even today's language reflects this: horsepower, horse sense, sabres in the military, "landaus" in motor car "coach" work.

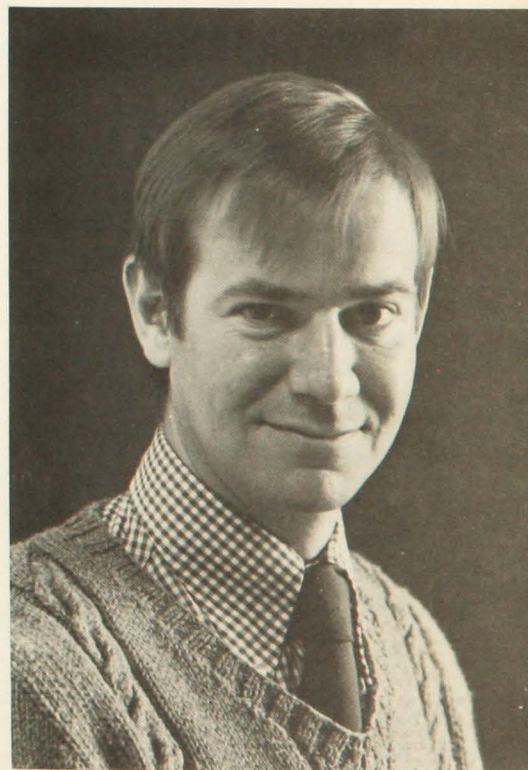
Farm horses in the U.S. reached a population peak of 26 million in 1919. With mechanization, this number steadily declined to the 1.58 million farm horse estimate of the 1974 Census of Agriculture. The USDA Crop and Livestock Reporting Service stopped its annual estimates of farm horses numbers in 1960.

However, the majority of horses today are not found on farms. The resurgence of interest in recreational horses has resulted in a dramatic increase in horse numbers. The total population of horses is now estimated by the American Horse Council at 10 million (only 1.6 mil-

lion of these on farms) or approximately the same numbers as the total U.S. horse population in 1940 when horses were still being used for draft purposes [2].

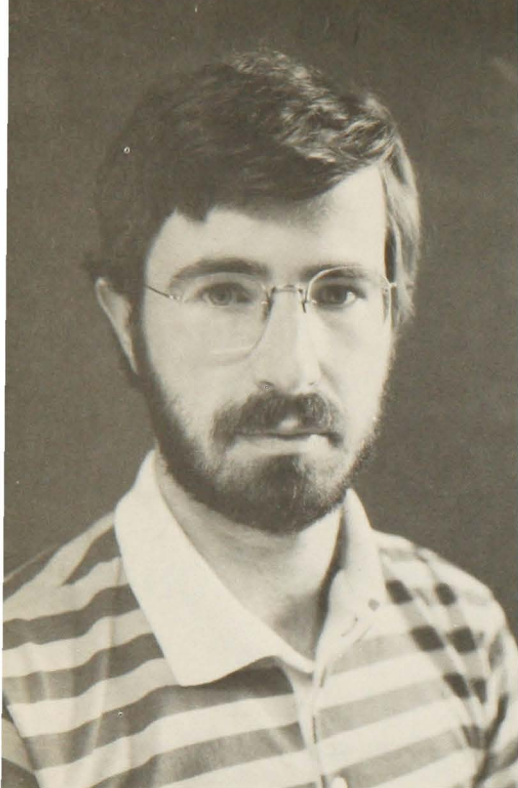
Horses in Minnesota

Minnesota parallels the history of horses in other parts of the country: draft horses and oxen cleared the land, were the power for farm operations, and also moved goods to market. Oxen actually outnumbered horses on Minnesota farms until 1870. After reaching a maxi-



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imum population of over 1 million horses in 1916, horses on farms declined steadily to the 39,756 horses recorded in the 1974 Census of Agriculture.

