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RECREATIONAL HORSE OWNERSHIP IN MINNESOTA:  
A CASE STUDY OF ANOKA COUNTY

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## I. INTRODUCTION

Leisure and recreation activities have become big business in the United States. The growth of personal incomes since World War II has reduced the relative importance of food in the consumption patterns of U.S. households. As the percentage of total income spent on food has declined there has been a corresponding increase in expenditures on recreation and leisure. As a result, Americans now spend \$250 billion (\$1170 per capita) on these leisure related activities representing 20% of average disposable income, or more than the amount spent on food. This aggregate \$250 billion of leisure or discretionary spending includes "at home" activities (\$10 billion annually for T.V. sets, \$5 billion annually for books and magazines) as well as the prominent outdoor recreation activities (\$10 billion on hunting and fishing, \$5 billion on boating, and \$5 billion on recreational vehicles)(1). In addition to the income factor, population growth and "pursuit of the good life" have all contributed to this leisure boom. However, the growth of these recreation and leisure industries has not been without problems. Demand has increased on land and water resources for recreation purposes. One very visible problem is the overcrowding at parks, campgrounds and other recreation facilities causing a degradation of the very wilderness or outdoor experience people seek. Long queues are a part of most weekend golfing, skiing or tennis games during the season in major cities. At the national park system, where the number of visits is expected to be 302 million (40% more than the total U.S. population) by 1979, month long waiting lists are common for the more popular attractions such as mule trips in the Grand Canyon, boat rides on the Colorado River, and camping and lodging at Yosemite. As a result of this growth in demand, the National Park system has taken steps to restrict access to some park areas

and begun issuing permits to hikers and climbers (2, p. 68-69).

Much of the resources and recreation literature reflects an interest in public outdoor recreation activities. For example Clawson and Knetsch acknowledge that outdoor recreation includes both public and private resource use. Nevertheless their analysis focuses on the demand for public recreation (3). In addition to these demand aspects, Cicchetti and Seneca include an analysis of supply conditions for public facilities and the government's role in providing them (4). Their study examines some potential conflicts that can develop from attempts to expand the existing supply of outdoor recreation facilities by the public sector.

Recreation is only one of several competing uses of public lands. Mining and lumber industries also have interests in the large public land holdings and forests in the United States. A prime example of this conflict is the current dispute in the Boundary Waters Course Area (BWCA) of Minnesota over a purely recreational use of the area or a multiple use including commercial logging and mining. Even within the recreational uses of the BWCA there are conflicts over the type of recreation to be enjoyed (motorized recreation vehicles vs. pure wilderness). Some of these issues of valuing and allocating amenity resources are looked at by Krutilla and Fischer, but again their focus is on public outdoor recreation facilities (5).

This attention to public outdoor recreation overlooks the fact that private recreation activities can involve a similar set of issues. Private recreation industries such as golf clubs, ski resorts and horse activities also create employment opportunities, economic benefits, conflict of interests

over resource and land uses as well as contributing to the supply of leisure and recreation activities of the U.S. population. Although these are the very issues that have been confronted by research on the use of public outdoor recreation research, little attention has been given to these issues involving the private recreation industries.

The purpose of this study, in part, is to examine some of these issues for a major private recreation industry, namely the system of privately owned and maintained recreational horses. Horses are a big business in the U.S. and in Minnesota. However, surprisingly little is known about the horse recreation industry.

#### Horses in the United States

The presence of a large horse population in this country has not always been associated with recreational activities. Originally the American horse provided the primary source of motive power for agriculture and the movement of people and goods. Residual impacts of the horse's former prominence are found in various traditions and euphemisms of our culture. Sabres are still a part of military dress uniforms, automobile "carriage" work is sometimes described as "landau" and various phrases such as "horse sense" and "horsepower" are reminders of the horses' influence in our history.

At its maximum, farm horse population numbered 26 million in 1919. With subsequent developments in mechanization, their number steadily declined to 1.58 million horses estimated by the 1974 Census of Agriculture (Appendix Table 1). With the USDA (Crop and Livestock Reporting Service) not recording farms work stock since 1960, this every 5 year Commerce Department survey is the only remaining census of farm horses.

However, enumerating only farm horses overlooks the majority of today's horse population kept off farms. Although no census estimate of these horses is currently available, the United States Census at one time recorded these horses under headings such as "horses in enclosures" or "horses not on farms". The maximum recorded population of these horses was 3,182,789 in the 1910 census (6, p. 614). The same forces of mechanization led to the decline of these urban horses until the recent resurgence of interest in horses as a form of recreation. The total population of horses is now estimated at 10 million by the American Horse Council (7, p. 68-69) or approximately the same number as in 1940.

The presence of large numbers of these horses in suburban fringe areas suggests that this growing horse population is used almost entirely for recreational activities such as riding, showing, and racing. In its new function as an instrument of recreation, the horse supports a considerable industry with estimated annual sales of over \$13 billion. These industry sales are composed of a full range of non-farm commodities such as tack, barns, riding clothes, ribbons and trophies while also retaining much of its agricultural base in the form of the hay, grain, and pastureland requirements (7, p. 68).

Outside of these aggregate estimates of the industry size, little information is available on the various aspects of recreational horses. Most of the research which has been done on recreational horses concerns the more prominent horse racing industry (8). Although these horse racing activities, involve substantial sources of money in betting and attract special interest groups, the number of horses and owners involved in racing is a small fraction of the total of privately owned horses kept for individual recreational purposes.



This apparent lack of research on issues of privately owned recreational horses is possibly due to the difficulty of identifying these numerous private owners. However, research on resource uses of recreational horses would be of interest to a wide variety of people. Information on the number and types of horses is important to extension programs and for planning programs and services for horseowners. Urban planners may be interested in demographic characteristics of horseowners, legislative appropriations for recreational facilities may be affected, and the business aspect of recreational horses may attract additional investments.

The purpose of this research then is largely to provide information where there is none. A case study of Anoka County in Minnesota serves as the framework for the development of this information.

#### The Horse in Minnesota

The pattern of horses in Minnesota follows the history of horses in other parts of the country. In Minnesota's early history, draft horses and oxen cleared the land, provided power for farm operations, and also moved goods and people to market. Oxen actually outnumbered horses on Minnesota farms until 1870. After reaching a maximum population of 1.025 million horses in 1916, the number of horses on farms declined steadily to the 39,756 horses recorded in the 1974 Census of Agriculture. These data exclude the important non-farm uses of Minnesota horses.

The Urban Horse. "People moving" and market activities were also the primary function of horses in early Minnesota cities. In a fashion similar to the present automobile service network, a full line of stables, farriers, feed dealers, and carriage shops provided for the needs of urban horseowners.

