SPORT MAGAZINE CIRCULATION AS AN INDICATOR OF SPORT INTEREST REGIONS

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London, England

1983

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
December, 1986

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SPORT MAGAZINE CIRCULATION AS AN INDICATOR OF SPORT INTEREST REGIONS

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PREFACE

I wish to thank all those people who have assisted during the course of my studies at Oklahoma State University. In particular, I am indebted to my major adviser, Dr. John Rooney, for not only giving me support when it was most needed, but also for providing his expertise and advice whenever I asked. I would also like to thank my committee members, Dr. Richard Dodder and Dr. Robert Norris for their thoughtful and constructive comments at various stages of this research. Within the Geography department, thanks go to Dr. Stephen Stadler for his help with SAS. Thanks must also go to all the faculty members and their families who helped in various ways, especially Dr. and Mrs Hecock.

Finally, but above all, sincere thanks go to my father Patrick, my stepmother Tricia, my sister Nicola, and my brother Chris. Without their support both moral and financial, anything I've achieved would not have been possible.

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CHAPTER I

INTRODUCTION

Overview

The spatial pattern of sports worldwide is a well known phenomenon and is easily distinguished when comparing nations. American football is a sport followed year round but is only played and supported, to any extent, on the North American continent. Australian Rules Football is another sport which hasn't been widely accepted outside of its cultural hearth. More diverse, but just as historically defined, is the sport of cricket, which although more widespread than the two previous examples, remains a sport that is played by countries with a similar historical background, that of the British Empire.

When the regional patterns of sports within nations are studied, similar patterns are established on a more local scale with some sports obviously more important in certain areas than others. An example can be noted from Great Britain where Rugby Union is most popular in south Wales. Several authors have discussed sports regionalization on both sides of the Atlantic. Rooney has been the principal researcher in the United States while Bale has concentrated most of his analysis in Britain and western Europe. There

are also many other individuals who have addressed geographic analyses of sports. Although the sports are different in many cases, all the authors have been concerned with an analysis of the spatial patterns of specific sports.

The aim of this thesis is to study regional patterns of various sports in the United States in a similar way to research already completed. However, it differs because of its use of a new indicator. There are a large number of sport magazines available to the discerning reader. Besides those magazines which cover all sports such as Sports Illustrated, Sport, and The Sporting News there are countless magazines dealing with specific sports such as Golf World or Skiing magazine. The research concentrates on the latter in an effort to regionalize sports interest using as a data base, circulation data at the state level in the sports covered by various magazines. The data will be considered on a per-capita basis to ensure each state is analysed with the same emphasis.

The Problem Statement and Objectives of the Research

The purpose of this thesis is to determine whether the magazine reading pertaining to different sports is uniform across the country or regionally concentrated. The database is the per-capita subscription value for each magazine by state. Using subscription rates automatically discounts newsstand sales and consequently doesn't allow for

variations in circulation due to heightened interest at the time of special events such as the World Series or the Indianapolis 500. The study benefits from this disregard of store sales because only those individuals who maintain their interest year round are included. Consequently it is a more consistent indication of interest.

The fifty states represent the areal units used for this research as this is the level at which magazine circulation data are released. Consequently, results from this study will be comparable to the sport regions devised by Rooney (1974, 1980, 1986) and Goudge (1985), which were also derived at the state level. Sport magazine circulation represents an indicator that could be used to supplement the existing data on sport regions in the United States.

Within the scope of this research several different questions will be studied. It is assumed that only those individuals with a particular interest in a sport will subscribe to the magazines associated with that sport. The major questions are as follows:

(1). Can the rate of sport magazine subscription, like player participation or production, be used as an indicator of sports interest? If so, can specific regions be identified where certain sports are more popular than others? Because of the nature of magazine purchasing and subscription, a new index is created in order to assess this question. The new index is weighted according to a states tendency to purchase general reading magazines such as Time

and U.S. News and World Report. Magazine subscription rates are considered to be dependent upon several factors, not least socio-economic status. Weighting of the sports index by general magazine subscription rates subsequently controls for a state's propensity to subscribe, and in doing so should also control for socio-economic status.

(2). Are those regions as identified by magazine circulation similar to those defined by Rooney (1974, 1980, 1986) and Goudge (1985)? This aspect of the study is limited to those sports researched by the authors, which include gymnastics participation, golf participation and production, football participation and production, tennis participation, cross-country and track participation, and the production of the best track and field athletes.

(3). Is the use of a weighted index appropriate in this particular instance? An unweighted index is likely to favor toward those states with a higher socio-economic status or purchasing power. Consequently, does the weighting by general subscription rates nullify the effects of a better living standard?

Each of these questions will be analyzed and the subsequent results will be discussed with relation to the validity of sport magazine circulation as an indicator of sports interest levels.

Limitations of the Research

Several constraints exist in a study such as the one completed. Most relate to the availability of data. Although all the magazines retain subscription data at the zipcode level, some publishing companies were reluctant to release this information. To this end, the Audit Bureau of Circulations (A.B.C.), an independent auditor, helped significantly. Many magazines have their circulations audited by the A.B.C., who publish the data at the state level. Although not all the magazines submit their data for auditing, Bennett (1985) states that over 80 percent of the magazines available in the United States are audited by the A.B.C.. Consequently, the greatest proportion of the data used in the research was obtained from them.

Those magazines not audited by the A.B.C. were contacted individually. Many were not prepared to release the data. Many of those who did release information, did so only at the regional level, each containing several states. Data received at this level of areal unit were considered too general to be of value, and were subsequently disregarded.

Because of the tendency of some publishers to withhold subscription data at the state level not only are some of the magazines missing from the survey, but, as a result, there are sports enthusiastically followed that are not included in the research. Generally, sports which have smaller and more regional circulations are not included. An example is Soccer. Soccer Digest is not audited by the

A.B.C., and the publishers were not prepared to release the required information. Consequently, the increasingly popular sport has not been studied. A more critical example can be drawn from the sport of basketball. One of the nation's most popular sports is not considered in this thesis because the publishers were unable to release data at the state level. As a consequence, voids exist in the research which are beyond the author's control. Because of the reliance of the research on publishing companies, generalizations cannot be made with regard to all the sports followed in the United States.

A related problem exists in that not all the sport magazines for all sports are not obtained. Several sports are represented by just one magazine. Football has several magazines in existance devoted to its coverage, yet in this research only Football Digest is assessed because it is the only magazine obtained. In instances such as this, the limitation is noted and speculations with regard to the observed distribution are for the magazine, not for the sport.

Studying the reading patterns of the American public in a manner such as this, it is likely that the values obtained for a sport's popularity, based on a per-capita index is going to be underestimated. An assumption is made that only one person reads the magazine. In many cases, it is probably true, but in others it is probably not the case. Several family members may read the same magazine.

Therefore, the estimates of a sport's popularity in a particular state or region are conservative.

The research is limited to a study of only those people who subscribe to magazines. While this is a limiting factor it does not detract from the quality of the research because it is meant to study just one sector of the population. What is of interest in the research is that sector of the population who subscribe to sport magazines, not the entire population. Rooney (1974) studied just those individuals who participated in sports, or those athletes who went to college. In doing so, he studied just a small portion of the population. Magazine circulation is studied here on the same basis. It is recognized that the focus is on just one part of the sports-following population and generalizations will be made regarding just that sector of sports enthusiasts.

The Research Context

Almost without exception, the previous research within the academic discipline of the geography of sport has concentrated on the individuals that participate in sports, either at the amateur levels of high school or college participation, or at the pinnacle of professional competition. A paucity of sports fan research exists. Bicknell (1977) and Dow (1980) have both completed articles on Boston Red Sox fandom in the New England states, Curtis (1980) has studied baseball fansheds in Pennsylvania, and

Shelley and Cartin (1984) have looked at fansheds nationwide. However, these studies represent a very small proportion of the increasingly large body of research devoted to sports geography.

Loy (1972) studied sports from a sociological viewpoint and defined sports on an individual's kind of involvement. "Producers" are those people who have a direct involvement with the game. Players, coaches, and cheerleaders are all considered to be sports "producers". Conversely, "consumers" are individuals who become indirectly involved with the sport. Fans who attend games, watch sports on television, or read about sports either in magazines or newspapers are considered to be "consumers" (Loy, 1972).

Therefore this research contributes to the geography of sport and in doing so belongs under the broader title of cultural geography. It is a relatively new approach that places it at the heart of sports consumerism as opposed to the established emphasis of sports production.

CHAPTER II

SELECTED LITERATURE REVIEW

Introduction

Two important themes will be considered in the literature review. Because the geography of sport is still an emergent discipline its status is ever changing. Sadly, debate about its role in the field of geography has been neglected. However, a few articles exist that examine its present status and where its future lies. The first part of this review, will therefore recount the literature devoted to the discipline and will include discussions of its conceptual framework. It will be followed by an examination of case studies completed in the discipline. The case studies are of particular importance because this research uses previous analysis as its base. The second aspect of the literature review concentrates on the subject matter considered in the thesis. Consequently, studies completed on the geographic analysis of sports fans are assessed. Completing the literature review will be a section devoted to the relevance of magazines in general, and sport magazines in particular, to society and sports.

The Geography of Sport

Rooney (1981) concentrates on a conceptual framework of sport geography that could be used in the future. The paper is an appraisal of the position of the discipline at that time. Rooney builds upon the two approaches to the study initially outlined in 1974 (Rooney 1974, 1975). A regional analysis concentrates on an individual area (state, county, nation) and discusses the sports that exist. The second approach Rooney establishes is topical where each sport is of singular importance. The sport is analyzed from its point of origin, its diffusion and subsequent spatial organization. Rooney then discusses, at length, examples of each while concentrating on the regional aspect. In conclusion, Rooney believes the discipline is still in its "embryonic stage" and that much wider adoption of the subject is essential.

Perhaps the most significant study of the place of sports within the field of Geography was completed by Bale (1984a). The paper concerns itself solely with an analysis of the importance of a geographic emphasis to sports studies although several case studies are cited to illustrate the types of research being undertaken.

Bale laments the lethargy of researchers in Geography believing they have fallen behind their counterparts in Sociology, History, and Psychology in sport studies. From a disorganized field in the late sixties, Bale believes the subject is now emerging as a valid subdiscipline. The

author analyzes the growth of a geography of sports and labels several distinct phases through which an emergent discipline passes (based on Loy's 1979 study for the sociology of sport).

The primitive stage is characterized by a number of isolated examples where the primary aim, is not a discussion of sports geography per se, rather than just a passing consideration. Bale cites the example of Reclus (1879) whose textbook The Universal Geography briefly discussed English cricket. Richards (1953) is also considered an example. Sports were the central theme of his research and although some of the ideas presented are now considered ridiculous, the dissertation can be seen as a forerunner to todays spatial analysis of sport.

Bale considers the Missionary stage as an attempt to bring the subject of sport into the academic discipline of Geography. Jackson (1957) saw the new-found emphasis on outdoor activities after World War II. He believed that those who participated in surfing, waterskiing, and others deserved research because of an increasing emphasis of outdoor recreation. Bale also cites Burley (1962) who argued that a geographical study of sport should be completed because "of its economic importance, its social implications, its ability to indicate cultural origins, its role as a guide to the influence on mans activities and its contribution to an understanding of urban land use" (Burley, 1962). Bale considers Rooney (1969) as an important paper

noting that its emphasis on regional variations was to be the approach adopted in many studies thereafter.

The Network stage emphasizes the reaching of a broader audience to enhance the validity and reputation of the subdiscipline. Consequently papers, textbooks, and university courses become an important mode of disseminating knowledge and ideas. Rooney (1974) produced the text A Geography of American Sport. Presentation of papers began at the Association of American Geographer meetings and courses were initiated at several universities.

Intellectual growing self confidence is characteristic of the Muscle-Flexing stage, where the aim is to reach individuals outside the discipline. Bale believes Rooney's text The Recruiting Game is an example. Rooney (1980) examines the highly competative business of high school recruiting and suggests radical changes to bring about honesty and parity in collegiate athletics.

Bale doesn't believe that sport geography will ever attain the Autonomous stage, characterized by high academic status and large numbers of teachers. He sees this as a function of the limited interest in mass culture in general.

The paper then considers several different approaches to the academic study. The examples range from studies with an approach similar to Rooney's analysis of rosters to research that considers the relationship between weather and sports and the existance of "nuisance fields" created by fans around sports stadia.

The paper represents an excellent overview of the academic position of sports geography. Using stages defined for another subject, Bale adapts the definition to derive a valid statement about the geography of sport and its development as an academic discipline.

In a later paper, Bale (1984b) emphasized the actual types of work being completed in the subject. Rather than discuss measures considered important to the development of the discipline, Bale concentrates on various aspects of sports geography. Included in the discussion are topics such as the origins of sport, its' spatial organization and spatial interactions, and sport regions. Humanistic approaches to the study of sport are also discussed. This paper supplements Bale (1984a). When considered together, they represent an excellent discussion of the study of sports. Although most of the examples are English or European, Bales' analysis of the conceptual framework allows for application to the United States.

The emphasis of the papers discussed above has been an analysis of the role of sports within the broader academic discipline of geography. While those papers cited numerous examples drawn from research, their primary aim was to present the geography of sport as a valid and legitimate field of study. It is essential to discuss, in greater depth, research completed with regard to actual sports as the thesis is based upon many of these studies.

Rooney (1969) was the first researcher to use per-capita indices as an indicator of sports interest. Assessing the popularity of football in the United States, Rooney used both professional and collegiate rosters to ascertain the origin of quality football players. Defining regions by studying county level data, Rooney uses the measure as a surrogate for interest, assuming that those areas producing more quality athletes do so because of higher interest levels. The second aspect of the study considers where those players go to college. Migration patterns of Texas football players showed that most stay in their home state. Only a very few go any further than Oklahoma. At the other extreme it is shown that Pennsylvania exported over seventy-five percent of its talented footballers.

Rooney's (1974) text A Geography of American Sport is an outgrowth of his 1969 research. Rooney analyzes many different sports in the United States although the emphasis is on football, basketball, and baseball. The text considers the topical and regional approaches to sports geography.

In a discussion of professional sports, Rooney sees considerable spatial flux where franchises constantly relocate to find the most profitable market areas. Rooney makes a case for more equitable franchise location maintaining that franchises would still be profitable while providing the American public more opportunity to watch live sports on a more local basis. The discussion also

incorporates an analysis of the golf, tennis, and bowling circuits indicative of periodic markets. Each stop on the professional tour is seen as fulfilling a need for a limited period before moving on to a new location. Noting that recruiting is the chief component of athletic migratory patterns, Rooney utilizes location allocation techniques to derive theoretically more efficient recruiting fields.

Much of Rooney's study on sports regions utilizes per-capita indices of participation or production. This approach is one that is used in this thesis with regard to sport magazine circulation.

Pillsbury (1974) discusses spatial patterns of stock car racing in the southern states. Using home town residences of major drivers on the NASCAR circuit, and race-track locations as indicators, Pillsbury finds that while the sport may be widespread interest levels are not. The 'Carolina-Virginia Piedmont' is a term used to describe the area with greatest driver production. While interest levels were still predominantly southern, Pillsbury notes that the sport is gaining a wider following throughout the country and that the sport will eventually lose its' southern identity.

A similar approach is taken by Baerwald and Gross (1974). They analyze the changing production areas of professional basketball players. Baerwald and Gross use similar methods to those utilized by Pillsbury (1974). Rather than deriving descriptive statistics as Rooney has

done, they map the locations of high schools producing quality athletes. Taking professional rosters at five year intervals enables subjective conclusions about the changing locations of major basketball producing areas. The authors conclude stating some areas such as Kentucky and Indiana have maintained their high production status throughout the twenty year survey period. More interesting are their observations about the emergence of black players and their influence on patterns of high production.

Pillsbury (1974) and Baerwald and Gross (1974) have a similar approach. Both map the home town of their respective athletes. Subsequently their conclusions are based solely on total production and neither transforms the data to a per-capita index. This detracts from the quality of their research as a per-capita transformation would enhance their conclusions regarding regions of interest.

Rooney (1975) considers the theoretical aspects of sports geography including periodic markets in all the major American sports. Professional teams are regarded as mobile receptors moving over a money field and drawing from the money resource base. Rooney cites other examples including the professional golf tour where golfers move around a similar circuit each year. Optimal versus actual franchise locations are discussed within the context of spatial flux. Several new locations are suggested. Since the paper was written, several of these suggestions have been used, especially since the creation of the United States Football

League. The article also has a similar approach to previous research. Sport regions are discussed in conjunction with factors contributing to regional differences.

Similar research has been completed in Europe. In Great Britain, geographical studies of sports participation and production have been completed, primarily in Sport and Place by Bale (1982). In a text very similar to Rooney's (1974) analysis of American sport, Bale concentrates on the origin, diffusion, and spatial patterns of British sports. The emphasis is on cricket, soccer, and rugby with other chapters on the minor sports such as golf, athletics (track and field), tennis, squash, and basketball.

Using the same per-capita index that Rooney utilized, Bale identifies patterns of sports participation and production in the United Kingdom. Just as Rooney did, Bale seeks to explain the distributions using underlying economic and social reasons as the key to the observed distribution. It must be noted, at this point, because there is not the same emphasis on collegiate sports in the United Kingdom, Bale's production data are based on the professional ranks of the Football League, the County Cricket Association, the Rugby League, and the amateurs within the Rugby Football Union.

Bale (1983) expands the study area to contain western Europe. The importance of international studies of sport is stressed at the beginning of the paper. Bale believes that a greater understanding of comparative sport studies,

especially at the international level leads to a better insight of the different sports systems.

Analyzing a variety of sports including soccer, tennis, and handball among others, Bale assesses the varying degrees of participation in each studied sport. Per-capita indices are again used to establish areas of interest. The more obscure the sport, the more localized is its popularity. An example is seen in the sport of orienteering where the participation throughout Europe varies from seven percent of the European norm in Great Britain to over thirty-eight times the norm in Sweden. Elite track and field athletes are studied in a demonstration of the emphasis of particular nations in that specific sport. Again great disparities are seen throughout the relatively small study area, a result of each country's different emphasis on aspects of physical prowess.