As in the national farm census, this estimate overlooks the nonfarm aspects of horses in Minnesota. "People moving" and market activities were the primary function of horses in early Minnesota cities. A full line of stables, farriers, feed dealers, and carriage shops served urban horseowners then as a similar network today serves automobiles. The first streetcars introduced in 1872 in the Twin Cities were pulled by horses until electric railway cars replaced them in 1889.

In addition to work functions, urban horses were used in the late 19th century for many recreational and sporting activities. Winter races in the Twin Cities originated on city streets and later went to ice tracks. Dirt track racing was popular in summer with races held at the State Fair and other privately run tracks such as the Bill King Track, the Kitsondale Track, and the Minnehaha Driving Park. Horse trails were common around lakes and parks and many amateur horse shows were sponsored by Twin Cities riding clubs and academies.

Information on the number of horses involved in recreational activities has always been sketchy. The early censuses estimate urban horse population, but give no details on recreational horses. One indication of the increasing popularity of the pleasure horse is the rapid growth of youth 4-H Club's light horse projects following the demise of the draft horse program in 1947. The light horse project started in 1958 and in 1977 was the largest animal project in the state—out numbering dairy projects 5,624 to 5,222. These 4-H projects (4-H is a program of the Minnesota Agricultural Extension Service) however represent only a fraction of total recreational horse participants. Until phased out in 1960, personal property tax assessment records listing horses as private property, provided a source of data on the state's horse population estimated in 1963 at 48,000 (33,000 pleasure horses and 15,000 draft horses) [3].

In August 1971 the Minnesota Agricultural Extension Service

made the most recent comprehensive estimate of horse population. This estimate, 165,000 was based on subjective returns of county agents and has been the framework for subsequent re-appraisals of 160,000 horses (1977), down from an estimate of 180,000 prior to the high hay and grain prices of 1976.

In both the 1963 and 1971 estimates, the 7 county Twin Cities Metropolitan Area (TCMA) had a large share of the total state horse population (18.3 percent in 1962 and 26.1 percent in 1971). This concentration of horses in the most populated region of the state raises several issues: 1) what are the socio-economic characteristics of the people owning horses and how do these patterns of ownership relate to future demographic changes? 2) what are the uses of these horses related to the recreation needs of Minnesota residents? and 3) what are some of the economic implications of horses? While the apparent rapid growth of Minnesota's horse population and the demographic changes of recent years make these issues increasingly relevant, the currently available information is inadequate. This study, funded by the Agricultural Experiment Station of the University of Minnesota, was carried out to provide some of this needed information.

Methodology

Under time and resource constraints, this survey was confined to a single county. While horse owning patterns are expected to vary in different areas of the Twin Cities, Anoka County was studied because of its high concentration of horses, accessibility and interesting range of urban, rural, and suburban townships.

Although the number of horses in Anoka was originally estimated as 7,000, no information was available on the number of owners or their addresses. By contacting saddle clubs, breed associations, farriers, veterinarians, neighborhood horseowners, boarding stables, and township lists of registered horseowners, a list was compiled of 722 horseowners in the county. A further check estimated this list to be 60 percent complete, implying that

the county has approximately 1,200 horseowners.

A telephone interview questionnaire was developed to collect information from horseowners. Before the telephone calls, a letter was sent to randomly selected horseowners introducing the survey, its objectives, and the type of questions to be asked. This approach obtained cooperative responses from 176 horseowners or 97.2 percent of those contacted.

Horse Ownership in Anoka County

The survey results indicate that although there is a wide variety of horse-owning situations in the county some general patterns of horse ownership can be traced. The majority, 80.7 percent keep their horses on their own property, mostly in the nonurban areas of the county. Few owners are involved in agriculture. Only 13.1 percent are involved in any commercial farming with 1.7 percent listing farming as

their primary occupation. The most frequently cited occupations: skilled operators (including truck drivers) or craftsmen (34.7 percent), followed by owner-managers or salesmen (25.6 percent), and professionals (20 percent). These job holders were employed an average of 21.2 miles (one way from where they lived) and most (78.9 percent) had total annual household incomes above \$15,000.