Horses were even involved in early mass transit efforts in the Twin Cities. The first streetcars introduced in 1872 were pulled by horses until replaced by electric railway cars in 1889 (9, p. 52)

In addition to these work functions, horses were used in many recreational and sporting activities. Winter ice racing, dirt track racing and horseback riding within the Twin Cities were all prominent well into the 20th century.

Winter races were originally held on city streets in fashionable areas such as Hennepin and Park Avenues before the organization of formal racing clubs. In 1886 the Minneapolis Park Board constructed the first ice racing track on Lake Calhoun, soon followed by tracks on Lake of the Isles, Crystal Lake and Como Lake. Ice racing disappeared in the 1920's as the automobile became more common, and these lake areas became more densely populated as wealthy residential districts.

Concurrently, dirt track racing (trotting and pacing) was popular during summer months. Prominent races were held at the State Fair (its present location became the permanent site in 1885), Bill King Track (formerly near Franklin and Hennepin Avenues), the Kitsondale Track (formerly near Snelling and University Avenues), and the Minnehaha Driving Park (formerly located near 41st and Minnehaha Avenues). Horse racing was finally abandoned as a State Fair activity in 1949 after the discontinuance of the Great Western Horse Circuit and the replacement of the one mile horse track with a one-half mile auto race track.

Other early recreational horse activities are still present in the Twin Cities Metropolitan Area (TCMA), but have shifted out of metropolitan Minneapolis and St. Paul. At one time there were horseback riding trails around Lake of the Isles, Lake Calhoun, and in Camden Park in North Minneapolis. Many amateur

horse shows were sponsored by Twin City riding clubs and academies. These activities form the basis of the present day recreational horse participation which is now centered in suburban and out-state areas.

#### Minnesota's Recreational Horse Population

Information on the number of horses involved in these recreational activities has always been sketchy. In 1900 the United States Census of Agriculture estimated 21,161 horses in Minneapolis and St. Paul, but many of these horses were not connected with recreation. (10) On a statewide basis, the agriculture census has never enumerated recreational horses separately from all horses kept on farms. An indication of the increasing popularity of the pleasure horse is demonstrated by the rapid growth of 4-H light horse projects following the demise of the draft horse program in 1947. The light horse project, started in 1958, was the largest animal project in the state in 1977 (outnumbering dairy projects 5624 to 5222), despite a 13% decline from the 6478 horse projects in 1975. These 4-H projects however represent only a fraction of total recreational horse participants.

In the past, a good indication of recreational horse population was obtainable from personal property tax assessment records which included horses. A 1963 study based on these records estimated the total Minnesota horse population in 1962 as 48,000, composed of 33,000 pleasure horses and 15,000 draft horses. (9, p.58)<sup>1/</sup> However, subsequent investigations and field interviews in the TCMA indicated that the assessment

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<sup>1/</sup> Assessment records are no longer a source of horse population estimates as the counties in Minnesota phased out the personal property tax during the 1960's.

records understated actual horse population for the TCMA by 50% (9, p. 84). This suggests that the 1962 total state horse population was also underestimated.

The most recent comprehensive estimate of horse population was made through the Minnesota Agricultural Extension Service in August 1971. Based on subjective returns of county agents, it was estimated that there were 165,000 horses in the state. This estimate was adjusted to 180,000 in 1975 and following the high grain and hay prices of 1976, was reduced to 160,000 in 1977 (11).

The 7 counties of the TCMA account for about one-fourth of the state horse population, (18.3% in 1962 and 26.1% in 1971). This concentration of horses in the most populated region of the state provides the primary basis for several research issues: (1) what are the socio-economic characteristics of the people owning horses and how does this pattern of ownership relate to future demographic changes; (2) what are the uses of these horses and how do they relate to the recreational needs of Minnesota residents; and, (3) what are some of the economic implications from the type and level of resources devoted to horses. With the apparent rapid growth of Minnesota's horse population and the demographic changes of recent years, these issues take on increased relevancy. The inadequacy of the currently available information to confront these issues is the motivation for this study. The subsequent investigation of the recreational horse system is based on a case study survey conducted in the rapidly urbanizing county of Anoka. After discussing the methodology used in this study, (section II), the survey results are described in section III. In the final section implications of the survey's results are discussed in the context of the issues raised in this introduction.

## II. METHODOLOGY OF THE RESEARCH

The various stages of carrying out a survey to collect information on Minnesota horseowners are described in this chapter. Under time and resource constraints it was necessary to narrow the focus of this survey to a single county. The preliminary indications of a high concentration of horses in the TCMA and toll free telephoning suggested locating the study within the Twin Cities region. Within the TCMA, each horse owning county can be characterized by different horseowning situations. Hennepin County, especially the western region is perhaps the most prominent and active horseowning area in the Twin Cities. However, the large urban areas of Minneapolis included in Hennepin County would make an enumeration of all horseowners very difficult. Ramsey County, which is almost entirely urban, no longer has a significant horse population. Carver and Scott counties are more rural than the other counties, and have relatively small horse populations. While the remaining counties, (Anoka, Washington and Dakota) were believed to have large horse populations, Anoka was chosen from among these three counties largely because of the interest of the county extension staff in this project and the assistance they provided in developing the sampling frame. In addition, Anoka's rapidly changing demographic features and its full range of urban to rural land uses presents an interesting set of relationships to be examined along with the county's horseowning patterns.

### Enumeration Process

The study was restricted to a sample of all horseowners residing in Anoka County regardless of where their horses are kept. Partial lists of owners were available from local saddle clubs and breed associations. However it was necessary to supplement this list through an extensive search.

Other sources contacted in developing the list included veterinarians and farriers practicing in the county, active horseowners in various neighborhoods of the county, several boarding stables, and public lists of registered horse owners in city and townships where licensing of horses is required.

This extensive search of alternative sources of information yielded the names of 722 horseowners in Anoka County. This list, while certainly not complete, was considered adequate to provide a "random" sample of horseowners. This sampling frame was checked for completeness through a version of a "capture-recapture" test. In this process, the names of the first 25 horse owners found along randomly selected routes in Ramsey and Lino Lakes were to be compared with names on the sampling frame. These 2 cities were randomly chosen from the 12 non-urbanized cities and townships of Anoka County after each township had been classified according to its licensing requirement for horses and proximity to the inner metropolitan area. Lino Lakes was chosen from the list of inner area cities with no licensing requirements for horses. Ramsey represented the outer area city and townships with horse registration ordinances.

From this search, 64% of the horseowners encountered in Ramsey and 56% of the horseowners in Lino Lakes were found to be already in the sampling frame. Information on the number of horses, acres of land, commuting distance of the husband and household size characteristics was collected from all the horseowners encountered (Table 2.1). The differences between those horseowners in the sampling frame and those outside do not appear to be great. This suggests that any inferences drawn from the sample would also apply to all horseowners, including those not in the sampling frame. Based on these results, it was also estimated that 60% of Anoka's horseowners had been included in the sampling frame and that the total population of Anoka county horseowners was therefore about 1200.