In more recent studies, on either side of the Atlantic, the emphasis has shifted from one of pattern description to one of pattern analysis and assessment. In 1980, Rooney produced The Recruiting Game. The book differs from his earlier research because the emphasis shifted to an analysis of the consequences of big time collegiate recruiting. Studying the geographic origins, diffusion and reasons for collegiate recruiting, Rooney utilizes the same per-capita indices to delineate "hotbeds" of quality athletes. He then uses them as a basis for study of recruiting patterns. Rooney criticizes the inherently corrupt system and

discusses the results of a university's desire for a nationally recognized athletic program. "Shamateurism" is one of the more noted effects, where high school "blue-chip" recruits are offered financial or material inducements to enroll at certain institutions.

In the book Rooney suggests the creation of a "super league" where fifty-six prime schools would become similar to the minor leagues. Athletes would be considered true professionals and paid as such, while at a particular university. The players would draw a wage and would also have the option of attending school in the off-season. Those schools not part of the super league would revert back to true amateur status where anyone could play for as long as they wanted.

Mullins (1982) studies the origin of those football players with the most ability; the professional ranks of the National Football League. The same regional approach based on per-capita indices is applied. Finding similar patterns to those discussed by Rooney (1974, 1980), the paper goes further when it analyzes the patterns of graduation of the professional football players. Notre Dame and Pennsylvania State University have the highest graduation rates while schools like Oklahoma State University and University of Oklahoma languish at the lower end of the graduation scale. Nationally only one-third of all professional football players ever complete their bacculaureate degree.

Rooney (1985) continues his arguments for a new collegiate sports system. He maintains that the hypocrisy of allowing good athletes with few literary skills to remain eligible (accomplished in a variety of ways) would be nullified under the new system originally proposed by Rooney (1980). Therefore, the presently criticized higher educational institutions could regain some of their credibility. They could also return to being educational institutions rather than a front for the sports entertainment business.

The geography of sport in Great Britain has also become more analytical. Bale (1983) analyzes regional disparities in soccer player production. Bale believes the differences mapped (using the per-capita index) are explained by marginal factors influencing youths in areas of high unemployment. Connell (1985) however, considers they are more a function of structural economic change in the British economy.

Rooney (1980), Mullins (1982), Bale (1983), Connell (1985) and Rooney (1985) all show the worth of a geographic analysis of sport. Using descriptive studies as a basis for the delineation of specific sport regions, they then use those regions in a analysis of the implications and societal effects of sports systems. These articles also give an indication of the "muscle flexing" development stage as described by Bale (1984a). They concern themselves with a geographical analysis of sport but examine the broader implications of the systems in the outside world.

All the articles cited above give an excellent indication of the field of sports geography. One dominant approach appears in the work, that of the delineation of particular sport regions. Many of the authors create sport regions by transforming raw data values to a per-capita index. By assessing sport interest on a per-capita basis, greater discussion of the regions is facilitated. The approach taken in this thesis is similar. The raw circulation data are transformed to per-capita indices in order to assess sport magazine subscription variations.

Having discussed the literature of relevance to the methodology of the research it is necessary to refer to literature pertaining to the subject matter. Initially research completed on an analysis of sports fan spatial patterns will be assessed. Subsequent discussion will include material pertaining to magazines and their circulation, especially sport magazines.

Sports Fans and Sports Magazines

As stated in the introduction, very little literature exists on the subject of a geography of sports fans. However, more research has been completed in recent years, implying that the sports supporter is becoming more important as a subject of study. Bicknell (1977) analyzes sports fan regions in and around Boston. In a paper that refers to work completed by Dow (a New Hampshire geographer), Bicknell discusses each of the professional

franchises located in the New England area and explains, with quotations from Dow, why the fan regions exist in their present form. All the franchises have fan regions that spread as far as Maine in the north and New York in the south, although in the case of the latter, the boundary changes with the success of the team. These areas are called "swing towns" because of their inconsistent support for the teams that surround them. One anomaly is the Boston Celtics, a predominantly successful team, that does not have the widespread support the other franchises in the Boston area enjoy.

Dow (1980) completed a more empirical study of Boston Red Sox fans in New England, based on the communications media. Using statistics on the radii of television networks broadcasting sports, Dow assesses fan region limits for the Boston Red Sox in and around Boston. Dow believes the study is valid because of its use of a new indicator. He states that research of the other sport franchises in the area would reveal different patterns, especially in football which is often subjected to local television blackout.

Curtis (1980) like Dow (1980) attempts to establish sport fan regions for baseball. In an analysis of newspaper column inches from several newspapers across Pennsylvania, Curtis examines the rates of support for the Philadelphia Phillies and the Pittsburgh Pirates. As defined by newspaper column inches, different fan regions exist in Pennsylvania. The farther east one goes the greater the

coverage is devoted to the Phillies. Alternatively as one travels westwards the emphasis shifts to the Pittburgh Pirates. In an attempt to predict the regional limits using the Reilly breaking point model, Curtis finds that the newspaper regions compare favorably, with one exception; that of Williamsport, where a hotbed of local fans exist. The local newspapers establish the existance of a Williamsport fan region where news of the Tomahawks (a triple A team) exceeds the coverage devoted to either of the major league teams.

Shelley and Cartin (1984) attempt a national study of baseball fan regions or fansheds. Using a sample of students from institutions across the United States, they assess the students favorite baseball teams and the degree to which they follow baseball. Although the sampling technique is weak (some areas are overemphasized while others receive little attention) the authors establish fansheds for all the major league teams. They find their fansheds are extremely localized (possibly a function of their sampling technique) and that those people who are not baseball fanatics tend to support the most successful teams.

All the studies discussed above emphasize fans of a specific team or teams. The emphasis of this research is an analysis of a particular sport's fan. It is assessing the regionality of enthusiasm for a sport rather than a sports team. Consequently, its' approach is different but it is attempting to establish similar theories i.e. that

different areas can be established where one sport or team support dominates over another.

Very little literature is known to exist that deals with spatial patterns of magazine circulation. Dow (1980) considers any study of sports fan regions based on magazine circulations would be complex. However, the emphasis of this study is different to that proposed by Dow (1980) and should experience few of the alluded problems.

Carlson (1983) analyzes circulation patterns of general magazines in a similar way to the one used in this research. Using data analyzed by The Book of American City Rankings, Carlson discusses the different levels of magazine subscription in the major metropolitan areas of the United States. Des Moines, Iowa is found to be the nation's leading consumer of periodical material. The city leads the nation in per-capita subscriptions to magazines such as Playboy or Penthouse and, of more interest in this study ranks in the top ten for magazines such as Tennis World, Tennis, Golf, and Cycle. Little unemployment, high literacy, and above average disposable income are thought to be the primary reasons for the existing pattern.

Zelinsky (1974) evaluates regional cultural disparities in the United States using magazine circulation and membership of voluntary organizations as indicators. Using these "unobtrusive measures", Zelinsky adopts a seven factor varimax rotation factor analysis in an assessment of cultural variations across the United States. Zelinsky

labels the factors as considered appropriate, dependent on correlations with certain socio-economic factors. Seven different culture regions are then defined (excluding one state regions) and labels them accordingly. Included in the seven are the "Middle West", "the Old South", the "Super South", and "Megalopolis".

In an article that emphasizes participation and production of athletes as an indicator of sports interest, Rooney (1986) briefly considers sport magazine readership. He discusses the readership of two magazines, Basketball Digest and Golf Digest. Studied at a regional level, the basketball magazines are read at higher rates in the north central part of the country. Similarly, the golf magazine is also considered to be more popular in the northern region. The study however, fails to consider the effects of socio-economic status on purchasing rates and in doing so, could be over-emphasizing those states with a better standard of living.

No other literature is known to exist that considers the geographic variations of magazine circulation. Therefore the rest of this literature review briefly considers the influence of magazines upon reading behavior, with special reference to sport magazines.

Schmidt (1982) gives an account of the development of periodical magazines from their introduction in the eighteenth century to the present day. By the end of the nineteenth century, magazines had become very popular as

advertisers began to realize the potential market. Schmidt believes that 89% of all Americans aged 18 and above now read magazines. It is also considered that 116 million Americans read an average of eight different publications a month. Periodicals reflect the tastes of the American public and are popular because they deal with subject matter too obscure for daily newsprint (Schmidt 1982).

Marie Hart (1972) assesses the changing popularity of sports from the late nineteenth century to the present day by an analysis of sport magazines. The national study concentrates on three different magazines each representing a different time period. Outing represents the earliest period from 1882-1923. The magazine concentrates on unorganized outdoor activities such as hiking and very little attention is given to organized or professional sports. The second period is covered by Sportsman. The emphasis during this time period of 1927-1937 is one of material wealth in sports and individual involvement. During the post-war period Sports Illustrated is chosen. Marie Hart states that the most recent period in sports history, as shown by magazines is characterized by an acceptance of professional sports, interest in international activities, and enthusiasm for spectator sports. As time has passed Americans have become spectators, and the emphasis has moved away from individual participation.

Michener (1976) believes the success of sport magazines such as Sports Illustrated relies on the magazines ability to give in-depth analyses of the personalities in sport.

Newspapers will always give box scores of the games, therefore magazines have to rely on the inside stories behind the scores. Many of the larger circulating sport magazines now follow this format. However, the smaller circulating magazines covering the more obscure sports like bodybuilding or parachuting still record the results. In small magazines, results are an integral part because they keep their subscribers up to date with accomplishments that invariably are not covered, either in sport magazines or on the sports pages of newspapers.

Summary

The purpose of this literature review has been to acquaint the reader with the types of reseach completed primarily in the geography of sports and secondly with regard to magazines and their circulation. It is noted that very little work has been completed on an analysis of sports regions as defined by magazine circulation. Consequently, considering the importance of magazines in American society and the emphasis placed on sport and recreation in the United States the thesis will fill a void in the body of literature that has been discussed above.

CHAPTER III

DATA COLLECTION AND ANALYSIS

Introduction

This study draws on several data sources. The Standard Rate and Data service, the Audit Bureau of Circulations, and individual publishing companies provided the sport magazine circulation data. The U.S. Census of 1970 and 1980 are utilized for the socio-economic data. The U.S. Bureau of the Census population estimates for 1985 are used for the demographic statistics. The final sources were A Geography of American Sport (Rooney, 1974) and The Recruiting Game (Rooney, 1980), used for obtaining information on sport participation and production.

Sport Magazine Circulation Data

Three sources were used to obtain the circulation data for sport magazines. The Standard Rate and Data Service handbook is a publication that lists almost every magazine publication in the United States. Its primary function is as an aide to product manufacturers in the U.S.. It lists each magazine under collective headings (dependent on their emphasis) and publishes the advertising rates for potential customers. Several magazines with large circulations also

provide actual circulation data as an indicator of potential markets. Sports Illustrated, Time, and U.S. News and World Report all had approximate circulation values by state.

Many magazines are members of the Audit Bureau of Circulations. An independent organization, the bureau releases monthly circulation data for each of its members. The primary aim is to supplement the Standard Rate and Data Service, providing actual circulation data for potential advertisers. Most sport magazines, however, have circulations too small to warrant independent auditing. Consequently, the only way of obtaining data is through the publishers themselves.

Both the Audit Bureau of Circulations and the individual publishers were contacted, told of the research aims, and asked for their assistance in releasing circulation data. Several magazines, such as Surfing magazine and Rodeo were able to release data only at the regional level; because of the generalized areal unit the data were disregarded. Other magazines, too numerous to cite, refused or were unable to release any data.

The National Golf Foundation provided circulation data for Golf Digest. A non-profit organization, the N.G.F. provide information regarding golf to product manufacturers and golf clubs in order to increase the sports' acceptance in the United States.

Of the sixty-five magazines originally contacted, only thirty-one consented to release useable data at the state level.

These magazines, the sports they represent, and the source from which they were obtained are listed in Table I. The data are from the summer issues of each sport magazine studied. In the case of the general sport magazines, it might be thought that the data are skewed toward summer sports such as baseball. However, this is not thought to be the case because the data are subscription figures and a subscription is generally for at least a six month period, which would contain more than one sports season.

Other data obtained from the Standard Rate and Data Service handbook included the state level circulations of U.S. News and World Report and Time magazines. These data are obtained to provide a general subscription index at the state level. The general subscription index data are 1985 general estimates calculated by the Standard Rate and Data Service.

Demographic and Socio-economic Data

The demographic data forms an integral part of the thesis as the magazine circulation is weighted on a per-capita basis in order to nullify the effects of population density. As the magazine information is from 1985, it is considered that the 1985 population estimates published by the U.S. Census would provide a valid data base of population. The 1980 population census is thought to be too old to be of use, especially when the growth of the sunbelt states is taken into account.

TABLE I

SPORT MAGAZINES USED IN THIS STUDY, THEIR SPORTS, AND THEIR DATA SOURCE

MAGAZINE	SPORT	SOURCE
Athletic Journal	Running	A.B.C.
Baseball Digest	Baseball	A.B.C.
Bicycle U.S.A.	Cycling	Publisher
Bicycling	Cycling	A.B.C.
Bowling Digest	Bowling	A.B.C.
Bowling Magazine	Bowling	Publisher
Cycle Guide	Cycling	A.B.C.
Football Digest	Football	A.B.C.
Golf	Golf	Publisher
Golf World	Golf	A.B.C.
Golf Digest	Golf	N.G.F.
Horseman	Horse Racing/ Show Jumping	A.B.C.
Inside Sports	General Sports	A.B.C.
International Gymnast	Gymnastics	Publisher
Muscle and Fitness	Bodybuilding	Publisher
National Masters News	Running	Publisher
Runners World	Running	A.B.C.
Sail	Sailing	A.B.C.
Shooting Times	Hunting	Publisher
Ski	Skiing	A.B.C.
Skin Diver	Skin Diving	A.B.C.
Skiing Magazine	Skiing	A.B.C.
Skydiving	Parachuting	Publisher
Sport	General Sports	A.B.C.
Sporting News	General Sports	A.B.C.
Sports Illustrated	General Sports	A.B.C.
Tennis	Tennis	A.B.C.
The Runner	Running	A.B.C.
Underwater U.S.A.	Skin Diving	Publisher
Velo-News	Cycling	A.B.C.
Water Ski Magazine	Water Skiing	Publisher

A.B.C. Audit Bureau of Circulations
N.G.F. National Golf Foundation

The socio-economic statistics were obtained from a number of sources. Data were gathered on several variables. The median income and percent white population, by state, were obtained from the 1980 United States census (Bureau of the Census, 1980). Although a five year lag period exists between the magazine circulation data and the socio-economic data, no demographic data were available for a more recent year. Similarly, the data on literacy rates are also outdated, although to an even greater extent. The data were based on 1970 state values of adult literacy. This was the most recent information available for the topic, but had to be considered in the evaluation of magazine circulation. The data were obtained from the U.S. census of 1970 (Bureau of the Census, 1970).

Sports Participation and Production Data

In order to determine the relationship between consumers of sport and producers of sport, data were collected on state-to-state variations of player participation and production. Several objective studies on the people who participate in sports, or who produce quality athletes in the U.S.A. have been completed, primarily by Rooney (1974, 1980, 1986) and Goudge (1985). Consequently, data were obtained from Rooney's texts: A Geography of American Sport (Rooney, 1974) and The Recruiting Game (Rooney, 1980). Per-capita indices were available for a variety of sports including football, basketball, baseball,

tennis, golf, cross-country, track and field, and gymnastics. Although data are also available for a number of other sports such as ice hockey and skiing, it was not compatible with the per-capita subscriptions of those magazines and had to be disregarded.

Data obtained from A Geography of American Sport included golf participation and production, cross-country and track participation, gymnastics participation, and tennis participation. Data on football production were gained from The Recruiting Game. Many sports considered in the magazine survey had not been covered by Rooney with regard to participation or production. Such sports, could not be included in a comparative study and included skydiving, scuba diving, and horse racing and show jumping. Goudge (1985) provided the data on the production of high quality track and field athletes.

Data Analysis

Although the problem of geographic distribution of sports magazines is a new one, the method of analysis follows sports studies completed earlier with a few modifications. As the circulation data are only available at the state level, the method of analysis is directly comparable to Rooney's state level studies of participation and production (1974, 1980).

The basis for much of Rooney's (and much of Bale's) work is a per-capita index that shows above or below average

participation or production in a particular sport. A similar index is used in this thesis with regard to magazine circulation. The index assesses the relative circulations of each magazine compensating for population differences. It does not, however, allow for differences in socio-economic status. Described below is an unweighted sports subscription index. The adaptation to a weighted index is considered after this discussion. A hypothetical example is possibly the best way to describe the index.

If Football Digest magazines total circulation produces an average of 1 magazine for every 12000 people across the entire United States, then any state that has an average of 1 magazine for every 24000 people has a subscription rate of half the national norm. A value of 1 magazine for every 6000 people would be twice the subscription rate of the nation as a whole. Average circulation of 1 per 12000 is given an index value of 1.00. Thus, half the national norm would be given an index of 0.50 and twice the national norm is designated as an index of 2.00. Using the formula below, an index value can be obtained for each areal unit studied:

$$\text{Index Value} = \frac{\text{number of magazines}}{\text{total population}} \div \frac{1}{12000}$$

Where the number of magazines and total population are values derived for the areal unit of interest and 1-12000 is the national rate of subscription. The resulting index is one that indicates per-capita readership of sports magazines for each state. In creating the index a measure of sports

interest is formulated. However, little consideration is given to a state's magazine purchasing power.

Due to the cost of magazines they are arguably more popular with the middle and upper classes, being too expensive for the lower or working classes. Because of this, each index value has to be weighted according to the state's propensity to subscribe to general news magazines. In order to ascertain each states weight it has been decided to study the subscription patterns of two important weekly magazines Time and U.S. News and World Report. These two magazines are chosen because they are considered to be general news magazines covering a wide range of news topics. The two magazines also represent differing political viewpoints, Time being a publication with a liberal editorial, while U.S. News and World Report represents conservative attitudes. Therefore, general news magazines with varying political tendencies are considered. It is believed that this combination gives the best representation of a state's propensity to subscribe to general magazines.

An index value for these magazines is determined for each state. Those states having fewer than the average number of subscribers are given an index of less than one while a state with above average subscription rates has an index of greater than one. The index is calculated by the means outlined above. Consequently, each state will have an index value that considers its propensity to subscribe with relation to the national average. Table II shows each states general subscription index.