This dominant pattern of non-farm, suburban horseowners fits into the general demographic pattern of the county, which as the northernmost of the 7 counties in the TCMA, has experienced rapid population growth: from 22,443 people in 1940 to 189,024 people in 1975. As a consequence, Anoka's available farm land declined from 210,430 to 104,300 acres. The rapid population growth has been due largely to the in-migration of working age families who now give Anoka its suburban character. The county's average household income is slightly higher than the rest of the

state (\$15,844 versus \$14,960) and 67 percent of Anoka's work force work outside Anoka County, primarily in Hennepin and Ramsey counties [4].

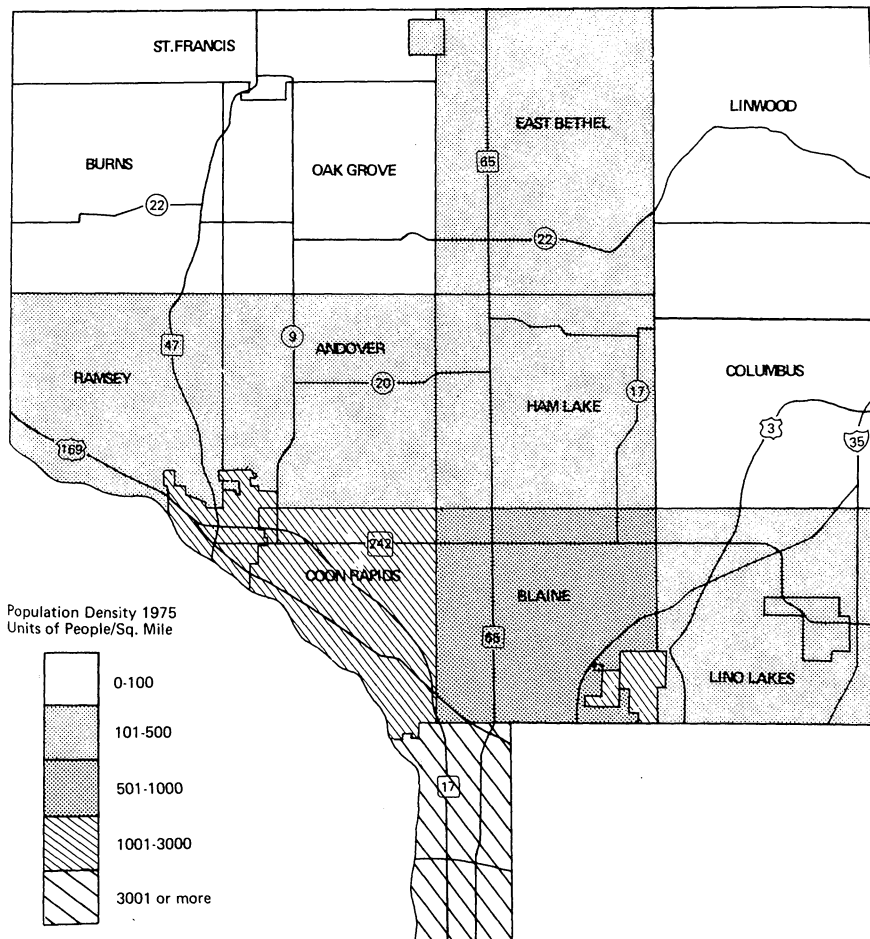
The survey estimated that there are 3,500 horses in Anoka County: an average of 2.8 horses per owner. However, the owner's location within the county was found to affect the number of horses owned. For example, those urban owners who board their horses at commercial stables owned only 1.3 horses while those owners keeping horses on their own property owned an average of 3.1 horses each. The distribution of horses in the county and the number of owners keeping horses on their own property is roughly the inverse of the population density map for Anoka (map 1).