Table 2.1 Comparison of Mean Value of Selected Characteristics for Horseowners Encountered in Checking Sampling Frame.

Township	Sample Size (No.)	Horses Owned (No.)	Land Owned (acres)	Job Commuting Distance (miles)	Household Size (No.)
(in sampling frame)					
Ramsey	15	3.63	4.50	15.90	4.80
Lino Lakes	13	5.40	53.28	14.10	4.10
Combined	28	4.47	27.57	15.09	4.46
(not in sampling frame)					
Ramsey	9	2.37	4.93	15.30	5.25
Lino Lakes	11	3.40	19.1	16.18	5.1
Combined	20	2.94	12.67	15.76	5.17
T value for test of difference between combined means		1.21*	1.13**	.200	1.18**

Source: Survey of Horseowners Encountered Along Random Routes in Ramsey and Lino Lakes Township 1977.

\* significant at 25% level.

\*\* significant at 30% level.

The check on the completeness of the sampling frame, which relied on horses being visible, was necessarily constrained to the non urbanized townships. Since many of the horseowners in these more urbanized townships do not board their horses at home, there was no apparent means of checking the accuracy of the sampling frame for these owners. On the other hand, it is believed that our sample was complete in regards to all commercial stables in Anoka County. After the survey was completed it was found that 5.1% of the horse owners in the sample had to be discarded (2.8% had disconnected phones and did not reply to mail inquires and 2.4% lived outside the county). There was a significant category of non-respondents (30 out of 240) made up of individuals who had recently sold their horses. If these households are assumed to be replaced by new horseowners, (and hence excluded from the sampling frame) the estimate of total Anoka County horseowners is 1142.

Although the estimate of the number of horseowners in the county was not the most crucial objective of this research, it is nonetheless important to the later phase of analyzing the economic implications of Anoka's horse population. The main effort was devoted to developing a sampling frame which would provide a representative sample of horseowners.

#### The Questionnaire

A questionnaire was designed to collect information by telephone interview from horseowners in the sample on investments, annual expenses, activities and characteristics of horseowners. Use of a telephone survey avoided problems of late questionnaire returns, potentially low response rates with bias problems for nonrespondents and question interpretation problems. On the other hand, a mail questionnaire may have given the horseowner more



time to think about questions dealing with expenses. A letter introducing the survey, its objectives, and the type of questions to be asked was sent to the 240 randomly selected horseowners just prior to the telephone interview helped to overcome this problem. The questionnaire was pretested through personal interviews of those horseowners visiting the large animal clinic at the University of Minnesota's Veterinary Medicine School. A final telephone pre-test was then administered to 10 metropolitan area horseowners (excluding Anoka County).

During the 2 weeks of telephone interviewing, 176 useable surveys were completed. Of the remaining households, 30 no longer owned horses or lived just outside the county, 20 were not at home or unavailable during the interview period, 5 phones were disconnected. Only 3 telephone interviews were refused. Completed questionnaires were returned by 4 of the 6 horseowners who were mailed surveys because of unlisted phone numbers.

The questionnaire took 7 to 15 minutes to administer, depending on the horse owning situation. This was felt to be a maximum length and it was not possible to do more extensive questioning into special areas such as a comprehensive breakdown of feeds used, a more in depth examination of various show and race horses, or probing on some of the motivations for owning horses. In parts of the survey, such as questions dealing with expenses and amounts of hay and grain used, owners often were able to provide only general responses. In other cases where the owner could make no estimate, these questions were left blank but the rest of the questionnaire was used.

Although these problems of owners responses were anticipated from the pre-testing process, it was possible to work within these constraints. The

basic, "first time" nature of this survey and the quality of the data on activities and quantity of investment allows use of this data in addressing the primary issues of this research.

### III. HORSE OWNERSHIP IN ANOKA COUNTY

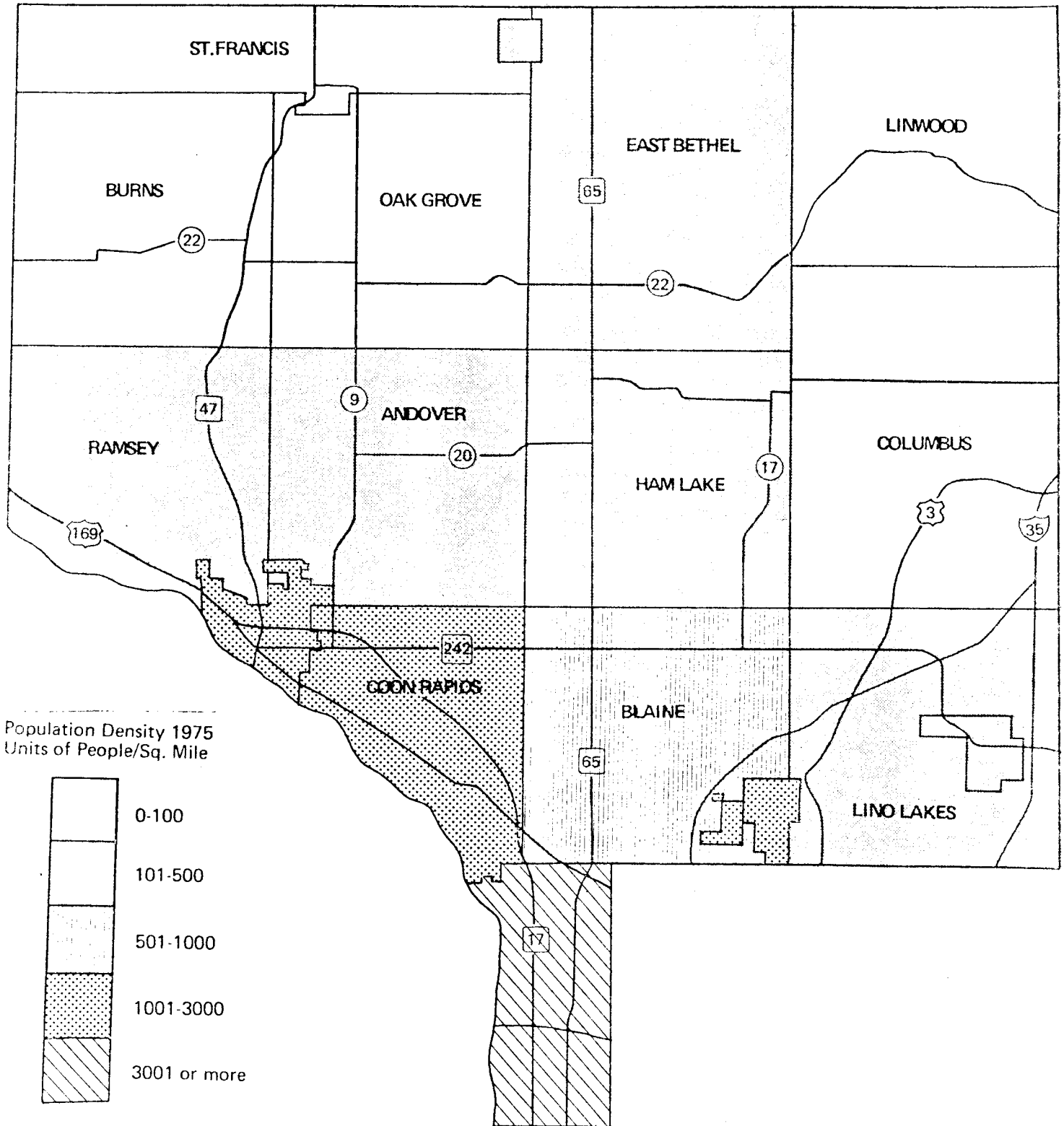
The results of this survey indicate that most of the estimated 3500 horses in Anoka county are kept on the owner's property and in rural nonfarm situations. Horseowners in the more urban areas (Anoka, Coon Rapids, Fridley, Columbia Heights, and Blaine cities) tend to board their horses and to own fewer horses (1.4 per owner), compared to the more rural owners (3.1 horse per owner), Eighty-nine percent of the owners who board their horses (rather than keeping them "at home") live in these 5 largest townships of Anoka County. The distribution of horses and owners who keep horses on their own property is thus roughly the opposite of the population density in Anoka County (Map 1). As a result of this rural pattern and the minimum acreage requirements for keeping horses now in force in all cities and townships in the county, these "at home" horseowners live on relatively large parcels of land. Excluding the 13% of owners who are involved in full or part time farming, each horseowner owns an average of 11.3 acres.