TABLE II

GENERAL MAGAZINE SUBSCRIPTION INDEX FOR EACH STATE

NAME	INDEX
Maine	1.18
New Hampshire	1.45
Vermont	1.41
Massachusetts	1.55
Rhode Island	1.15
Connecticut	1.66
New York	1.23
New Jersey	1.26
Pennsylvania	1.09
Ohio	0.98
Indiana	0.77
Illinois	1.03
Michigan	0.95
Wisconsin	0.99
Minnesota	1.20
Iowa	0.82
Missouri	0.86
North Dakota	1.05
South Dakota	0.97
Nebraska	0.98
Kansas	1.04
Delaware	1.21
Maryland	1.27
Virginia	1.10
West Virginia	0.66
North Carolina	0.69
South Carolina	0.57
Georgia	0.72
Florida	0.84
Kentucky	0.60
Tennessee	0.60
Alabama	0.53
Mississippi	0.44
Arkansas	0.46
Louisiana	0.62
Oklahoma	0.65
Texas	0.81
Montana	1.19
Idaho	0.85
Wyoming	1.16
Colorado	1.26
New Mexico	0.97
Arizona	1.02

TABLE II Continued

NAME	INDEX
Utah	0.73
Nevada	0.91
Alaska	1.57
Washington	1.14
Oregon	1.04
California	1.20
Hawaii	1.18

Based on per capita readership of Time and U.S. News and World Report

Two indices are determined, one for each sport magazine and one for each state's general subscription patterns. The unweighted sport magazine index (derived on a state basis) is divided by the general subscription index providing a weighted sports subscription index. The result is a sports readership index that is weighted according to each state's general subscription patterns.

The unweighted and weighted indices are calculated, by state, for two different groups of magazines. The magazines are first grouped together according to the sport represented i.e. all the golf magazines together, all the football magazines together, etc.(See Table I for sports groupings). Grouping the magazines together by sport allows a more accurate indication of sports interest controlling for publication style. Individuals may be interested in the same sport but may subscribe to different magazines because they like the articles contained in one magazine over another. Similarly, all the general sporting publications, Sport, Sports Illustrated, Inside Sports, and The Sporting News are grouped together to appraise subjectively the degree of sport support or "fanatacism" throughout the United States. Having assessed the importance of each sport grouping, certain magazines are analyzed individually. Research is completed in this aspect to ascertain why different magazines have different circulatory patterns. The magazines are then treated individually to study circulation patterns of each publication and assess why any

difference of pattern occurs within sports. Certain sports are represented by only one magazine and will, therefore, have been studied as a sport rather than as a magazine.

Once the general maps have been discussed each sport is considered for the degree of relationship between the subscription index and the socio-economic and player production and participation values. This is completed by each individual sport and emphasis is placed on the weighted index. Pearson's product moment correlation coefficient is used to preserve the actual values as opposed to Spearman's rank coefficient which does not take into account the actual difference between each observation.

Summary

The research method outlined above represents an approach similar to studies completed by Rooney (1974) and Bale (1982). Weighted and unweighted subscription indices for each sport are calculated. The weighted sport subscription indices are then mapped in order to establish an understanding of sport interest regions as defined by sport magazine subscription in the United States. Finally, correlation analysis was used to determine the relationship to socio-economic and athletic participation data. The results of the study are explained in Chapter IV and Chapter V.

CHAPTER IV

THE GEOGRAPHIC DISTRIBUTION OF MAGAZINE READERSHIP

Introduction

The purpose of this chapter is to recount the geographic distributions as computed by the analytical techniques outlined in Chapter III. Possible explanations for the observed distributions are also suggested. The chapter considers and maps each sport for which magazines were obtained.

The Observed Circulation Distributions

Overview

In this section each sport is discussed in turn and, where appropriate, each individual magazine is assessed. Because of the nature of this study, where the tendency to purchase general news magazines varies throughout the country, the index weighted by general magazine purchasing rates is stressed (for a discussion of the weighting see previous chapter). In certain cases, however, the unweighted index is used to supplement the weighted data. By transforming the data to a per-capita basis, differences due to variations in population density are minimized.

Every map in this study exhibits the same value for the national average, that of 1.0.

If general sports magazines are considered, a fairly uniform pattern is observed. Figure 1 shows a compilation map of four sport magazines consisting of Sporting News, Sports Illustrated, Sport, and Inside Sports. A tendency toward uniformity is noted with most of the states subscription rates approaching 1.0 or the national average rate. However, a slight north-south variation can be noted. Subscription rates are a little higher in the northern plain states and gradually decrease the further south one goes. Mississippi readers subscribe to general sport magazines at only half the rate of most of the nation. Only one state subscribes at a substantially higher than average rate; Nebraska has a value of 1.42.

The four magazines considered combine for a total circulation of over four and three-quarter million copies. The uniform distribution indicates that interest in sports, at a superficial level, is relatively equal throughout the nation. Of more interest is an analysis of specific sport magazines in an effort to determine regions of interest in particular sports.

Golf

The map produced in Figure 2 is a composite of three magazines, Golf, Golf World, and Golf Digest. Figure 2 shows two definite regions where golf magazines are subscribed to at substantially higher than average levels.

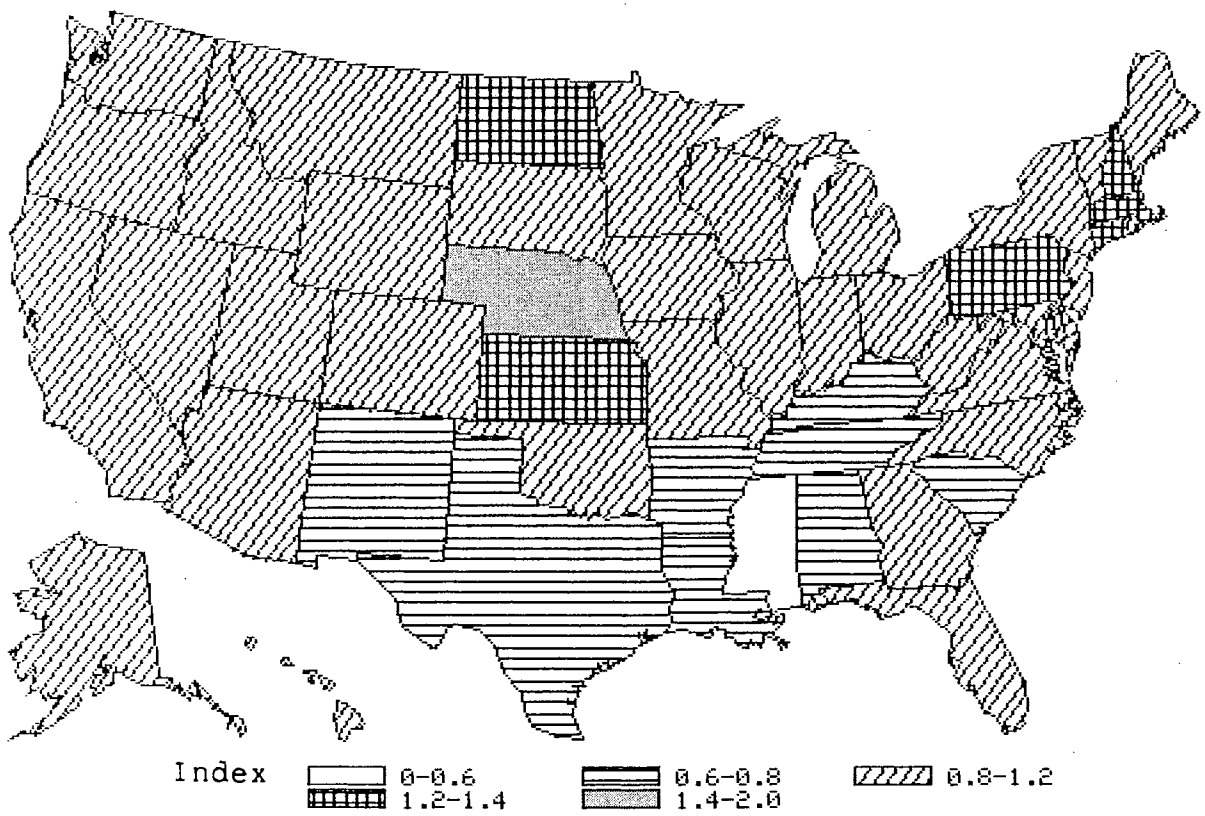

Figure 1. Weighted Readership Indices for General Sport Magazines

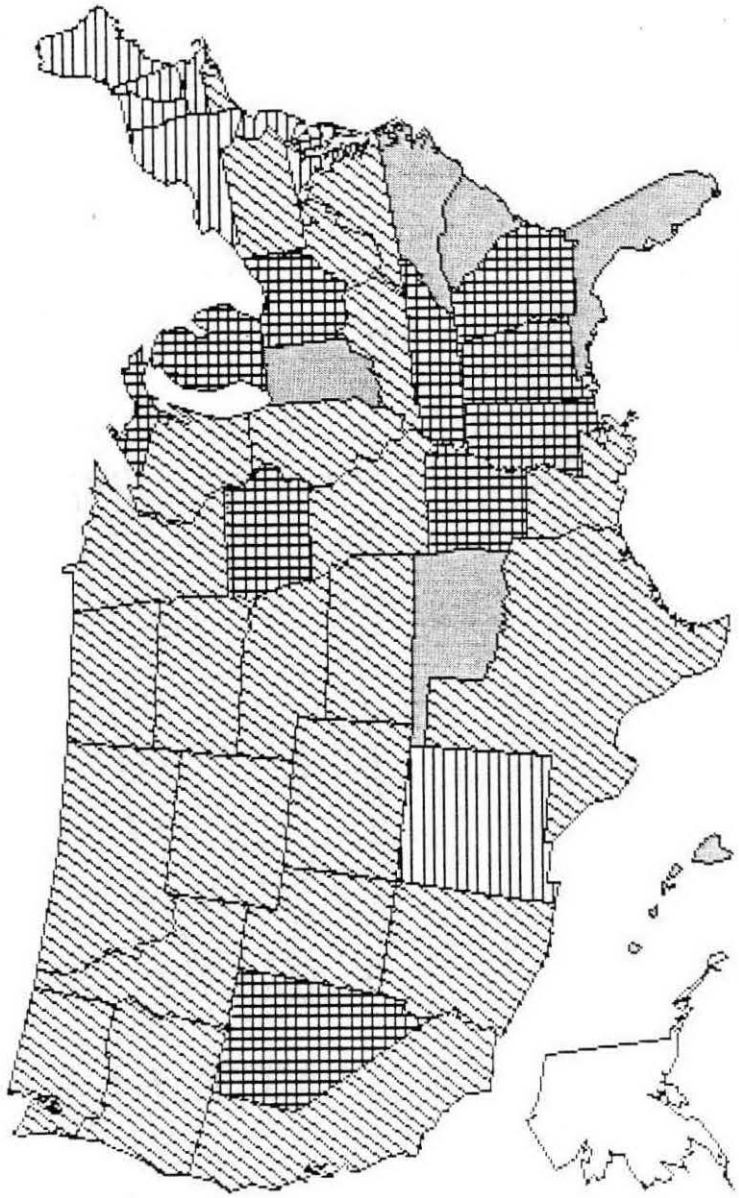

Figure 2. Weighted Readership Indices for Golf Magazines

The largest and most important region is to be found in the southeast of the country. All the states have indices in excess of 1.2 and North and South Carolina, Florida, and Oklahoma exceed 1.4. The largest value in the region is found in North Carolina where the value of 1.65 indicates the population of the state subscribing at rates of 65 percent above the national average.

A secondary region is found in the north central part of the United States, where Indiana leads with an index of 1.43, and where Ohio, Michigan, and Iowa also have higher than average rates. Of the other states, only Nevada and Hawaii have indices substantially higher than the national average. Also of interest are the unusually low rates on the northeastern seaboard. With the exception of Pennsylvania, all the states north of Maryland subscribe to golf magazines at rates between 60 and 80 percent of the national norm.

Explanation of the observed pattern is fairly straightforward, the southeast has a long association with golf. Although access to golf is relatively low in the southeastern states, more rounds are played by the golfer (Adams and Rooney, 1985). Georgia has a history of providing a significant number of players to the professional circuit. In 1971, it was producing touring professionals at two times the national average (Rooney, 1974). Given these factors and the climatic advantages, it is not surprising that the region also has high subscription rates.

Tradition helps to explain the high values in the northcentral part of the country. Golf has its origins in the north, one of the first courses was located outside Chicago (Adams and Rooney, 1985). The area also has a better than average golf course provision and is also known for its production of good golfers. Thus, the north maintains its interest with golf despite an unsuitable climate.

Contrary to the dominance of the southeast, the northeast United States is particularly low. Fewer players are produced and there is less provision of golf for the public. Pressures on landspace is considered one of the reasons, but perhaps the overriding factor that leads to the souths domination is one of climate. Having a longer season facilitates high participation by those who play and thus more interest, which in turn, leads to greater readership and subscription of golf magazines.

If each of the three magazines is studied independently, different per-capita circulation patterns become apparent. Figure 3 shows the weighted indices by state for Golf World. The magazine has a total circulation of 72866 and is published in Atlanta, Georgia. Both of these factors aid in an explanation of its circulation pattern. The circulation is overwhelmingly concentrated in the southeast. As the publishing company is based in Georgia, it is not surprising to find states in close proximity having large circulations. As one moves further

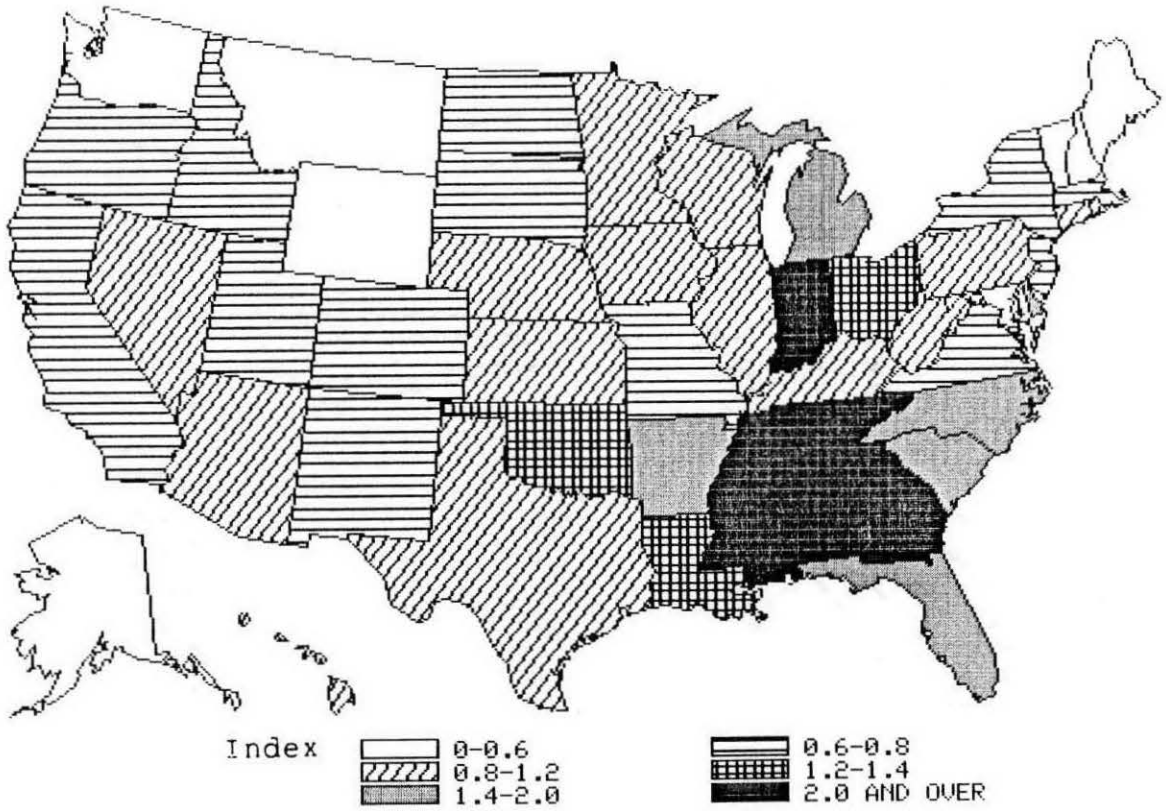

Figure 3. Weighted Readership Indices for Golf World

away from the source the circulation drops below the national average, until areas such as Montana and Maine are reached where very few people subscribe to the magazine. A combination of several reasons is likely to explain the distribution. General interest levels of golf are partially responsible but potentially more important is the distance from the publishing company. In a magazine of small circulation such as Golf World the publishers concentrate their marketing strategy in the immediate area. Therefore, the further one goes from Atlanta the less emphasis is placed by the publishers on marketing their magazine. Also of importance is that sector of the golf magazine reading public to which the publication is directed. Golf World is directed toward, by its own claim, to the "ardent golfer, amateur and professional" (Standard Rate and Data Service, 1985). As a result its pages are devoted to the P.G.A. and the L.P.G.A. and junior and senior tournaments. High values of golf round completion are a characteristic of the southeast, indicative of the regions serious approach to the sport. High circulation statistics could be a result, especially as the magazine is directed toward the "ardent golfer".

As the circulation of a magazine becomes larger, distribution becomes more widespread. Figure 4 shows the circulation pattern for Golf magazine. With over 795000 subscribers the pattern becomes more regular with a larger number of states attaining values toward the national norm.