Horseowners use their horses mainly for recreational riding (94.1 percent). Most of this riding is along public roads and in open fields near the owner's house. Less than half of Anoka's horseowners show their horses competitively. Of those who do compete, Western Pleasure and Western Performance are the most popular events.

The horses chosen for these activities and the expenditure lavished on them reflect a wide range of preferences. The most popular breeds mentioned were Quarter Horses and Appaloosas (accounting for 57 percent of all horses). Although two-thirds of the owners valued their horses at less than \$500 per horse, the *average* value per horse was \$795. The additional investment in tack, equipment, etc. averaged \$1,182 per horse (table 1) with owners spending \$486 per year per horse on feed, veterinary, and other charges (table 2).

In a typical at-home boarding situation, there are 3.1 horses on the horse owner's property and \$6,243 worth of equipment (including trailer, barn, saddles, bridles, riding clothes and tack supplies). These owners buy 295 bales of hay and 1.95 tons of grain during a year (\$442 for the hay and \$195 for the grain at 1977 prices) and spend \$797 on veterinarian, farrier, maintenance, and special fees. After including transportation costs and a 10 percent capitalization charge on horse and equipment, the annual cost of owning horses for these av-

Map 1. Population density: people per square mile by townships, Anoka County



erage suburban households is over \$2,000. Horse owning households spend nearly 8 percent of their reported incomes on horse activities (12.3 percent if the capitalization charge is included).

Although this is the most commonly found situation, there are many exceptions. For example, the owner who boards horse(s) at a stable has, on the average, fewer horses (1.3), and hence, fewer expenses. However, even at minimal maintenance levels which include a boarding fee, veterinarian and farrier care, special expenses and a

capitalization cost on equipment and horse, the annual maintenance cost of owning one boarded horse averages \$720.

Implications of Results

Although horses, accessories, and annual costs are expensive, horseowners are found in all income groups. However, income levels do appear to influence the amount spent on horses, their care and equipment. As household incomes continue to increase, expenditures on horses and investment in them can also be expected to grow.

Another pattern observed was the tendency for horseowners to invest more heavily in equipment and horse care after owning horses for several years. Even for a county that has been characterized as having a lot of backyard, "transient" horseowners, a sizable number have been involved with horses for more than 15 years (17.4 percent). What may have started as a casual hobby quite often becomes a large scale operation and one increasing in cost.

Of the present horseowners, 87.5 percent said they planned to continue to own horses in 5 years and 68.8 percent planned to continue after 10 years (15.9 percent were uncertain). The large number of new owners (40 percent have owned horses less than 4 years) also suggests that the horse population in Anoka County will continue to grow and that further Agricultural Extension Service programs in horse care and management, such as 4-H programs, will be needed.

A key element in any discussion depends on an appraisal of the number of horses actually owned. As discussed previously, an accurate and complete horse census in even a single county would be very difficult. While this study estimates 3,500 horses in Anoka County, this is substantially less than the prevailing 7,000 "guesstimate" by area veterinarians and Extension workers.

Using this lower estimate, Anoka County horseowners have \$4.1 million invested in capital equipment such as barns, trailers, saddles, bridles, and supplies. Annual cash outlays including hay, grain, veterinarian and farrier expenses, horse shows, maintenance, and related fees are estimated at \$1.7 million for the county. Including a 10 percent capitalization cost for all equipment and horses, Anoka County horseowners make annual expenditures of \$2.34 million on their horses.