One consequence of this rural horseowning pattern by people who for the most part are not farmers, is the most horseowners live far from job centers.<sup>1/</sup> Not surprisingly then, the average commuting distance one way of horseowners is a distant 21.2 miles. The jobs cited most often by horseowners were skilled operators (including truckdrivers) or craftsmen (34.7%) followed by owner-managers and salesmen (25.6%) and professionals (20.0%). In a related characteristic, 79% of the horseowners had annual incomes greater than \$15,000 with 49.7% of the households earning between \$15,000 and \$25,000.

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<sup>1/</sup> Anoka differs most from the other 6 counties of TCMA in its unusually rapid post WWII population growth. Spurred by the in-migration of working aged families, Anoka's population has grown from 22,443 people in 1940 to 189,024 in 1975. Available farm land decreased from 210,430 to 104,300 acres in the same period. Fully two-thirds of Anoka's work force was employed outside the county (1970) primarily in Hennepin and Ramsey counties.

Map 1. Population Density: People per Square Mile by Townships in Anoka County, 1975



Estimated average incomes of horseowning households is \$20,000 compared to a county wide average reported as \$15,844 in 1976. However, these income levels for horseowners are not exceptional in comparison with other households with the same age and similar family size in the State of Minnesota. The average age of the oldest person in these households was 41.2 years with an average of 4.2 people in each of these households.

Although teenage girls have often been cited as being most active with horses or most responsible for a family owning horses, information from this study does not support this argument. Although dependent children are present in 80% of the households, boys were present in 74.4% and girls present in 76.7% of the horseowning households. Within families, the teenage daughter was found to be the person most interested in horses in only 26.3% of the households.

In fact, adults were more frequently cited as being the most active household member in regards to horses in over half the sample:

	% Households
Father <sup>a/</sup>	20.5
Mother <sup>a/</sup>	21.6
Adult females <sup>b/</sup>	11.1
Adult males <sup>b/</sup>	<u>.6</u>
Total	53.8

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<sup>a/</sup> Adult heads of household (married and/or single parents)

<sup>b/</sup> Adults not heads of households, usually adult children (greater than 18 years old)

The estimated 1200 horseowning households represent 2.1% of the total households in Anoka County.<sup>1/</sup> In the least urbanized townships (all of the county excluding Coon Rapids, Blaine, Anoka, Fridley and Columbia Heights) 6.5% of the total households own horses. In the context of land resources, the estimated aggregated acreage of the non-farming horseowners (8,927 acres) represents 3.7% of the non-public land area of Anoka county. By excluding the 73,234 acres devoted to urban and built up lands as of 1971, (1,p.55) the land owned by these horseowners then represents 5.2% of the private rural land area. There were 104,300 acres in Anoka County involved in commercial farming in 1976 which leaves a residual estimate of 65,000 acres as being used for rural non-farm residences. The non farming horse owners represent 13.7% of this last land use category.

The Uses of Horses in Anoka County. The two main recreational uses for horses are pleasure riding and horse showing or competition. Except for horses from exclusively breeding operations or special show horses, almost all owners (94%) used their horses for pleasure riding. Horseback riding along public roads and on or across other people's property were the most popular riding places indicated by Anoka County horse owners. Riding clubs and public horse trails were the least used riding locations.

Over the half the owners surveyed do not currently use their horses in competition at any level. Amongst owners who did compete in horse events Western Performance, Western Pleasure (including gaming), Halter and English Performance were the most listed. (Table 3.1). The sponsorship and levels of

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<sup>1/</sup> Total population of Anoka was divided by the average household size of 3.62 to estimate the number of households as 52,210.

Table 3.1. Horse Showing: Number of Participants in Styles of Competition as Percentage of All Horse Showers and All Horse Owners <sup>a/</sup>

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Activity	Number of Participants <sup>a/</sup>	As a % of all Horse Showers	As % of all Horse Owners
Western Pleasure	64	77.	36.3
Western Performance	29	35.	19.8
Halter	22	26.5	12.5
English Performance	18	21.6	10.2
Racing	7	8.4	3.9
Rodeo	5	6.	2.8

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Source: Computed from 1977 Anoka County Survey

<sup>a/</sup> Includes multiple participation in more than one activity.

competition was quite varied. Saddle club shows, 4-H shows, state rodeos, as well as out of state racing competition, were commonly mentioned. Although polo clubs exist in the TCMA, no one in the survey indicated participation in that activity.

In addition to the usual competition for trophies and ribbons, 31% of horseowners in competition did so for cash prizes. The average reported cash prizes for these competitors was given as \$251.65, ranging from 0 to \$2500.<sup>1/</sup>

A variety of organizations such as 4-H, Saddle Clubs and Breed Associations at the national, state, and local level are available for horseowners with different interests. However, less than half the horse owners in the survey (43.7%) belong to any type of horse organizations. Most of these "joiners" (76.1%) also show their horses, so that most of the non-joiners only use their horses for recreational riding. The most frequently joined organization is 4-H which had members from 19.8% of all horseowning families. Saddle clubs (18.7% of all owners) and Breed associations (13.6% of all owners) were the next most frequently joined horse groups.