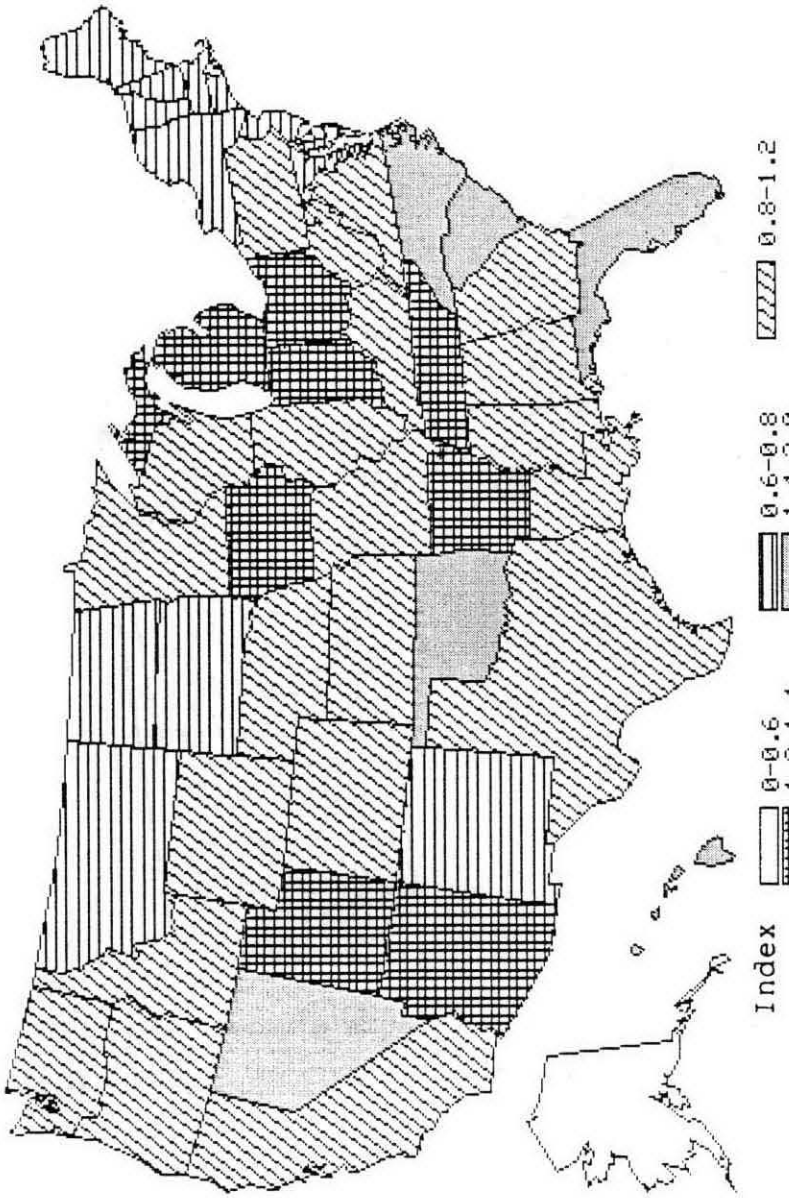

Figure 4. Weighted Readership Indices for Golf

With an increasing circulation, the location of the publishing company becomes less of a factor as marketing is probably oriented on more of a national scale.

The final magazine considered for golf is Golf Digest (shown in Figure 5). The magazine has the largest circulation of the three (in excess of 1.25 million) and subsequently has a more uniform distribution. Its subject matter considers more superficial aspects of golf such as the personalities involved, spectacular holes, and golf fashions. Consequently it is likely to appeal to more of the golf reading public and therefore maintains a wider and more uniform distribution.

Football

Only one magazine was obtained for football, that of Football Digest. The circulation is mapped in Figure 6. With a circulation of over 100000, the magazine shows marked variation in its circulation patterns. The north central region centered on South Dakota has high indices, as does a southern region containing Texas, Oklahoma, Louisiana, Mississippi, and Alabama. The final region of above average subscription comprises an area similar to "PennWeVO" as discussed by Rooney(1974), but also consists of Indiana and Virginia.

Explanation of the southern region and the "PennWeVO" area is fairly straightforward. Rooney (1974) showed the industrial north-east containing states such as Pennsylvania

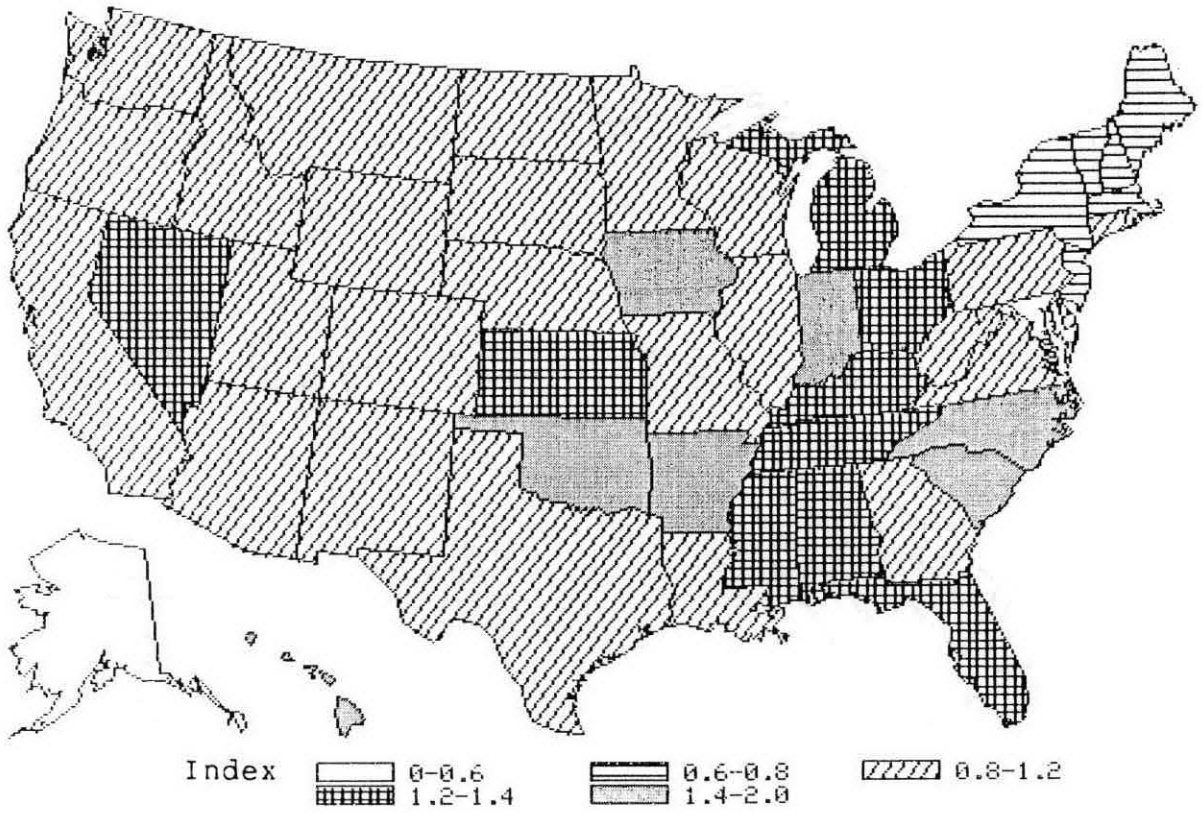

Figure 5. Weighted Readership Indices for Golf Digest

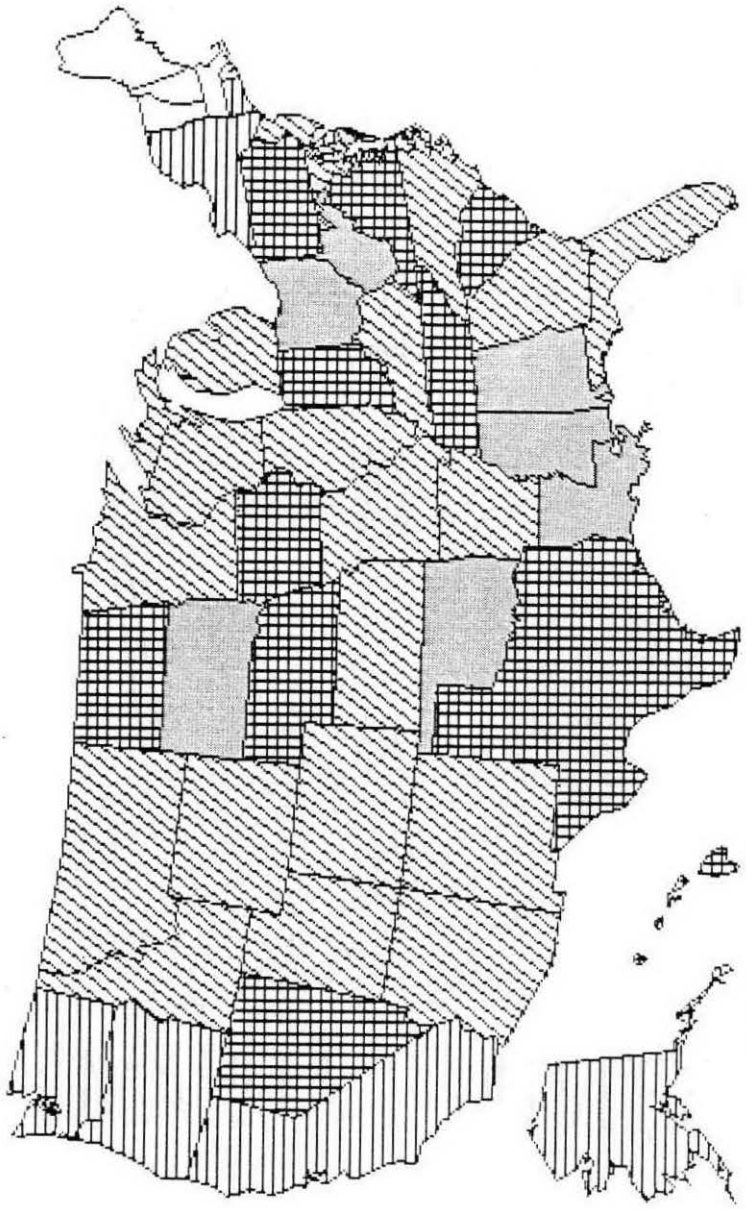

Figure 6. Weighted Readership Indices for Football Digest

and West Virginia had substantially higher than average player production and participation indices. Similarly, Rooney (1982, 1986) described a passion for football in the south, especially in Texas, unsurpassed in any part of the country. Both the regions stress the physical attributes of the sport and in both areas local teams, high school, collegiate, or professional are fervently supported. These levels of interest toward the playing and supporting of the game may be supplemented by a desire to read about the sport and subsequently lead to the higher circulation rates.

The anomalous region of the north central United States is harder to explain. The high values are especially difficult to explain because no professional team exists in the area. There exists, however, high participation in the region which may aid in explaining the concentration.

Two deficit areas exist on the map, the first on the Pacific coast, and the second on the northeastern seaboard. Football Digest is published in Illinois and these points may represent the geographical extremities where product marketing is limited. However, it is difficult to do anything other than suggest reasons for the circulations as it is only one magazine and football is such an important sport. Several magazines consider the sport and with the importance attached to football a better result would be obtained with a better sample of magazines.

One final note of interest, Nevada has a 1.35, a per-capita subscription of 35% above the national average. No

professional franchises exist in the state and it is suggested that the heavy emphasis on gambling influences the observed pattern. Football Digest is oriented toward professional football and some use may be derived from its coverage of rosters and statistics in the compilation of betting lines.

Baseball

Baseball is a sport which has become dominated by the sunbelt states, in terms of major league player production (Rooney 1974). However, a different pattern is seen when subscription to baseball magazines is examined. Only Baseball Digest was available for the sport. The Standard Rate and Data Service does not list any other baseball publications and with a circulation in excess of 225000, Baseball Digest can be considered an important magazine.

As can be seen from Figure 7 the primary area of importance is the north central United States. Illinois is the leading state reading the magazine at rates of 75% above the national norm. Surrounded by several other states with large rates, this obviously represents the core of the region. Average subscription rates exist throughout the rest of the eastern states, but toward the west the index rapidly drops. A line of states stretching from Texas to Montana and Washington all have rates below 60% of the national average.

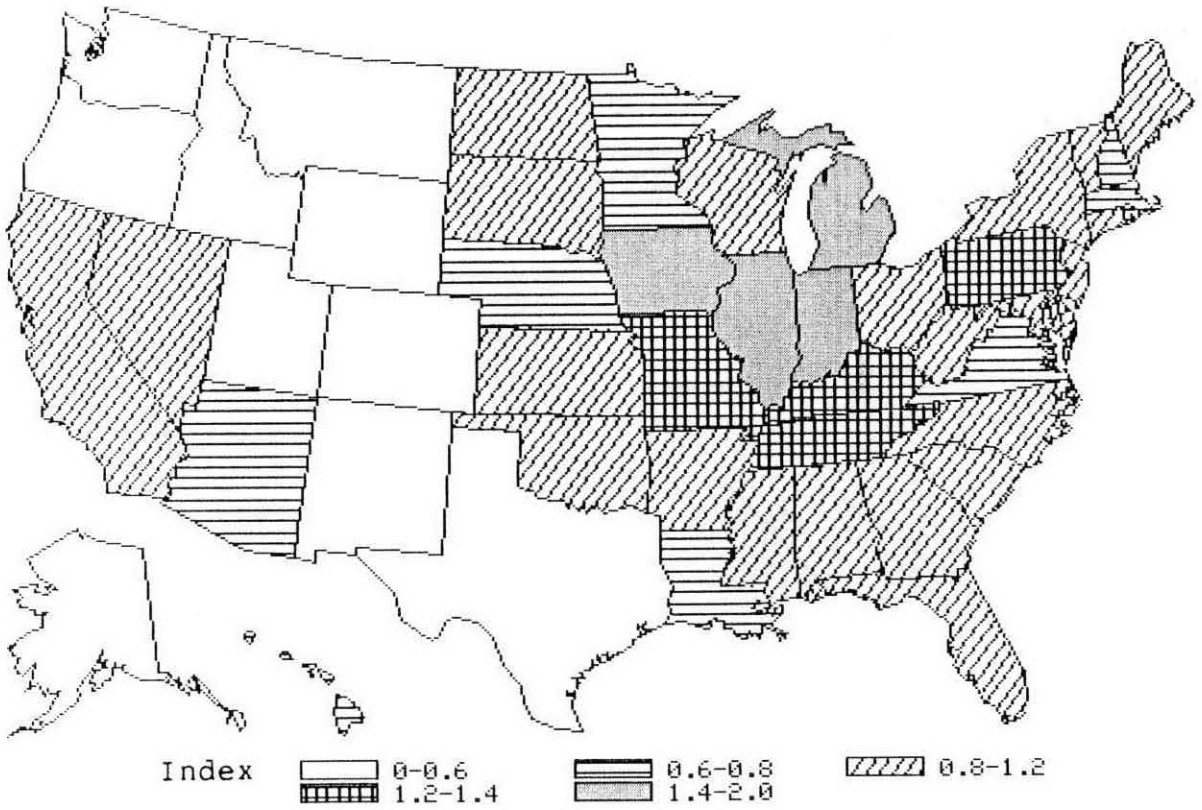

Figure 7. Weighted Readership Indices for Baseball Digest

Although, as Rooney (1974) stated, the primary areas of production are currently located in the sunbelt, subscription of Baseball Digest does not coincide with this pattern. The north central area has together with the northeast, in the longterm produced the largest number of major league players (Rooney, 1974). Thus the tradition of baseball in the area could aid in an explanation of the distribution. A second important factor is high school participation. Indiana and Illinois both have large rates of baseball participation that associates with high subscription indices. However, the subscription patterns in the southwest and Pacific coast do not reflect the high participation rates recorded by Rooney (1974). One final reason for the northcentral emphasis of baseball reading is the location of publishing company. Based in Illinois, subsequent marketing by the publishing company may be concentrated in the most immediate north central area.

Tennis

Tennis, with golf, is one of the most popular recreational sports in the United States. An extensive professional touring circuit also exists. Consequently, exposure to the sport is frequent, both in the media, and at a more personal level. Tennis magazine had a circulation in June 1985 of half a million copies. Published in Norwalk, Connecticut, the magazine has a nationwide coverage with few exceptions. A large proportion of the country has indices

approaching the national norm. One area, however, can be delineated with regard to high subscription indices. Unlike many of the magazines considered in the research, the location of the publishing company is not incorporated into the dominant area. Connecticut has average subscriptions but is bordered to the north and east by states with indices considerably below average. The most popular area for Tennis magazine is the southeast (Figure 8). The major reason is climate. Just as in other outdoor summer sports, the relative advantage of a suitable climate is very important. More opportunity to play the sport leads to more interest which, in turn, leads to greater readership. This is seen when noting a gradual increase in subscriptions the further south one goes. States such as Montana, North Dakota, and Idaho all have indices less than 60% of the national norm. The further south one goes the heavier the subscription to Tennis magazine. However, climate does not totally explain the observed pattern. Figure 8 shows a lack of subscriptions in California where participation is high (Rooney, 1974). Many professional tournaments are played and many professionals choose to live in Florida and its neighboring states. Thus, this area dominates and California, with its many recreational options, is reduced to average readership.

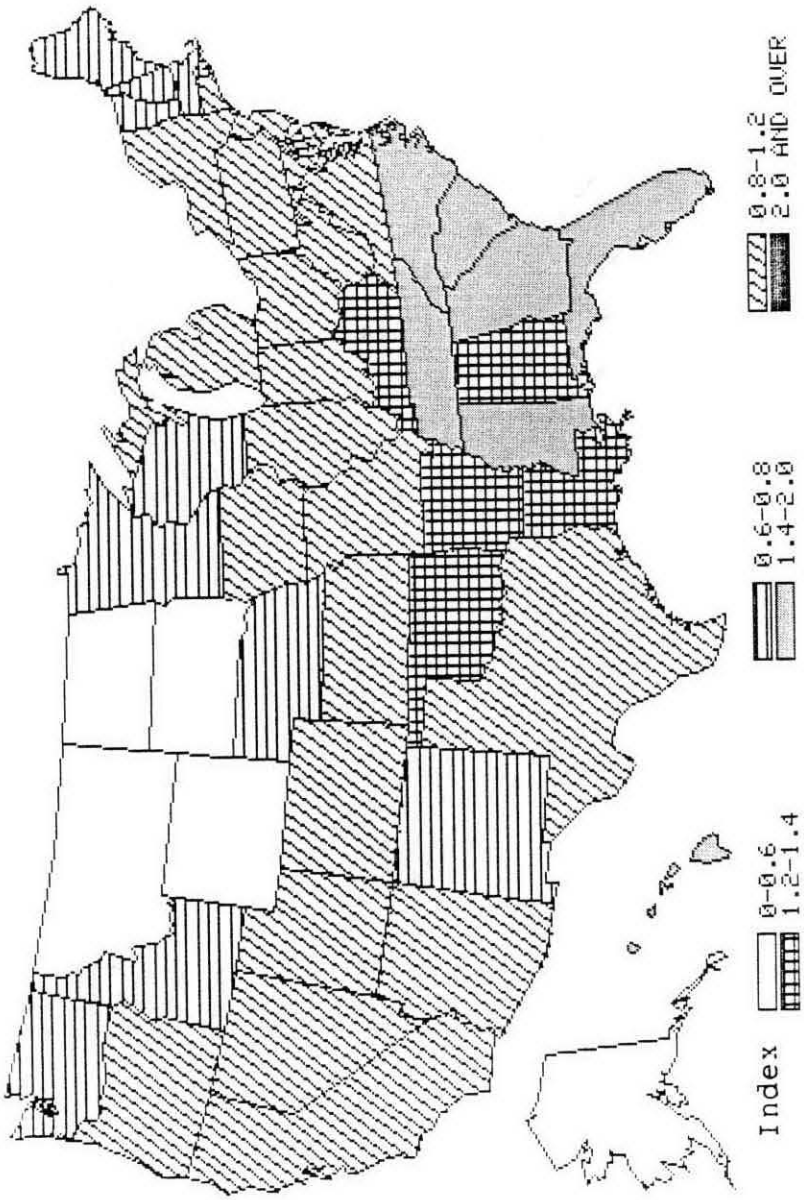

Figure 8. Weighted Readership Indices for Tennis

Skiing

Skiing is one of the most environmentally determined sports that exists. People can only ski where the climate and terrain allows, with only a few exceptions. Consequently, the locations of those that subscribe to skiing magazines is likely to be similar to those restricted areas where skiing is possible.