On a county basis, the expenses which are most relevant, and appear to have the most impact on local economies are the "agricultural" resources devoted to horses. During the dry summer of 1976, Anoka's hay production was down 33 percent from 1975 and prices averaged \$70.50/ton statewide with

Table 1. Average value of horse owner investment on a per horse basis by boarding status of horses

Capital investment item	Average for at home horses (\$)	Average for boarded horses (\$)	Overall average (\$)
Horses	765.33 ^a	1,086.70	795.72 ^a
Barn	665.30	8	602.26
Saddles	242.13	235.30	241.49
Bridles	40.98	52.16	42.05
Miscellaneous tack & supplies	65.29	78.21	66.52
Clothes	47.39	51.08	47.63
Horse trailers	162.86	125.95	159.36
Other equipment	25.10	3.41	23.02
Total	2,014.38	1,632.81	1,978.05

Source: Computed from 1977 Anoka County Horse Survey.

^a The mean for all horses was \$1,880. The figures shown in the table exclude the horses of 3 owners (with 30 horses) with an average investment of \$17,900 per horse. These were specialty breeders and race horse owners.

Table 2. Annual cash outlays for regular horse care items on a per horse basis by horse boarding status

Recurring cost items	Average for at home horses (\$)	Average for boarded horses (\$)	Overall average (\$)
Grain ^a	62.50	—	56.58
Hay ^a	142.55	—	129.05
Feed supplements	18.30	—	16.56
Boarding fees	—	429.30 ^b	40.68
Veterinary	51.80	51.29	51.76
Farrier	31.71	25.57	31.13
Stud fee, mare care, training	46.32	95.44	50.97
Maintenance and repair	33.26	24.76	31.99
Miscellaneous expenses	33.88	46.04	35.03
Transportation (15¢/mi)	41.75	47.20	45.48
Total	462.07	719.60	486.23

Source: Computed from 1977 Anoka County Horse Survey.

^a These figures do not include any allowance for home production and represent only reported hay and grain purchases.

^b Includes feed and hay; these are an estimated \$250.

some horseowners reportedly paying up to 3.50/bale (\$140/ton). As a result, the supply of hay became a crucial issue between county horse owners and farmers. Farmers claimed that horseowners were making hay scarce and expensive for their cattle, while horseowners claimed that farmers were taking advantage of the shortage to charge them high hay prices. The 3,500 horses in Anoka County certainly consume a sizable quantity of hay. An estimated 7,525 tons of hay, representing the production of 5,394 acres in 1976 Anoka growing conditions, were purchased by Anoka County owners. Assuming a hay ration of 25 pounds of hay per horse per day—to capture the effect of hay raised by the owner and pasturing land—15,750 tons of hay, or the production of 11,250 hay acres under 1976 growing conditions were consumed by Anoka County horses. Because of hay's low value to weight ratio, shipping is expensive and its market is very localized, as indicated by the 12 mile average hay purchasing radius in the survey. The hay used for horses in Anoka certainly puts pressure on local hay prices.

The grain consumption by Anoka's horses (2,577 tons) represents the production of 3,980 acres of Anoka land or 1,671 acres of south central Minnesota land. These feeds are purchased through grain elevators by 93 percent of the horseowners without creating the effects on local prices observed for hay. Although not all of this hay and grain production took place in Anoka County, it is equivalent to nearly one-seventh of Anoka's agricultural land or enough land to support some 3,500 dairy or beef animals. (The number of horses in Anoka County [3,500] actually outnumbered dairy cows [1,700], although total cattle [8,500] are more numerous).

Aside from these agricultural aspects, the land used to keep non-farm horses on the owner's rural residence is related to the suburbanization process. Of all horseowners, 67 percent keep their horses on rural non-farm residences which represents 8,927 acres, or 13.7 percent of the estimated total nonurban,

Table 3. Minimum acreage ordinances and inception dates for new housing and horses by townships in Anoka County