Reflecting the popularity of Western horse activities, Quarter Horse and Appaloosa were the two most popular breeds mentioned (Table 3.2). The registry, or lack of it, was not questioned on these horses. In some cases this meant that the dominant breed, rather than purity or registry, determined a horseowner's classification of his horses. Thus the number of Grade horses in Anoka county is almost certainly larger than the data indicates. "Other" horses mentioned included Tennessee Walkers, Palominos, Painted, Buckskin, Draft and Pintos.

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<sup>1/</sup> The figures do not subtract the entry fees and other costs of participation in competition. Clearly most horseowners do not make a cash "profit" by participating in shows although prizes may help defray some of the costs.



Table 3.2. Number of Breeds and Owners of Horses in Anoka County Horse Survey.

Breed	Number of Horses	Number of Owners	Average Horses per Owner
1. Quarter Horse	195	68	2.9
2. Appaloosa	90	28	3.2
3. Grade	85	37	2.3
4. Arabian	83	28	3.0
5. Arabian Mixture	56	23	2.4
6. Ponies Of America	48	14	3.4
7. Thoroughbred	46	7	6.6
8. Other Breeds	47	17	2.8
9. Shetland	39	16	2.4
10. Other Pony	32	11	2.9
11. Welsh	26	12	2.1
12. American Saddle Horse	23	4	5.7
13. Morgan	16	7	2.3
TOTALS	496	272	2.8

Source: Computed from 1977 Anoka County Horse Survey.

### The Cost of Horse Ownership

Horse ownership is expensive. The average investment in a single horse is \$1978 -- including the value of horse related equipment. There are also many recurring expenses such as feed, veterinarian and farrier bills, training expenses, stud fees, mare care, and entrance fees to horse shows that contribute to the cost of ownership. Based on this survey's results, the estimated annual cash expenditure on these recurring items averages \$486 per horse. While the initial acquisition cost of a horse may be fairly low, the "proper" style of horse ownership can soon lead to considerable capital investments in such necessities as a barn, fencing, a trailer, saddles, bridles, riding clothes, and various sundries.

Investment in Horses and Equipment. The value of horses owned are based on estimations of the horses' value given by the owner. While this value may not be the same price the horse would receive on the market, it does give some indication of the horses' worth and the level of the owners' involvement with horses. Two owners valued their horses at greater than \$10,000 each (Table 3.3). The current prices for horse meat of 24¢ per pound liveweight for a thousand pound horse keeps the minimum value of a horse near \$200. Two-thirds of the owners valued their horses at less than \$500 per horse. The overall average value of a recreational horse in Anoka County is \$795.72.

Of the 138 horseowners keeping horses on their own property, 96% indicated they had a separate structure to shelter their horses (i.e. horses were not kept with other livestock in a dairy barn). Since many of these barns were quite old or were self constructed from lumber scraps or converted sheds, only 70% of the owners could provide an estimate of use value of their barns. These estimates ranged from \$10 to \$40,000 per owner at an average of \$602.26 per horse for all owners.

Table 3.3. Average Per Horse Value per Owner

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Average Value (\$) per horse	Per Cent of All Owners
less than 250	33.0
250 - 500	33.5
500 - 750	6.3
750 - 1000	10.2
1000 - 1500	5.7
1500 - 2000	4.5
2000 - 3000	2.3
3000 - 5000	1.7
5000 - 10,000	1.7
more than 10,000	1.2

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Source: Computed from 1977 Anoka County Horse Survey.

Saddles were another major investment for most horse owners. Each horseowner had an average of 2.65 saddles, or slightly less than 1 per horse. Although one person admitted owning 50 bridles, the average number per owner was 4.46. The valuation of these bridles averaged \$42.05 per horse. The various grooming aids and maintenance items such as brushes, combs, halter, blankets, and buckets were considered in this miscellaneous category. The estimate of the total value of these items was \$66.52 per horse.

Since much of the western riding and showing gear (jeans, boots, shirts) can also be used for general activities, only clothes used specifically in riding or showing were considered. Thus the purely pleasure rider or western showman may not have any special riding clothes while such an expenditure would be quite necessary for those owners participating in English performance indicated no investment in special riding clothes. Including all owners, the average value of special clothes was \$139 per owner, or \$47.63 on a per horse basis.

Only 26% of the horseowners in the survey actually owned a horse trailer while an additional 42% transported their horse(s) by either borrowing or renting a trailer, or using the back of a truck. There is, however, a wide difference in the mobility of the owners with trailers. The trailer owners transport their horses more frequently and cover nearly 10 times the mileage of those owners who transport their horses by rented or borrowed trailers and trucks. (Table 3.4)

From the information provided by the 46 trailer owners in the survey, the average purchase or construction cost per trailer was estimated as \$1796 with the most expensive trailer worth \$12,000. The most common

Table 3.4. Horse Trailer Onwership and Use: Trailer Users as a Percent of all Horse Owners and the Average Annual Use of Trailers

Transportation Means	Proportion of Total Horse Owners (%)	Average Annual Trailer Use (Number of Times)	Average Annual Trailer Mileage (Miles)
Own horse trailer	26	31.2	2689
Rented or borrowed trailer	42	4.5	270
None	32	0	0

Source: Computed from 1977 Anoka County Horse Survey

sized trailer was for two horses, and the largest had a carrying capacity of 8. Trailer ages ranged from new to 20 years old with the average trailer being 7.2 years old. Averaged over all the county's horses, the value of trailers per horse is \$159.36.

The preceding investments were for the more common pieces of equipment associated with owning and raising horses. In addition, special use equipment and antiques such as carts, buggies, sleighs and sulkies were owned by 21% of the owners in the survey. This group of owners included 21 who owned only a cart, 6 with only a sleigh, and 10 who owned an assortment of buggies, cutters and sulkies. Excluding the antique items classified as "priceless" by their owners, the average investment in this special equipment was estimated as \$346.12 per reporting owner, or \$23.02 per horse.

These items of horseowner's actual expenses for equipment and buildings are summarized in Table 3.5. These are only the easily identifiable components of the total horse investment. Other purchases or investments, such as a truck, haying equipment or a home in the country, may be a necessary element to fully enjoy horses, but it would be hazardous to attempt allocating a portion of these purchases as part of the horse investment. Thus the overall per horse estimate of \$1978 worth of investment (horse and equipment) is on the conservative side.