Ski and Skiing magazines were obtained for the study. Very few surprises exist. Skiing magazines are taken at far greater rates in the mountainous states of the Rockies and in the New England states of Vermont and New Hampshire. Figure 9 is a map combining the two magazines and shows this to good effect. Some states outside of these areas have average subscriptions but these are adjacent to well known skiing states. Examples can be drawn from Oklahoma and Texas. While no snowskiing exists in either of these states, their geographic proximity to those states that have extensive skiing such as New Mexico and Colorado means their subscription rates are artificially high. Those states furthest from the skiing regions have the lowest rates. The deep south is characterized by extremely low rates, primarily because no snowskiing exists in the area.

Watersports

Like snowskiing, interest in watersports is determined by the environment. Three separate watersports are considered in this research; waterskiing, sailing, and

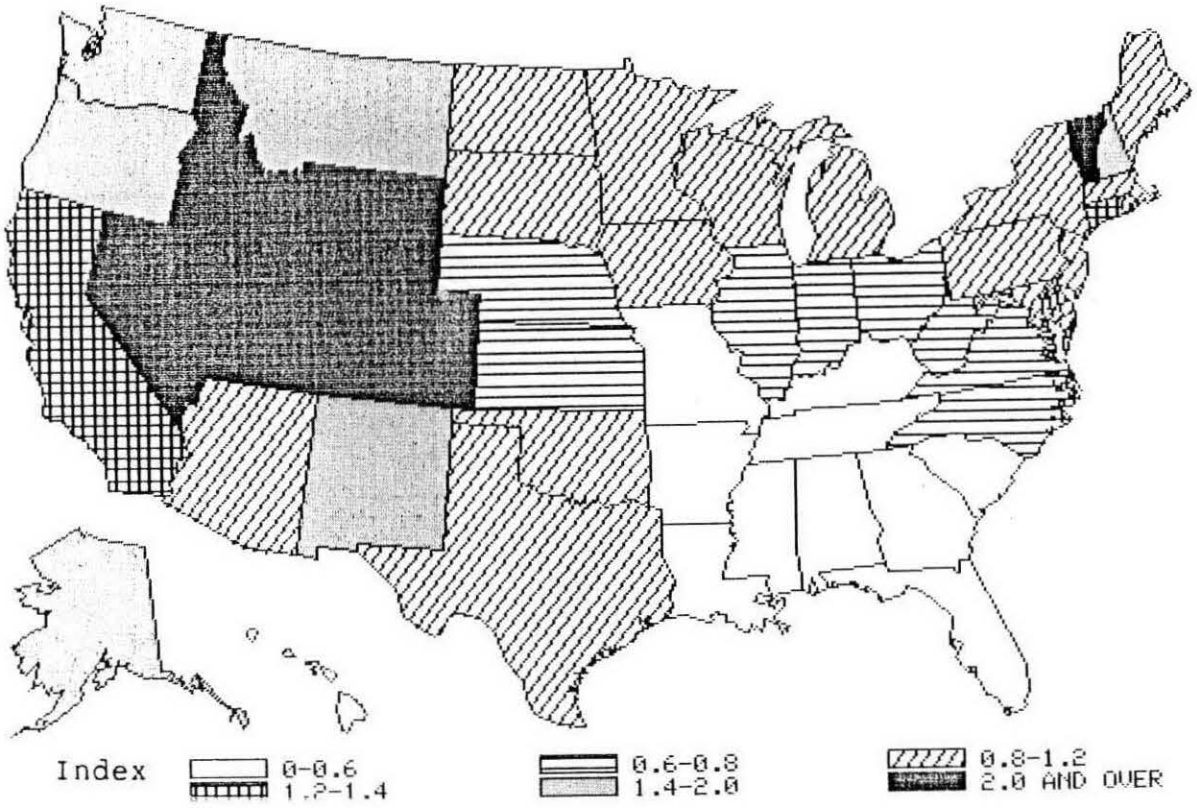

Figure 9. Weighted Readership Indices for Skiing Magazines

scuba-diving. Each sport is considered individually but many of the reasons for a particular distribution overlap with similar watersports, subsequent discussion for all three sports follows.

Sail magazine is the only magazine obtained for the sport of sailing. Published in the heartland of American ocean sailing at Boston, Massachusetts, the magazine has a considerable orientation to the coastal states. All the New England states have subscription levels well above the national average with Rhode Island leading with a weighted index of 1.80. Massachusetts derived an index of 42% above the national norm. The highest index is obtained in Florida at 1.92, although Washington and Oregon are also high. Other states with above average indices include those of Maryland and Delaware around the Chesapeake Bay, Michigan, and Nevada. Several other states subscribe at average rates, but the general pattern is one of decreasing readership toward central portions of the United States. The entire distribution for sailing is seen in Figure 10.

Waterskiing is a sport less dependent on space and more dependent on good weather than sailing. Thus, less reliance is placed on proximity to coastal waters. Consequently, a more landward distribution exists. Figure 11 shows the subscription patterns of Waterski magazine. A distinct southern pattern is shown. States with a good climate and access to lakes are clearly more interested in waterskiing and thus subscribe to the magazine more heavily. Also

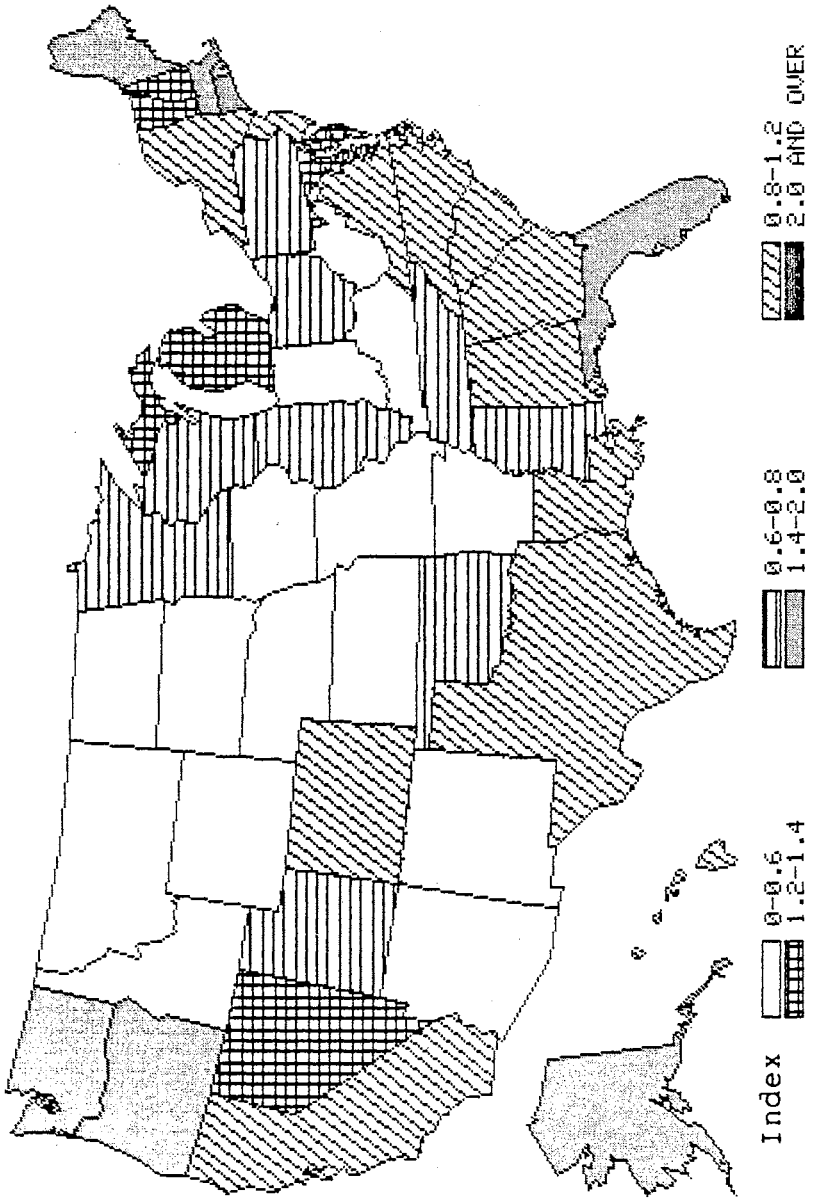

Figure 10. Weighted Readership Indices for Sail

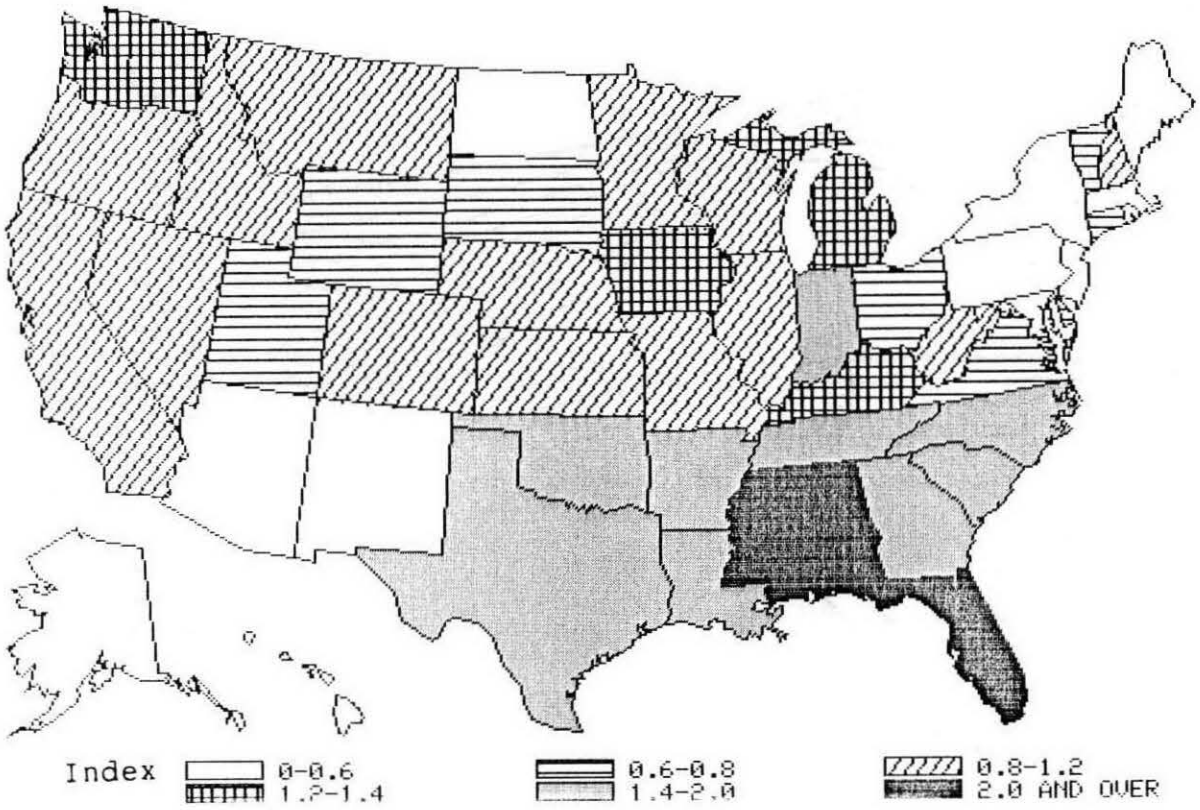

Figure 11. Weighted Readership Indices for Waterski

important is the influence of the warm and relatively calm waters of the Gulf of Mexico, where all the states bordering on the Gulf read Waterski magazine at over 40% the national average. One final important factor is that the publishing company is located in Winter Haven, Florida which further emphasizes the southern influence.

The final watersport to be assessed is scuba-diving. Two magazines were considered, Skin Diver and Underwater U.S.A. The distribution is seen in Figure 12. It is evident that scuba-diving magazines are taken throughout the country. Similar to waterskiing, a tendency exists toward the southeast coast where the climate is better suited and the states are in close proximity to the Gulf of Mexico. The population of Florida subscribe to scuba-diving magazines at three times the national rate and yet neither of the publishing companies is located within the state (one being in California and the other in Pennsylvania). Other states with unusually high subscription rates include Hawaii, Alaska and Nevada. It is not difficult to understand why Hawaii and Alaska have high readership rates but Nevada is not easily explained as it also had high rates for sailing.

Gymnastics

Rooney (1974) identifies a strong northern trend in high school participation of gymnastics. To a certain extent, that distribution is mirrored in the readership of

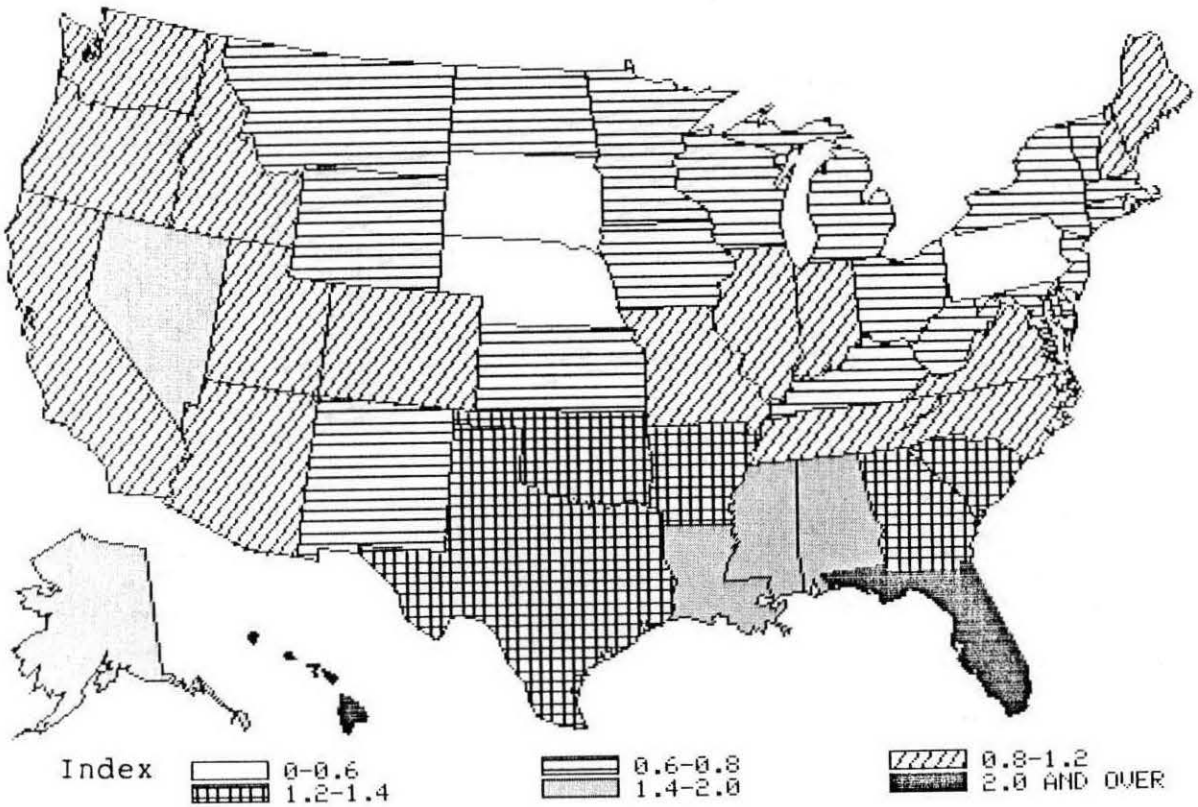

Figure 12. Weighted Readership Indices for Scuba-diving Magazines

International Gymnast. The magazine had a total of only 29323 subscriptions in July 1985. As can be seen in Figure 13 the northern plain states of the midwest constitute a region where the magazine is taken at rates of 40 percent or more above the national average. The largest weighted index is, however, found in Oregon where the subscription rate is at 2.10 times the norm. A possibility exists that Oregon's high rate is partially explained by geographic proximity to the publishing area in Santa Monica, California. A distinct deficit readership region can also be distinguished in the southern United States, where states to the south of Kentucky and South Carolina all read the magazine at less than eighty percent of the national norm.

Explanation may be aided by an assessment of climatic impact. Given the long inclement winters of the northern plains, more time is devoted to the pursuit of indoor sports such as gymnastics. In the southern states climate is less severe and subsequent emphasis may be placed on outdoor sports.

Bowling

Bowling, like gymnastics, has a north central distribution. However, the observed pattern is far more pronounced. The composite distribution of weighted per-capita subscription rates to Bowling magazine and Bowling Digest is shown in Figure 14. The highest state is Wisconsin, where bowling magazines attain an index of 2.50.