Townships by density areas	Minimum acreage for new housing (acres)		Inception date of ordinance	Minimum acreage to own horses (acres)	Inception date of ordinance
(with high density)					
	Residential	Rural			
Blaine	(<1)	(2½-5)	1962	none allowed	
			1975	1 horse/acre	1975
Coon Rapids	(<1)		1957	5 acres	1961
Andover	(<½)	(½-2½)	1971	2½; ½ acre/add. horse	1974
(without high density)					
	Plotted	Unplotted			
Oak Grove	2½	5	1970	1 usable acre/horse	1970
Burns	2½	5	1972	none	
Columbus	2½	5	1972	none	
East Bethel	2½	5	1974	2½	1973
Linwood	2½	5	1976	none	
Ham Lake	2½	5	1976	3; 1 acre/horse	1977
Lino Lakes	1	2½	1977	5	1960
Ramsey	1-2¼	10	1977	2½; 1 acre/add. horse	1973
St. Francis		2½	1977	24	1969

Source: Survey of City, Village, and Township Halls in Anoka, October 1977.

nonfarm residences in Anoka. In recent years, the city-townships in the county have instituted ordinances regulating the size of new housing in the nonurban areas (table 3). Many of these townships also have ordinances which restrict horses from heavily residential areas and require minimum acreages (usually 2½ to 5 acres) for the health of the horses and the neighborhood aesthetics. The minimum acreage for new housing in most of these townships permits keeping at least one horse. However, housing construction is reducing the available riding areas and diminishing the recreational enjoyment of owning horses.

Rapid urbanization in the county has already affected the distribution of the horse population in that its center has shifted from Blaine in 1963 to the Ramsey-Burns city-township area. Blaine's population grew from 8,000 to 25,349 from 1963 to 1975. Although Blaine still has farming areas and its horse population is larger than in 1963, "new" horseowners apparently find the less urbanized areas farther north of the Twin Cities more suitable. The

horse population in these northern townships has increased more rapidly. "Grandfather" clauses in the minimum acreage ordinances allow keeping horses on small acreages. However, urban development not only reduces riding opportunities, but also puts horseowners in a potential conflict situation when the nonhorse-owning majority attempts to legislate the activities of horseowners. The prohibition of horses on paved roads; minimum acreage ordinances; and registration of horse owners are some of the attempts to monitor and regulate horses. This is reminiscent of urban pet ownership which has become a source of controversy over leash laws, licensing, and apartment renting. Perhaps a planned system of horse trails to compensate for lost open space would help resolve some of these conflicts as well as slow further urban expansion by horseowners attempting to move to more open areas in order to keep horses.

Projections for continued population growth and urban expansion in the TCMA [4] suggests other horse-owning areas may confront these

issues in the future. Anoka's experience in dealing with larger numbers of horses and people may provide useful information for other counties in the TCMA facing similar problems.

The results of this survey can also be used to estimate the size of the state's horse industry. Although the horse-owning situation certainly shows variations in different regions, this survey may provide some guide to the state's horse industry. While the experience of counting horses in Anoka suggests that the state's horse population may not be as large as the 180,000 anticipated previous to the 1976 drought, there is still a sizable horse population in Minnesota. This survey resulted in an estimate of only 3,500 horses in Anoka, half the originally anticipated number. Whether this same conclusion can be drawn for the rest of the state is not known. Using 160,000 horses as an approximate state total indicates that only 4-5 percent of Minnesota's households own horses. However, the dollar size of this industry is sub-

stantial. Projecting from the Anoka survey results, Minnesota's horse-owners have \$190 million invested in horse equipment and \$77.8 million a year in horse care and special activities (\$125.9 million if a 10 percent capitalization cost on the horses and equipment is included).

Summary

Although horses are an expensive recreational activity, all income groups participate, making horse-owning one of the largest recreational industries in the state. The major impact of these horses, statewide, is in the agricultural area where it takes 300,000 acres to produce enough feed for them. Horses consumed 6.7 percent of the state's hay production and 0.7 percent of the state's grain production in 1976. In suburban areas, where large numbers of horses are located and fringe agriculture is declining, horseowners compete with farmers for feed, hay, and land.

The land requirements for keeping horses is in potential conflict

with continued urbanization which fills open areas with housing. Anoka urbanization is increasingly competing with demand for recreational access to land for riding purposes.

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