#### Annual or Recurring Expenses

Unless the horses are part of a 4-H project or a commercial enterprise, records of horse related expenses (especially hay and grain) are seldom kept by horseowners. The following discussion is based on the survey responses to questions on these matters. (Table 3.6)

Table 3.5. Average Value of Horse Owner Investment on a Per Horse Basis by Boarding Status of Horses

Capital Investment Item	Average for at Home Horses n = 449 (\$)	Average for Boarded Horses n = 47 (\$)	Overall Average n = 496 (\$)
Horses	765.33 <sup>a/</sup>	1086.70	795.72 <sup>a/</sup>
Barn	665.30	--	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	2014.38	1632.81	1978.05

Source: Computed from 1977 Anoka County Horse Survey

<sup>a/</sup> The mean for all horses was \$1880. The figure 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 and are excluded from these data.

Table 3.6. 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 n = 449 \$	Average for Boarded Horses n = 47 \$	Overall Average n = 496 \$
Grain <sup>a/</sup>	62.50	-	56.58
Hay <sup>a/</sup>	142.55	-	129.05
Feed Supplements	18.30	-	16.56
Boarding Fees	-	429.30 <sup>b/</sup>	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.

<sup>a/</sup> These figures do not include any allowance for home production and represent only reported hay and grain purchases.

<sup>b/</sup> Includes feed and hay; these are estimated to be of the order of \$250.



Under the survey's constraints, no distinction was made between straight grain or formula feed mixes, and only the quantity of grain was considered because the price of grain can vary substantially over time, place, and form. Only 5% of owners with horses at home reported raising all their grains, 14% made no estimate, and the remaining owners reported purchasing an average of 1.95 tons per year or .63 tons per horse per year. Applying an approximate price of \$5 per cwt.<sup>1/</sup> means that those owners purchasing grains spent an average of \$195 or \$63.00 per horse annually on feed. Most of the horse owners buy at least some grain at feed stores; 77.5% of owners purchase exclusively at stores, 7% purchase solely from farmers, and 15% purchase from both sources.

Special feed supplement purchases were reported by only 80 of the respondents as many of the owners said their formula feeds did not require further supplements. The average estimated expense for feed supplements was \$56 per owner per year or \$18.30 per horse.

The amount of hay fed to horses in any given year can also vary widely depending on the amount and quality of the pasture, the length of the pasture season, and in some cases, the depth of snow cover in winter. Whilst as 17.6% of horseowners reported raising all their hay requirements, hay purchases by owners buying all, or a fraction of their hay averaged 295 bales per owner. The majority of these horseowners (66.3%) stayed within 10 miles of home for buying their hay, demonstrating the localized nature of this market. The average purchasing radius was 12.9 miles with one owner traveling 150 miles to buy hay.

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<sup>1/</sup> A short survey of (1977) grain mill prices for horse feeds in the Anoka County area showed a range of \$3.75 for oats to \$7.50 per cwt for a protein formula feed mix.

The grain and hay expenses were not incurred directly by 34 of the Anoka county horse owners who do not keep their horses on their own property. In 50% of these cases hay and grain were included in boarding fees paid to commercial stables. The other 17 owners made alternate arrangements, keeping their horses with a friend for no charge or in exchange for labor services. For the 17 owners paying a boarding fee, this expense ranged from \$25 to \$100 per month per horse with an average of \$55 per month per horse. The most popular stall rented was a box stall (40.6% of boarders) followed by a run-in stall or pasture (37.6% of boarders) and a tie stall (21.9% of boarders). On an annual basis, the boarding fee for 1 horse, \$660, is approximately equal to the hay and grain expense for 2.8 horses kept at home. Perhaps as a result of this expense, the boarders only own an average of 1.3 horses (compared to 3.1 for non boarders).

As mentioned in the earlier section, 89% of these boarders live in the most urbanized part of Anoka county so that to keep horses in a non-residential area may mean that these owners still have to drive a long distance to reach a part of the county where horses can be kept. The average distance from an owner's home to his horse(s) is 7.7 miles with the closest distance being .1 of a mile and the farthest distance being 25 miles. This distance did not seem to discourage visits as the average visits were 17.8 times per month with a range of 1 to 60 times a month.

Owners were asked to estimate veterinary expenses from a full year period, including regular shots and worming visits as well as irregular visits and costs for accidents and injuries. With an average of 3.2 visits per year, the average annual veterinary bill per year for all treatments and drugs was \$51.76 per horse annually. Only 11.8% of all horse owners indicated they did not have any veterinary expenses in 1976.

Farrier charges include hoof trimming, treatment, and shoeing. A sizeable number of people (43) had no farrier bill, either doing the work themselves, having a friend do it, or in a few cases, not doing it at all. For those owners who did pay a farrier bill, the average annual expense was \$31.13 per horse.

Stud fees, mare care and training were not significant expenses for most horseowners as only 11 owners reported breeding a mare in the past year. The highest stud fee reported \$1000, was paid by an owner who had his mare bred to a former Kentucky Derby winner. Only 7 owners reported paying any expense for mare care and only 7.4% of the horseowners in the survey hired a special horse trainer for a fee. One of these trainers was on a full time basis at an annual salary of \$10,000. The per horse average for these 3 expenses was \$50.97 annually for all horses.

Minor (and major) repair bills to equipment (e.g. trailer, fences, saddles, building, etc.) were all considered as one expense. As with the other expenses, the actual maintenance costs incurred during the last year, rather than an amortized average, was requested. Thus only 44% of the horseowners could recall actual maintenance expenses in the past year. For these owners with actual costs, the average bill was \$231.60. For all owners the average annual maintenance expense is \$31.99 annually per horse.

Club membership, subscriptions to horse magazines, and entrance fees to horse shows were considered in a single miscellaneous category. These items were expenses for only 55.7% of the horse owners with \$5000 being the highest set of fees paid. The average expense for these items was \$35.03 per horse annually.

At a calculated cost of 15¢ per mile for both trailer owners' and trailer borrowers, the average annual expense for transporting horses is \$24.58 per horse.

Summary. The description of horses in Anoka County finds that most of them are located in non-urban areas, and in non-farm situations. Because of minimum acreage ordinances for owning horses in most city-townships, the average acreage for these horseowners is relatively large (11.3 acres per owner). The horse owners in Anoka County almost universally (94%) use their horses for pleasure or recreational riding. Another non-exclusive use, horse showing and competition, attracts 47% of the horseowners in Anoka County. The most popular horse showing activities, Western Pleasure and Performance, is also reflected in the popularity of Western horse breeds (Quarter Horse and Appaloosa) among Anoka County Horseowners. The cost of ownership and operation of these horses is also relatively large; average investment (including horses) was \$1978 per horse and the average annual spending on feed and maintenance was \$486 per horse. Cash outlays for feed and grain comprises 38% of this annual cost.