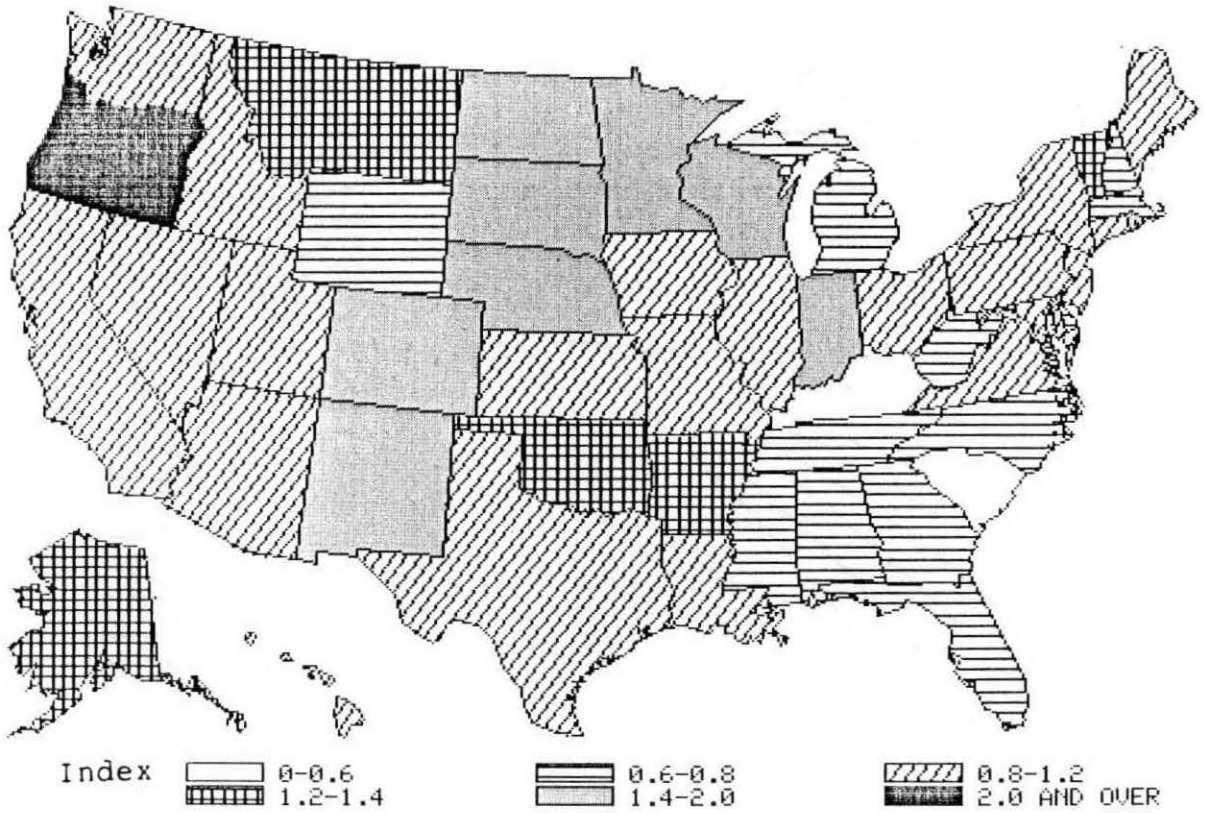

Figure 13. Weighted Readership Indices for International Gymnast

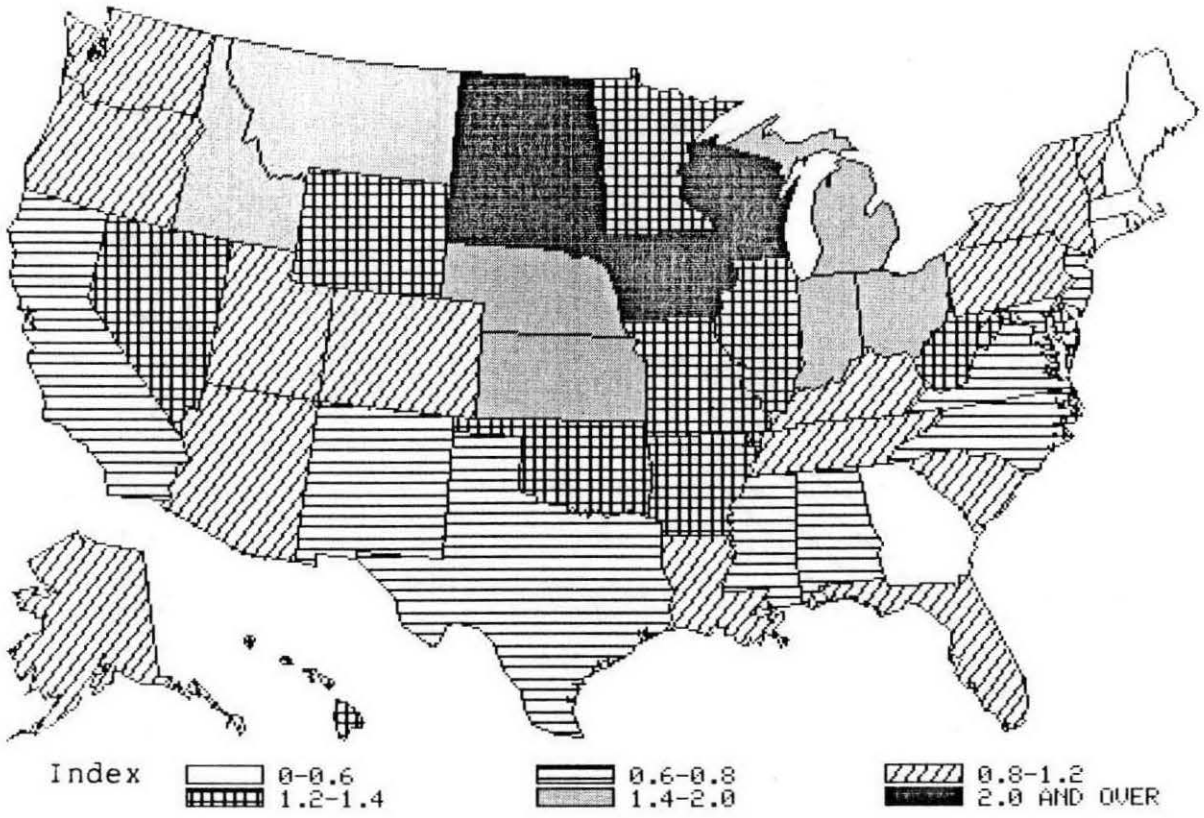

Figure 14. Weighted Readership Indices for Bowling Magazines

Explanation may be aided by the location of the publishing company for Bowling magazine, which is in Greendale, Wisconsin. However, the distribution of high per-capita subscriptions stretches from Idaho in the west to Ohio in the east. Many of the states within this belt read at 40 percent more than the national average with North and South Dakota, Iowa, and Wisconsin all above 2.00. Two deficit regions exist. The first consists of the southern states with Georgia attaining the lowest rate of only 59 percent of the nations average rate. The second region where bowling magazines are taken at significantly low rates are the New England states.

If the unweighted indices are used, the difference between north and south is further accentuated. Figure 15 shows that all states south of a line connecting New Mexico to North Carolina subscribe to bowling magazines at less than 60 percent the national average, with the exception of Florida. Conversely, the northern plain states all subscribe at rates 40 percent above, with North and South Dakota and Wisconsin at two times the norm.

Both Figures 14 and 15 indicate heavy subscription in the north with very small values for the south. The reasons for the observed distribution are similar to those of gymnastics. Bowling is an indoor sport and participation rates are likely to be higher in the area because of the severe restrictions on outdoor activity during the long winter season. Subsequent subscription rates are also likely to be higher where participation is higher.

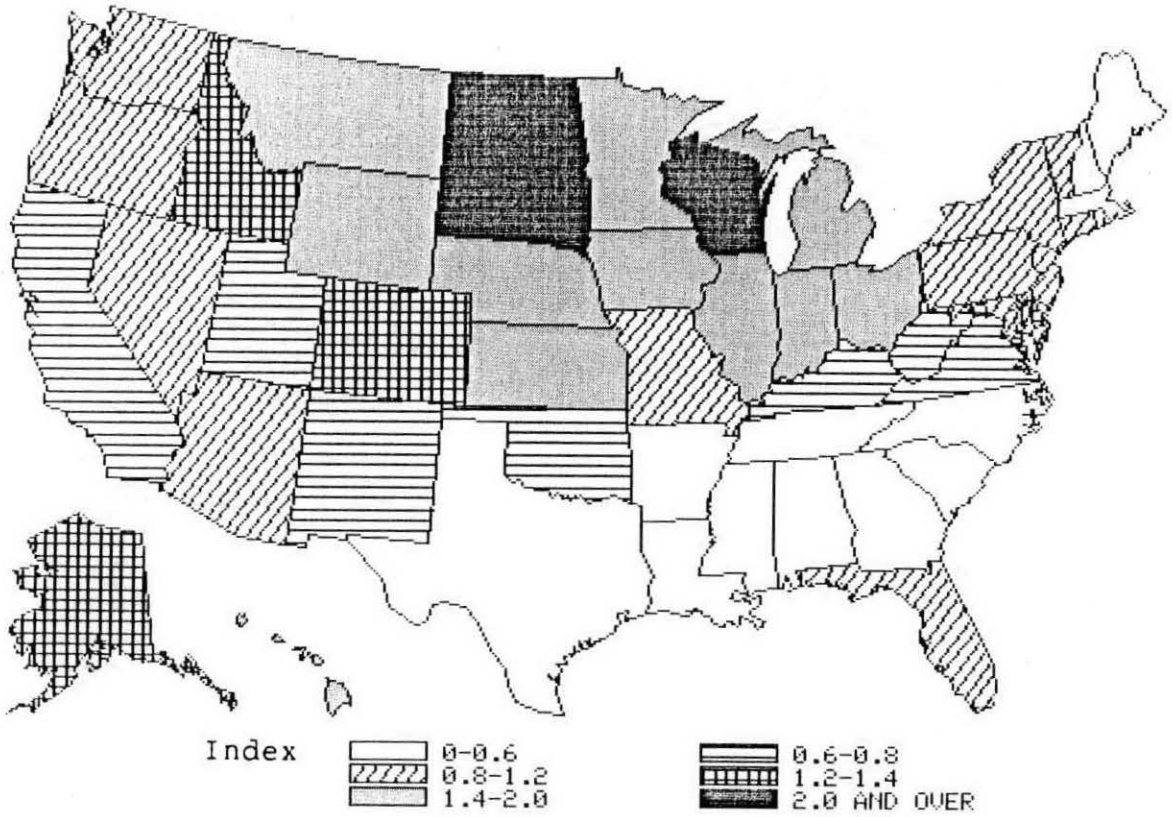

Figure 15. Unweighted Readership Indices for Bowling Magazines

Cycling

Cycling is represented by Bicycle U.S.A., Velo-News, Bicycling, and Cycle Guide. With a combined circulation in excess of 500000 many states subscribe at rates close to the national average. However, distinct surplus and deficit regions are also exhibited in Figure 16. The most prominent surplus area exists on the Pacific coast where California and Washington both have high subscription rates, as do Nevada and Oregon. The north east coast also subscribes heavily to cycling magazines and is lead by Vermont where subscriptions are 68 percent above average.

Both these areas of large circulation include the locations of publishing companies; Cycle Guide in California, and Bicycle U.S.A. in Vermont. Colorado also has high subscription rates but does not have a cycling magazine published locally. Subscribing at 85 percent above the national average, Colorado is the home of the U.S. Cycling Federation and U.S. Olympic cycling team. The high circulation in Colorado, is probably a function of local enthusiasm generated by the presence of two large cycling organizations. The south is seen to be an area of deficit subscriptions where all states read at less than 60 percent of the national average with the exception of Texas where the index is 0.74 and Florida where it is 0.81.

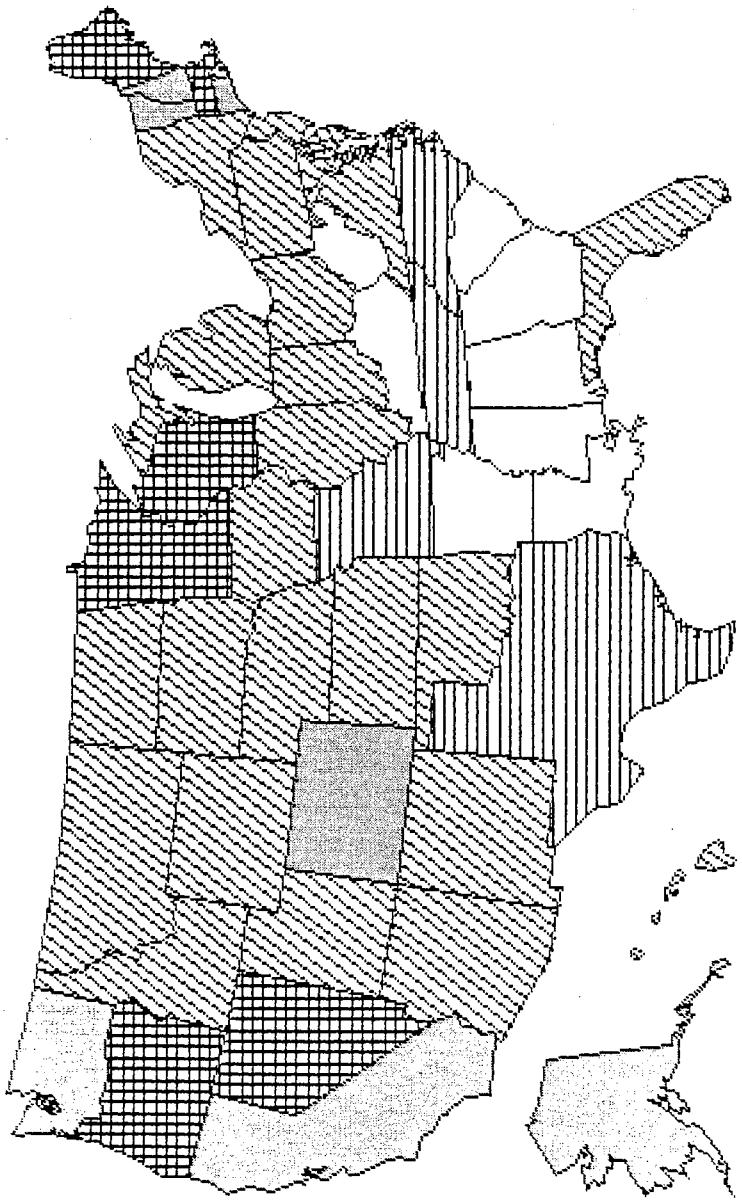

Figure 16. Weighted Readership Indices for Cycling Magazines

Running

Four magazines were surveyed for the sport of running. They range from Athletic Journal where the emphasis is on high level competition and training techniques to the National Masters News which stresses "...running for men and women over age 30". The Runner and Runners World were also considered in the study. The overall distribution is shown in Figure 17. Running can be considered a sport with national appeal as the distribution tends toward uniformity. No distinct region appears to dominate subscription rates, relative to other sports, although the pacific coast and Hawaii do have subscriptions of at least 20 percent above the average. A second region on the eastern side of the Rockies also exhibits above average rates and contains Colorado where subscriptions are 90 percent above the national rate.

Despite the tendency toward uniformity, with the majority of states subscribing at rates approaching the 1.0 index, a slight deficit region exists in the south. Arkansas has the lowest subscription rates in the area at only 56 percent and several other states subscribe at rates between 60 and 80 percent of the national norm. With the exception of Hawaii (2.49 weighted index), most of the states approach the national average and only diverge from it to a limited extent. This suggests that running magazines and therefore running itself, are followed throughout the nation.

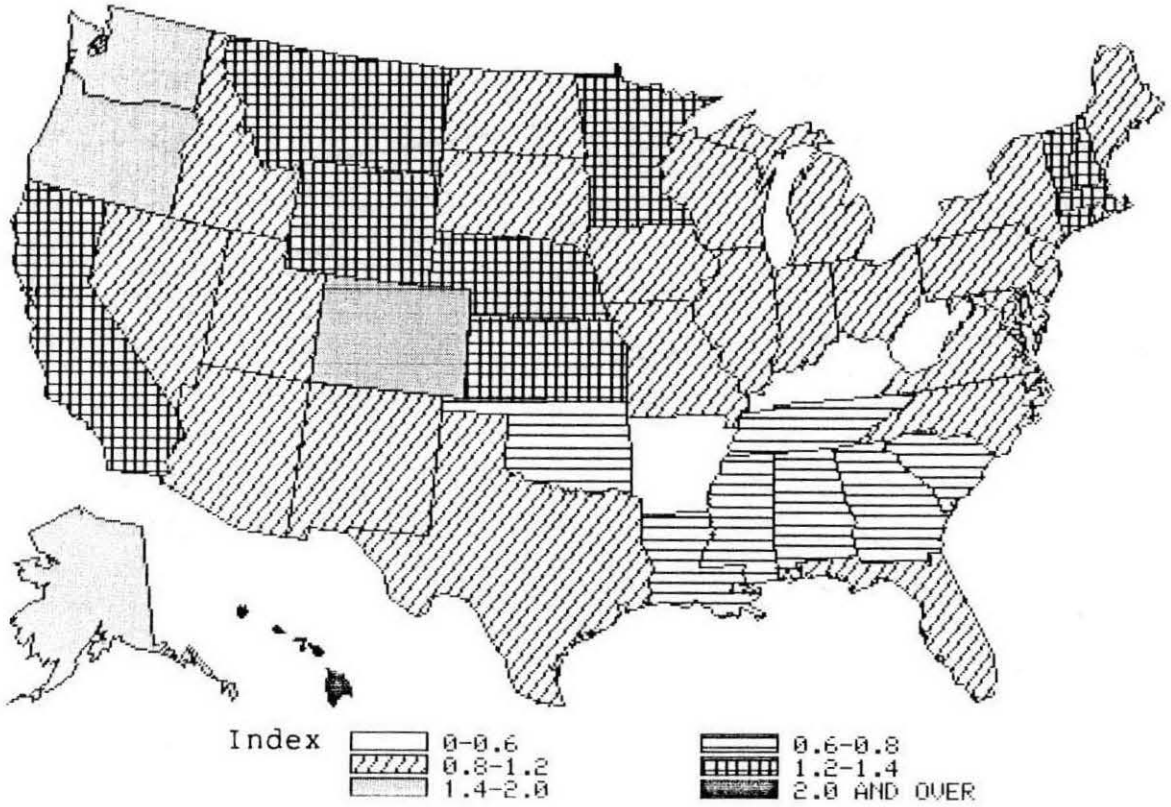

Figure 17. Weighted Readership Indices for Running Magazines

Minority or obscure sports

Several sports have not attained wide acceptance outside their own group of followers and do not have much time devoted to them by the sports media. For the purpose of this research body building, shooting, performance horsemanship, and skydiving are considered to be less popular or obscure sports. Although circulations may exceed some of the sports discussed above, it is considered to be a function of magazines obtained in the study and not of the sports popularity.