#### IV. IMPLICATIONS OF THE SURVEY RESULTS

The discussion in the preceding chapter indicates that horse ownership and recreation is practiced by people in all socio-economic groups. All horseowning situations in Anoka County were considered and a wide variety of expenses and activities were encountered. The information collected from the survey and presented in the previous section provides the basis for discussion some of the economic implications of these recreational horses for the region of Anoka County, and for Minnesota as well.

##### Factors Affecting Cost of Horse Ownership

The results of the survey indicates that it is expensive to own horses. In a typical at home situation, the owner keeps his 3.1 horses on his property, owns \$6243.40 worth of equipment (including horses, trailer, barn, saddles, bridles, riding clothes and tack supplies), buys 295 bales of hay and 1.95 tons of grain (\$442.50 for the hay and \$195.00 for the grain at 1977 prices) and spends an average of \$796.76 on veterinarian, farrier, maintenance and special fees (Table 3.3). After including a 10 percent capitalization charge on horse and equipment, the annual cost of owning horses for these average suburban households is greater than \$2078.

Although this is the most frequently found situation, there are many exceptions. The owner who boards his horse(s) at a stable has, on the average, fewer horses (1.3), and hence, lower total expenses. However, even at minimal maintenance levels which includes a boarding fee, veterinarian and farrier care, special expenses and a capitalization cost on equipment and horse, the annual average cost for owners boarding horses is \$1098.

Although horses and the system of necessary accessories and investments are expensive, all income groups are represented as horseowners. However, incomes influence the amount spent on care and equipment for the horses. As indicated above, the variations in these investments and expenditures is considerable; extreme cases ranging as high as \$316,200 for investments, and \$40,350 for annual expenses. However, generally horse related expenses and investments indicate a positive relationship with income levels. This pattern is consistent with the expectation that as a recreational activity, expenditures and investments in horse related items would increase with rising incomes.

Formal tests using statistical models indicate that expenditure on horse related items is significantly related to incomes and length of horse ownership. In percentage terms, expenditure on horse related equipment is expected to increase between 3 and 7% for each 10% increase in the income of horseowners.

These results suggest that if the pattern of rising household incomes continues, the demand for and investment in horse equipment items will continue to rise. It also suggests that other areas of the TCMA with substantially higher per capita incomes will have higher levels of investment and expenditures than those estimated for Anoka.

The other interesting pattern observed was the tendency for horseowners to invest more heavily in equipment and horse care after having owned horses for several years. Even for a county that has been characterized as having a lot of backyard, "transient" horseowners, there are a sizeable number of horseowners who have been involved with horses for more than 15 years (17.4%). What may have started as a casual hobby for some owners is now

a large scale operation. Not surprisingly, those who "stay with" horse recreation tend to become more financially committed to horses.

The number of 15 or more years horse owners can be expected to increase according to the intentions indicated in the survey. Of the present horse-owners, 87.5% said they planned to still own horses in 5 years and 68.8% of the owners planned to still have horses after 10 years, (15.9% were uncertain).

The large number of new owners (23.6% have owned horses less than 2 years) accompanying this expectation of ownership into the future suggests that the horse population in Anoka County will continue to grow as well.

#### Impacts of Horse Ownership.

A key element in any discussion of the impacts of horses in Anoka County depends on an appraisal of the number of horses actually owned. As discussed in the previous sections an accurate and complete enumeration of horses in even a county is very difficult, and probably not worth the effort. This study's methodology estimates that there presently are 3500 horses in Anoka County. This estimate comes in conflict with the prevailing guess by area veterinarians and extension workers that there are in the neighborhood of 7,000 horses in Anoka. Outside of the incomplete farm census of horses (458 horses), the only other estimate of Anoka's horse population was 1303 horses and 341 owners made in 1963 (9, p.84). Although a census of horses is not the central portion of this study, an estimate of Anoka's horse population is necessary to this section's estimate of resource and economic impacts. The methodology followed and the checks on this study's estimate suggest that the estimate of 3500 horses in Anoka county is more correct, and hence, will be used for this section.

Aggregate Investments and Expenditures. The aggregate estimates of horse related impacts are merely projected to a county wide basis from the original survey of 176 horseowners. Based on this survey, Anoka County horseowners alone have \$4.1 million dollars invested in capital equipment such as barns, trailers, saddles, bridles, and supplies. Annual cash expenses, 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% capitalization cost for all equipment and horses Anoka County horseowners expend annually \$2.34 million.

Implications to Agricultural Resources.

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. For example, during the dry summer of 1976, Anoka's hay production was down 33% from 1975 and prices averaged \$70.50/ton statewide. Some of the Anoka County horseowners reported paying as high as \$3.50/bale (\$140/ton) for hay. 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 3500 horses in Anoka County do consume a sizeable quantity of hay. Not all this hay is from Anoka. The average 12 mile hay purchasing radius of owners indicate that large portions of neighboring counties are potential sources of hay for Anoka County horses. By considering only purchased hay (home production excluded), an estimated 7525 tons, or the equivalent of 35%



of Anoka's 1976 hay production was purchased for horses.<sup>1/</sup> This hay consumption represents the production of 5394 acres in 1976 Anoka County growing conditions or 3396 acres under the more "normal conditions" of 1975 (12).

If home produced hay and grazing are considered, the acreage involved is larger. By assuming a hay ration of 25 lbs of hay per horse per day to allow for hay raised by owners and by pasturing land, 15,750 tons of hay, or the production of 11,250 hay acres under 1976 growing conditions 7100 acres under 1975 conditions were consumed by Anoka County horses.

Because of a low value to weight ration and high transportation costs, the market for hay is more localized than for grain. Under these circumstances of a localized market and the limited or diminishing agriculture activity in the TCMA, the hay used by the high concentration of horses in the Anoka region certainly puts pressure on local hay prices.

Grain Impact. Most of the grain fed to Anoka's horses does not come directly from farmers. An estimated 93% of the horseowners buy at least part of their grain from elevators. In the context of Anoka County, the 1983 tons purchased for horses was 10.7% of total oats, corn, and soybeans produced in 1976. The total consumption of grain by horses is estimated at 2577 tons of grain or the production of 3980 acres of Anoka land under 1975 growing conditions, or 1671 acres of south central Minnesota land in normal years.<sup>2/</sup>

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<sup>1/</sup> Excludes hay grown at home and hay fed to boarded horses.

<sup>2/</sup> This estimate assumes the grain fed to horses was composed of 2 parts oats to 1 part corn.

Thus in 1976 the equivalent of 15,140 acres of Anoka's agricultural land were directly linked to the support of recreational horses, nearly 1/7 of Anoka's current farm land. Among the alternative uses of this land is the production of dairy or beef animals. The number of horses in Anoka County actually outnumbers dairy cows (3500 to 1700), although total cattle (8500) are more numerous.

Aside from these agriculture aspects, the land used to keep nonfarm horses on the owner's rural residence can be seen as part of the suburbanization process. Of all horseowners, 67% keep their horses on rural nonfarm residences. Projecting for the country, these horseowners represent 8927 acres, or 13.7% of the estimated total non urban, non farm residences in Anoka. In recent years, the city-townships in Anoka County have instituted ordinances regulating the size of new housing in the non urban areas. Many of these townships also have ordinances for horses, restricting them out of heavy residential areas and requiring minimum acreages (usually 2 1/2 to 5 acres) for the health of the horses and the aesthetic appeal of the area. The minimum acreage for new housing in most of these townships is sufficiently large to permit keeping at least one horse. However with the present riding population densities at even 2 1/2 acres would cut down available riding areas and diminish the recreational enjoyment of owning horses. The pattern of urbanization also has implications for Anoka's horse population which will be discussed in the next section.

#### Trend in Anoka's Horse Population

This study's estimate of 3500 horses in Anoka County represents a 150% increase since the last study in 1963. However it is also 50% below the previous "guestimate" of 7000 horses in 1975. Although a 50% decline

may be too large, there are indications that Anoka's horse population has declined in recent years. The number of 4-H horse projects in 1977 showed a 13% decline from a peak in 1975.

The high prices for hay and grain in 1976 may have been important in reducing the horse population. Various Twin Cities horse experts have suggested that horseowners responded to the higher prices by reducing their horse herd, not by selling out completely. The reduction in the number of horses per owner from 3.82 in 1963 (1, p.84) to 2.83 in 1977 is consistent with this idea, although other factors such as wider based ownership may also be responsible for the reduction in this ratio. With a return to lower hay and grain prices, perhaps Anoka's horse population, or at least the number of horses per owner will increase.

Another factor which may be affecting Anoka's horse population is the rapid urbanization, a problem alluded to earlier. This study indicates that the center of highest horse population in Anoka has shifted from Blaine in 1963 to the Ramsey-Burns city-township area. In this same period, Blaine's population has grown from 8,000 to 25,349 while the population of Burns is still under 2000 and Ramsey's is 7800. Blaine still has farming areas within its boundaries and its projected horse population is larger than in 1963. However "new" horseowners apparently find the less urbanized areas further north of the Twin Cities more suitable for owning horses as the horse population in those northern townships has increased more rapidly. A similar response to Anoka's projected population growth to 219,541 by 1980 and 454,368 by the year 2000 (13) suggests that the area highest horse population will be shifting further north and maybe out of Anoka county.

Summary. This discussion has given some indication of the countervailing forces affecting Anoka's horse system. Growth in personal incomes can be

expected to increase recreational horse participation and the level of involvement. However, population increases could possibly limit further growth of the "horse industry" in Anoka County because of the intensive land requirement for maintaining and riding horses. "Grandfather" clauses in minimum acreage ordinances allow keeping horses on small acreages, but surrounding urban developments reduce riding opportunities and enjoyment. The lack of riding facilities have been a common complaint by many horse-owners and organizations, and this problem is likely to increase as urban development in Anoka county continues.

Thus while the lower hay and grain prices of 1977 may resume the growth of Anoka's horse population, the projected urban growth for Anoka leaves horseowners as a minority in any residential situation. This produces a potential conflict situation where the non-horseowning majority attempt to legislate the activities of horse owners. The prohibition of horses on paved roads, minimum acreage ordinances, and registration of horse owners represent developments in the attempt to monitor and regulate horses. In this respect horses resemble urban pet ownership which has become a source of controversy over leash laws, licensing and apartment renting.

#### Implication of Survey Results for Minnesota.

This survey has indicated that horses in Anoka County are primarily owned for recreational purposes and that the income to support these activities comes mostly from off-farm sources. The high horse population in other Minnesota counties with urban and recreational centers such as Olmstead, St. Louis, and Ottertail Counties suggest that statewide, horses serve the same purposes. However, recreational use of horses involve many activities, and as reflected

by the Anoka survey results, this diversity leads to wide variations in expenditure and investment levels. To the extent that Minnesota horseownership situations would also be expected to show wide diversity and since no other cross section estimate of these expenses has ever been attempted, these Anoka County survey results are perhaps the best available guide to the statewide horse industry in Minnesota.

As with Anoka County, a good appraisal of the state's horse population is a necessary element to estimating the economic size and significance of the state's horse industry. The 1977 projected population of 160,000 horses in Minnesota is based upon many of the same sources that estimated Anoka's horse population in 1975 at 7000. Although the error in the estimates for each county may be offsetting in the total horse estimates for the state and different factors may be affecting horseownership in other counties, the study's experience in the enumeration of horses suggests that the estimates of state horse population may also be somewhat overstated. This 160,000 horse estimate is used here to project aggregate investment and expenditure levels for Minnesota, but the reader is cautioned that there may be considerable overestimation in these numbers.

By using the level of expenses obtained from the survey under these assumptions, the total statewide investment in all horse related equipment (excluding horses) is \$190 million. The annual paid costs of services such as veterinarian, farrier and for hay and grain amount to \$77.8 million. Including an annual 10% capitalization cost of equipment and horses means that, at minimum, the annual cost to owners of keeping horses is \$125.9 million (all horses). If the value of other equipment (trucks, tractors, campers) used in connection with horses were available and also included, the total estimates of annual costs would be even higher.

Based on the consumption pattern in Anoka, 344,000 tons of hay, and 91,200 tons of grain are bought for the state's horses. This represents 277,200 acres of production under 1976 conditions or 265,000 acres of production in more normal years. Under these assumptions the hay consumption by horses represented 6.7% of Minnesota's hay production and 0.7% of Minnesota's grain production in 1976.

A study conducted earlier on the consumption of agricultural products by domestic household pets indicated that nationwide, the grain used in these pet foods also totaled less than 1% of total U.S. grain production (14).

The substantial number of horseowners in the urban fringe areas undoubtedly affect rising suburban land values. The larger size of land holdings amongst horseowners, and the higher number of horseowners in the less densely populated areas of Anoka suggest that horseowners are involved in the preliminary rural to suburban land conversion. The migration patterns of horseowners in Anoka County confirms this pattern. Some 19% of Anoka County horseowners, with horses on their own property, acquired horses in the same year they moved to their suburban home. Another 24% acquired horses within 3 years of moving to their present address and 10.8% moved to their present address within 2 years of first owning horses.

Zoning and minimum acreage laws which limit where and how many horses can be kept are already in effect. Projections for continued population growth and urban expansion in the TCMA (15) suggests other horse owning areas may be confronted with these issues in the future. Anoka's experience in dealing with large numbers of horses and people may provide useful information for other counties in the TCMA who potentially face similar problems.

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