Body building is represented by Muscle and Fitness. The magazine had a circulation in excess of 400000 in June 1985. Published in California, the magazine has a distinct southern orientation. Although Hawaii is the most prolific state subscribing to the magazine at rates in excess of two times the national average, the distribution on the U.S. mainland is far more interesting. Figure 18 shows that, almost without exception, all the states in a broad belt stretching from Nevada to South Carolina subscribe at rates of 20 percent above the national average and most take the magazine at rates between 1.4 and 2.0 times the standard level. The only noteable exceptions are Mississippi and Alabama where rates approach the national norm. The north has low to average subscription rates and the lowest area in the entire nation consists of the New England states.

Although body building can be considered an indoor activity, its distribution is unlike the other noteable indoor sports, gymnastics and bowling. Subsequent

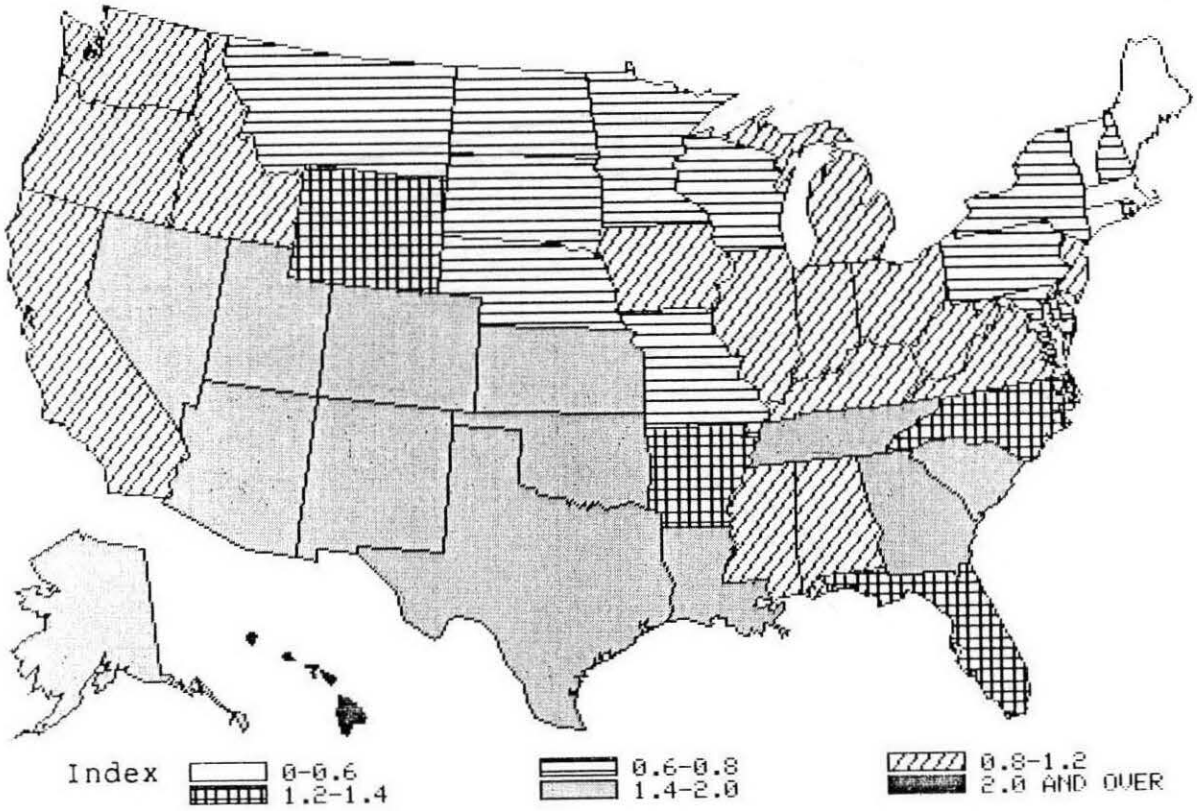

Figure 18. Weighted Readership Indices for Muscle and Fitness

discussion of the observed distribution can not rest upon climatic influences, some other factors obviously explain the pattern. Rooney (1980) suggests that the south, especially Texas, excels at football player production because the area emphasizes "ruggedness" and militarism in its football, among other reasons. Thus, the prevailing social attitude that produces quality football players may also enhance the popularity of body building as an activity.

Horseman magazine and Shooting Times are discussed together because their distributions are similar. Figure 19 shows shooting circulation while Figure 20 displays the map of performance horsemanship. As can be seen in both figures a pronounced orientation toward the western states exists. It is far more apparent in Figure 19 for Shooting Times. Performance horsemanship also has a western emphasis but spreads further east. Tradition helps to explain the distribution, the west has always been considered frontierland where heavy reliance was placed on the horse as a means of transportation and where the possession of guns aided in the settlement of disputes. Consequently, the area retains its interest in both activities, although the emphasis today, is on competition.

The final sport to be considered is that of skydiving. Skydiving magazine had a total subscription rate of only 6301 in October 1985 and is published in California. As is seen in Figure 21 only a slight trend exists in its per-capita subscription rates. There is a tendency for

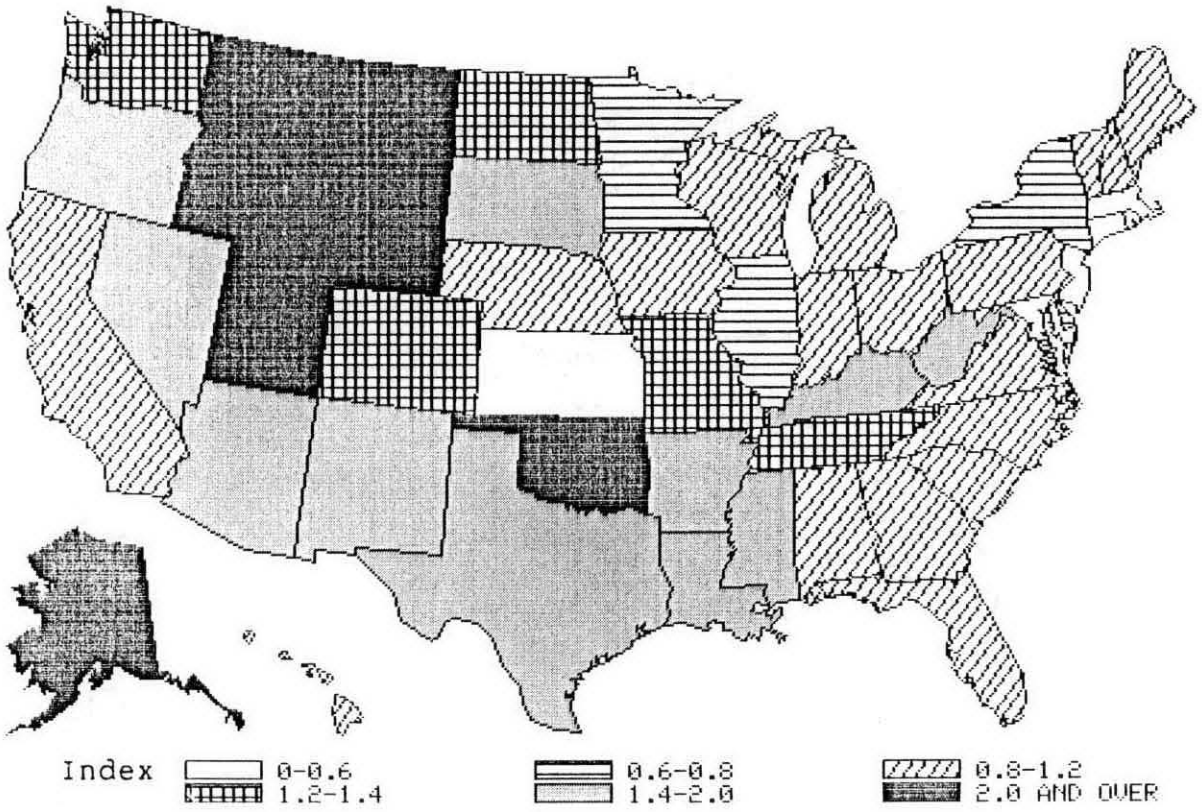

Figure 19. Weighted Readership Indices for Shooting Times

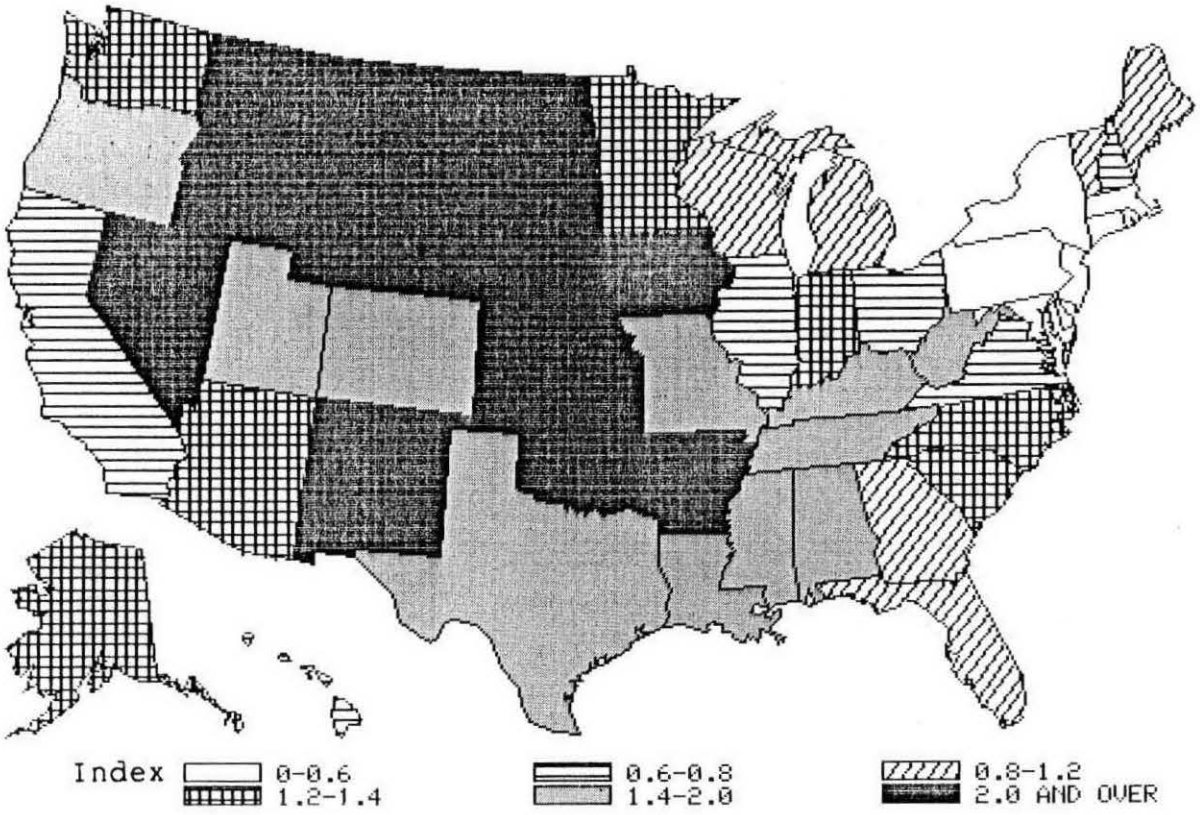

Figure 20. Weighted Readership Indices for Horseman

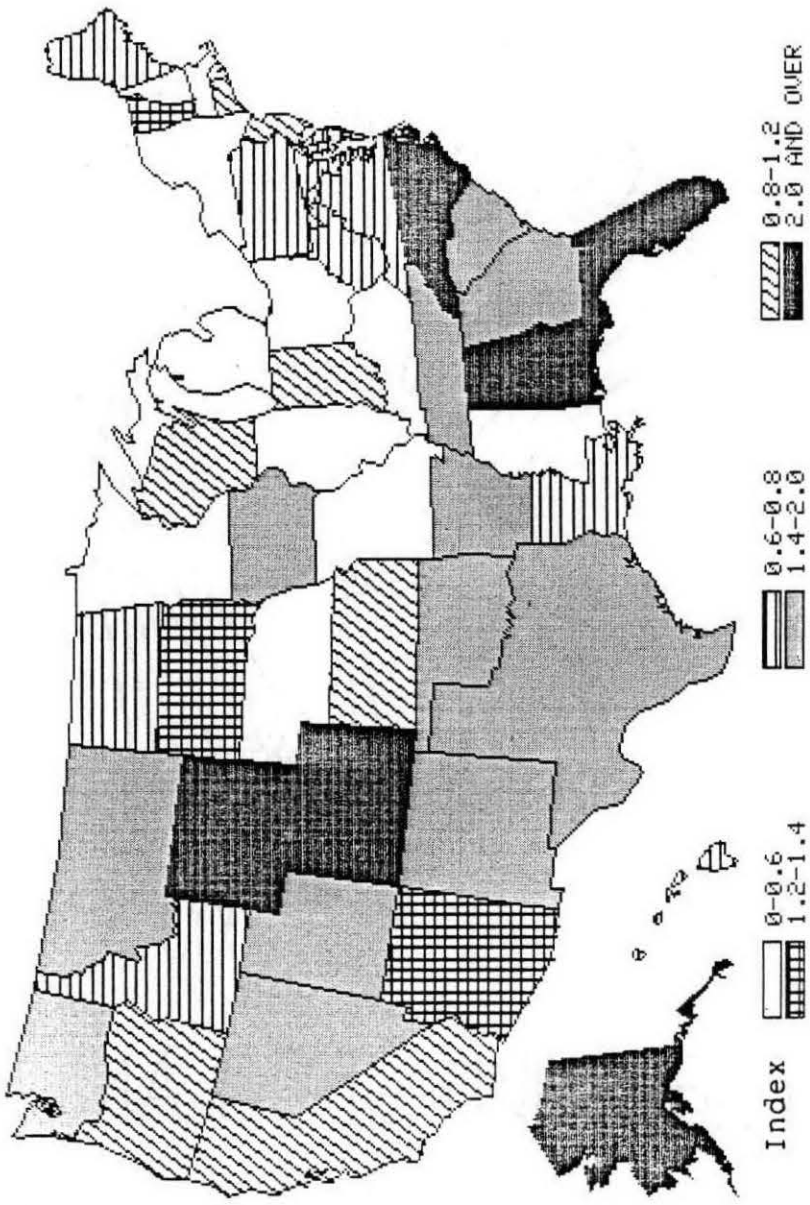

Figure 21. Weighted Readership Indices for Skydiving

subscription rates to be higher in the southern states, although the indices of 2.87 in Wyoming and 1.72 in Montana obscure this pattern. However, the broadest region does appear to be in the southeast, where Alabama, Florida, and North Carolina all subscribe at over twice the national rate. These states are surrounded by others with rates over 40 percent above the national norm. The northeast can be considered a deficit region with New York subscribing at a rate of just over 50 percent, while Massachusetts reads at just seven percent of the national average. Vermont obscures this trend by subscribing at rates of 22 percent above the 1.00 average.

The fragmented distribution is difficult to explain, primarily because the total circulation is so small at 6301. Emphasis of local markets plays no part in the magazines circulation pattern. As a consequence, no clustering exists around the publishing state, California. With a limited circulation broad areas of interest or disinterest are likely to be obscured by random events.

Summary

The purpose of this chapter was to map the analytical results. Several different reasons are suggested for the observed distributions. It must be remembered they are only suggestions and that they have not been proved statistically. Certain sports considered in the research also have other data relating to the regionalization of

sport interest and it is necessary to determine the degree of relationship that exists, if any.

CHAPTER V

CORRELATION ANALYSES

Introduction

In the previous chapter not only were the distributions of weighted index for each sport mapped but several reasons were alluded to for each distribution. In this chapter, correlation statistics are utilized to determine the degree of relationship between subscription data and actual sports participation and production. The second half of the chapter considers the validity of the weighted subscription index emphasized in this research.

Correlations Between Readership and Participation and Production

Because regionalization of sports participation and production are beyond the scope of this paper, past research is relied upon for the data pertaining to "sports producers" (Loy 1972). Rooney has been the most prolific author with regard to the compilation of similar indices for actual sports participation or production. However, data are only available in several of the sports discussed in the present research. Golf is represented by both participation and production data, as is football. Track and field

participation and production (based on the elite athletes who produce the best results in their events (Goudge, 1985)) are also considered. All the other sports covered consider high school participation rates. Included are cross-country participation (correlated with running magazine readership), tennis, and gymnastics participation.

For all correlations computed in this section Pearson's product moment statistic is used. The data are considered to be interval level, with differences between values of 1.4 and 1.5 the same as 0.8 and 0.9. Thus, Pearsons correlation coefficient is the most powerful statistic available.

Of all the sports considered, the most powerful correlation is obtained between the readership and participation data for gymnastics, with an r-value of 0.49 at the 0.05 confidence level. The value of 0.49 indicates a fairly strong tendency for those states with large numbers of participants in gymnastics to correlate with states where International Gymnastics is read at greater than average rates. Explained variation is, however, only 24.3 percent.

A similar low explained variation is also derived for the other sports, most significant of which is football. The correlation between football player production and football magazine readership yields an r-value of 0.46 at the 0.05 confidence level. Football participation and readership yields slightly lower values with an r-value of 0.42 at the 0.05 confidence level. Deriving r-squared values, or explained variations of 21.6 and 17.6 percent

respectively, a similar conclusion can be drawn for both football and gymnastics. While participation or production explains up to one quarter of the variation in readership, some other factors must explain the other 75 percent.

The other sports did not fare as well in the correlation analyses (Table III). Running magazine readership yielded only a 0.26 r-value at the 0.05 confidence level when correlated to track participation. Explained variation is, therefore, very low at 6.76 percent. When correlated with the production of elite track athletes, an insignificant relationship (at the 0.05 confidence level) of 0.09 was obtained. Similarly, cross-country participation showed no significant correlation statistics. Neither golf participation or production were significantly related to golf magazine readership. In both the values were so close to zero the conclusion could be drawn that no relationship existed between areas of high readership and area of high production or participation. Tennis represented the final example to be considered in this part of the analysis. The correlation derived showed a weak negative relationship with a value of -0.201, although the value was not statistically significant at the 0.05 level.

These results provide few surprises. Ideally very strong correlations between participation or production and readership would be desired. However, because of the nature of the data it was always unlikely to yield a strong positive relationship. The two data bases under analysis

TABLE III

CORRELATIONS BETWEEN THE WEIGHTED READERSHIP INDEX AND PARTICIPATION AND PRODUCTION DATA BY SPORT

Variables Correlated	Pearson's r
Golf participation and golf readership.	0.11*
Golf production and golf readership	0.03*
Football production and football readership	0.46
Football participation and football readership	0.42
Cross country participation and running readership	0.04*
Track participation and running readership	0.26
Elite Track and Running readership	0.09*
Gymnastics participation and gymnastics readership	0.49
Tennis participation and tennis readership	-0.20*

*Not significant at the 0.05 confidence level.

are different, they consider two different sports enthusiast populations. Rooney's production and participation data and Goudge's elite track athlete data, at best, consider individuals between the ages of fifteen and twenty-two. With the primary orientation of available Rooney and Goudge data being high school participation the emphasis is toward the younger age groups. Magazines, however, are more frequently read by a much older group of people which is likely to include "armchair athletes". Therefore, the population reading magazines and thereby expressing interest, need not relate too closely to areas of high school participation or collegiate production.

Evaluation of the Weighted Index

In this research, emphasis of the weighted subscription index has been stressed. Primarily completed in an attempt to factor out certain intrinsic characteristics of magazine purchasing, it is now necessary to evaluate the use of the index.

The weighted index was created in order to negate certain economic and social factors that could have an effect on a magazines subscription. The nation's propensity to subscribe to any material, in this case sport magazines, is assumed to be a function of interest in a particular publication, economic background, and social factors including literacy and race.

General magazine subscription is thought to reflect the last three components listed above. Thus an area that reads general magazines at higher than average rates expresses not only an interest in the publication but also economic prosperity and readership potential. If this is the case then a high level of explained variation could be expected in a multiple regression between general magazine subscription and the socio-economic factors included in the study. Consequently, the general subscription index (derived from per-capita subscription to Time and U.S. News and World Report) was considered to be the dependent variable in a multiple regression with the socio-economic factors as independent variables. The multiple regression yielded a multiple r-value of 0.72 (r-square of 0.53) at the 0.05 confidence level. Because of the nature of the data, it can be considered not only statistically but also practically significant. Therefore, the general magazine index can be used as a surrogate weighting measure to factor out certain socio-economic factors.

Use of the unweighted sports subscription index does not allow for variation in socio-economic status as shown by the general magazine index. Consequently, an area such as the deep south with lower than average literacy and income may show up as low on the sports index, whereas in reality, relative to their overall socio-economic status, they may express great interest in a particular sports publication.

An example of how this works can be taken from the sport of football. The unweighted index for the state of Mississippi is 0.66. However, because the general magazine index is as low as 0.44, the weighted index becomes 1.503. In this particular instance the value is greatly increased. Another example can be seen in the sport of sailing. Massachusetts and New England are considered to be the heart of America's ocean sailing. With an unweighted index of 2.22 for sailing magazines, the value is weighted by dividing by the general magazine index of 1.55. This results in a weighted sports subscription index of 1.42. The emphasis still exists, as would be expected in the midst of ocean sailings heartland, but the value is lowered when the socio-economic status of the state is taken into account. One final example shows how weighting the index has little effect. Arizona has a general magazine index of 1.02 signifying general magazine subscription in that state approaches the national average. Using this value as a denominator will change the unweighted index very little. For baseball magazine subscription Arizona has an unweighted index of 0.76 which, when weighted is only changed to 0.74.

Although the three examples discussed above were chosen to best exemplify changes from the unweighted to the weighted index, the same effect occurs for all sports dependent on the state. Table II shows the general magazine index by state, as derived from Time and U.S. News and World Report.

However, the differences also vary with sport. Some sports weighted indices change considerably more than others. Table IV shows the Pearson correlation coefficients between the unweighted and weighted indices by sport. As can be seen all sports change to a certain extent, but the degree to which changes occur varies by sport. Skiing and sailing magazines change very little as shown by their high correlations (0.91 and 0.93 respectively). Other magazines change considerably more. Golf magazines produce a weak correlation between the weighted and unweighted indices at only 0.37. General sports magazines change radically with the unweighted scores bearing no resemblance to the weighted scores (Pearson correlation coefficient of -0.06). A possible reason for the lack of change in certain sports such as skiing or sailing could be that those sports are amongst the most environmentally determined in the study. Regardless of socio-economic factors, the only areas that subscribe to these magazines are the areas where the sport takes place and the immediately adjacent states. Those sports with less of an emphasis on the environment such as tennis or bodybuilding change considerably more once socio-economic data are factored out.

Because the socio-economic factors correlate to a high degree with the general magazine index, then any multiple regression between the dependent variables of unweighted and weighted indices and socio-economic factors should reveal some distinct changes. Using income, literacy, and

TABLE IV

CORRELATIONS BETWEEN UNWEIGHTED AND WEIGHTED READERSHIP INDICES BY SPORT

SPORT	Pearson's r
Golf	0.37
Football	0.53
Cycling	0.63
Running	0.55
Hunting	0.82
Baseball	0.69
Bowling	0.86
Sailing	0.93
Gymnastics	0.83
Skin Diving	0.76
Skiing	0.91
General Sports	-0.068*
Tennis	0.68
Bodybuilding	0.70
Horse Racing/Show Jumping	0.87
Waterskiing	0.65
Skydiving	0.82

*Not significant at 0.05 confidence level.

percentage white population as independent variables, then as these are factored out (with the transformation from unweighted to weighted index) any multiple r-values should decrease.

Table V shows the r-square values for both unweighted and weighted indices by sport. A general tendency exists that the r-square values do decrease with the transformation. Of the seventeen sports analyzed, thirteen decrease (to varying degrees) and four increase. A unifying factor was sought to attempt to explain the increase in the four sports of golf, football, horse-racing/showjumping, and waterskiing but the sports are so diverse that it remains uncertain as to the reasons for their departure from the norm.

Summary

The aim of this chapter was to assess the use of a weighted sports subscription index as a potential measure of sports interest. Although the comparison with participation and production data did not conclude favorably it is to be expected considering two entirely different sports enthusiast populations were studied.

Through the use of simple correlations and multiple regressions a very strong case can be made for the use of weighted sport magazine indices as an indicator of sports interest. However, the index is not totally foolproof as the increasing r-square values for certain sports suggests (Table V). The weighted index proves to be a refinement of an analytical tool not previously adjusted in this respect.

TABLE V

R-SQUARED VALUES FOR MULTIPLE REGRESSIONS BETWEEN SOCIO-ECONOMIC FACTORS AND UNWEIGHTED AND WEIGHTED READERSHIP INDICES

Sport	Unweighted Index (r^2)	Weighted Index (r^2)
Golf	0.14*	0.25
Football	0.15	0.18
Cycling	0.53	0.23
Running	0.46	0.35
Hunting	0.16	0.02*
Baseball	0.20	0.03*
Bowling	0.36	0.24
Sailing	0.47	0.40
Gymnastics	0.35	0.18
Skindiving	0.36	0.29
Skiing	0.41	0.30
General Sports	0.61	0.21
Tennis	0.61	0.49
Bodybuilding	0.51	0.47
Horse Racing/Show Jumping	0.19	0.23
Waterskiing	0.16*	0.24
Skydiving	0.18	0.05*

*Not significant at the 0.05 confidence level.

Overall, weighting by subscription of general printed matter serves as a useful surrogate for nullifying the effects of socio-economic status in a study where economics and social background play an important part.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this thesis was to objectively determine regional patterns of sports interest in the United States using a previously untested indicator; that of sport magazine circulation. Because the nature of magazine purchasing was thought to be dependent upon the socio-economic status, the index was weighted according to each state's propensity to subscribe to general magazines (believed to be a surrogate measure of socio-economic well being). Each sport was analyzed seperately which, in certain cases, involved grouping several magazines together. Other sports were, however, represented by just one magazine and subsequent analysis was more straightforward.

Each sport's weighted subscription index was mapped and possible reasons for the observed distribution were suggested. Subsequent discussion of the regional patterns alluded to similarities between subscription and participation and production. Correlation statistics were calculated between the readership indices and participation and production statistics based on previous research completed by Rooney (1974, 1980) to determine the degree of relationship between the two sport interest indicators.

Finally, an evaluation of the new index was completed with regard to its validity in this research.

Conclusions

Distinct regional patterns of sports interest can be ascertained from an analysis of specialized sport magazine subscriptions. The patterns varied with sport and ranged from the fairly ubiquitous distribution of general sport magazines to the highly regionalized patterns revealed by sports such as sailing or skiing. Different regional patterns revealed emphases upon different sports in particular areas, although certain common ties between sports or pastimes lead to similar distributions. Such is the case with shooting and horseriding enthusiasm being at its highest in the states west of the Mississippi possibly due to the cultural history of the area. Another example can be drawn from the watersports, although patterns of interest were determined by the environment. Environmentally determined sports such as skiing or sailing exhibited highly regional patterns because of the very nature of the sport. Little interest was shown in these sports where the environment was not conducive to either spectating or participation.

When the regional patterns of sport magazine subscription were tested against sport participation or production with the aim of establishing any relationships that may exist, very few of the compatible sports proved to

show any degree of relationship. This is not too surprising because of the nature of the datasets involved. The participation and production datasets were based on a young population between the ages of fifteen and twenty-two. Magazine subscriptions are taken by a more adult population and includes people who do not necessarily participate at any particular level. Therefore, because two different sports enthusiast populations are being studied it is not surprising that little relationship exists between the two.

In most sport interest studies that used a per-capita index, prior to this one, a basic index was used. Because of the nature of this study, a new weighted index was implemented. Created in order to negate the effects of purchasing power, the index was evaluated for its suitability. The weighting (obtained by a consideration of purchasing rates of general news magazines) proved to be fairly adept at nullifying the effects of socio-economic status and was especially useful when considering states of poorer economic standing.

Recommendations

Given the limited amount of data and the limited degree of areal definition (state as opposed to county resolution) the weighted sport magazine subscription index appears to be a competent indicator of differing levels of sports interest in the United States. Conclusions, however, cannot be overstated because of these inherent weaknesses.

Improvement of the study could be facilitated in a number of ways. As stated in Chapter I limitations of the research rested on the availability of data. More subscription data for magazines could be obtained both for the sports considered in the research and for sports not covered. A void exists in the research especially when it is remembered that no data was available for basketball. Collection of more data for several sports already considered in the study would only enhance the results. For example, football and baseball (two of the most popular sports in the country) only considered one magazine each. Several magazines are published for each of these sports and their inclusion would add considerably to the validity of the derived regional patterns.

Weighting the index could also be refined, both by obtaining more general magazines and by including more socio-economic factors to facilitate a more complete consideration of important variables.

Concluding Statement

This research has attempted to derive patterns of sports interest in the United States utilizing a previously unused indicator. Analysis of sport magazine subscriptions has provided a new aspect to sports regional studies. Its validity is gained from the fact that not only those people who participate in a sport or "sports producers" (Loy 1972) are important in determining sport interest regions but

purchasers of sport magazines must also be considered as they fulfill the role of "sports consumers".

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APPENDIX

General Sport Magazines

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	22848	0.87	1.04
NEW HAMPSHIRE	21842	0.87	1.26
VERMONT	12123	0.85	1.20
MASSACHUSETTS	147561	0.86	1.34
RHODE ISLAND	20974	0.99	1.15
CONNECTICUT	79570	0.79	1.33
NEW YORK	367510	0.89	1.09
NEW JERSEY	169324	0.94	1.18
PENNSYLVANIA	269224	1.09	1.20
OHIO	227928	1.14	1.12
INDIANA	112697	1.40	1.08
ILLINOIS	237210	1.05	1.09
MICHIGAN	182309	1.11	1.06
WISCONSIN	101483	1.13	1.12
MINNESOTA	88648	0.93	1.12
IOWA	63223	1.41	1.16
MISSOURI	83464	1.02	0.88
NORTH DAKOTA	16522	1.21	1.27
SOUTH DAKOTA	14790	1.13	1.10
NEBRASKA	42609	1.43	1.40
KANSAS	56801	1.17	1.23
DELAWARE	13800	0.96	1.17
MARYLAND	96834	0.92	1.17
VIRGINIA	121756	1.02	1.13
WEST VIRGINIA	31002	1.28	0.85
NORTH CAROLINA	102910	1.25	0.87
SOUTH CAROLINA	47951	1.31	0.76
GEORGIA	91890	1.12	0.81
FLORIDA	182054	1.01	0.85
KENTUCKY	54587	1.27	0.77
TENNESSEE	68177	1.26	0.76
ALABAMA	50289	1.24	0.66
MISSISSIPPI	24332	1.12	0.49
ARKANSAS	27177	1.32	0.61
LOUISIANA	55400	1.05	0.65
OKLAHOMA	54434	1.33	0.87
TEXAS	229647	0.91	0.74
MONTANA	17110	0.92	1.09
IDAHO	15225	0.94	0.80
WYOMING	11412	1.02	1.19
COLORADO	70414	0.91	1.15
NEW MEXICO	21439	0.80	0.78
ARIZONA	61362	1.00	1.02
UTAH	25689	1.12	0.83
NEVADA	20096	1.24	1.13
ALASKA	9876	0.63	1.00
WASHINGTON	83766	0.88	1.00
OREGON	47192	0.89	0.93
CALIFORNIA	502136	0.83	1.01
HAWAII	20192	0.86	1.01

Golf Magazines

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	7066	0.78	0.65
NEW HAMPSHIRE	8046	1.03	0.71
VERMONT	4127	0.98	0.70
MASSACHUSETTS	49184	1.08	0.69
RHODE ISLAND	8310	1.10	0.95
CONNECTICUT	33330	1.34	0.80
NEW YORK	112712	0.81	0.66
NEW JERSEY	57373	0.97	0.77
PENNSYLVANIA	92941	1.00	0.91
OHIO	105694	1.26	1.28
INDIANA	47625	1.11	1.43
ILLINOIS	101573	1.12	1.08
MICHIGAN	88590	1.24	1.30
WISCONSIN	40296	1.08	1.08
MINNESOTA	36031	1.10	0.91
IOWA	25040	1.11	1.35
MISSOURI	31200	0.79	0.92
NORTH DAKOTA	4799	0.89	0.85
SOUTH DAKOTA	4475	0.81	0.83
NEBRASKA	13155	1.05	1.06
KANSAS	23442	1.22	1.17
DELAWARE	5303	1.09	0.90
MARYLAND	27469	0.80	0.63
VIRGINIA	44937	1.01	0.91
WEST VIRGINIA	10727	0.71	1.07
NORTH CAROLINA	52290	1.07	1.54
SOUTH CAROLINA	25083	0.96	1.65
GEORGIA	41180	0.88	1.21
FLORIDA	109762	1.23	1.46
KENTUCKY	21277	0.73	1.20
TENNESSEE	30305	0.81	1.35
ALABAMA	22514	0.71	1.35
MISSISSIPPI	11834	0.58	1.31
ARKANSAS	11637	0.63	1.37
LOUISIANA	21188	0.60	0.97
OKLAHOMA	25157	0.97	1.48
TEXAS	111058	0.87	1.07
MONTANA	6405	0.99	0.83
IDAHO	7075	0.90	1.06
WYOMING	3937	0.99	0.85
COLORADO	28993	1.15	0.91
NEW MEXICO	8473	0.75	0.77
ARIZONA	30264	1.21	1.19
UTAH	10807	0.84	1.13
NEVADA	8807	1.20	1.32
ALASKA	1724	0.42	0.27
WASHINGTON	36060	1.04	0.92
OREGON	21278	1.01	0.97
CALIFORNIA	220177	1.07	0.88
HAWAII	16018	1.94	1.64

Football Digest

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	554	0.68	0.57
NEW HAMPSHIRE	394	0.56	0.39
VERMONT	295	0.79	0.56
MASSACHUSETTS	2483	0.61	0.39
RHODE ISLAND	359	0.53	0.46
CONNECTICUT	2355	1.06	0.64
NEW YORK	11075	0.89	0.72
NEW JERSEY	5444	1.03	0.81
PENNSYLVANIA	11670	1.41	1.28
OHIO	10581	1.41	1.43
INDIANA	3625	0.94	1.22
ILLINOIS	8841	1.09	1.05
MICHIGAN	5202	0.82	0.85
WISCONSIN	3968	1.19	1.19
MINNESOTA	4135	1.41	1.17
IOWA	2314	1.15	1.40
MISSOURI	2571	0.73	0.85
NORTH DAKOTA	637	1.33	1.26
SOUTH DAKOTA	808	1.63	1.67
NEBRASKA	1444	1.28	1.31
KANSAS	1727	1.01	0.96
DELAWARE	368	0.84	0.69
MARYLAND	3250	1.06	0.83
VIRGINIA	5886	1.47	1.33
WEST VIRGINIA	1441	1.06	1.61
NORTH CAROLINA	3374	0.77	1.11
SOUTH CAROLINA	1860	0.79	1.37
GEORGIA	3343	0.80	1.10
FLORIDA	7965	1.00	1.19
KENTUCKY	1562	0.60	0.98
TENNESSEE	2556	0.77	1.28
ALABAMA	2107	0.75	1.41
MISSISSIPPI	1210	0.66	1.50
ARKANSAS	842	0.51	1.11
LOUISIANA	3592	1.14	1.84
OKLAHOMA	2441	1.06	1.61
TEXAS	12499	1.09	1.34
MONTANA	638	1.10	0.92
IDAHO	494	0.70	0.83
WYOMING	452	1.27	1.09
COLORADO	2847	1.26	1.00
NEW MEXICO	852	0.84	0.86
ARIZONA	2360	1.06	1.04
UTAH	956	0.83	1.12
NEVADA	811	1.24	1.36
ALASKA	392	1.07	0.68
WASHINGTON	2754	0.89	0.78
OREGON	1256	0.67	0.64
CALIFORNIA	17029	0.92	0.76
HAWAII	1103	1.49	1.26

Baseball Digest

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	1403	1.19	1.01
NEW HAMPSHIRE	997	0.99	0.68
VERMONT	792	1.47	1.04
MASSACHUSETTS	5739	0.98	0.63
RHODE ISLAND	896	0.92	0.79
CONNECTICUT	4894	1.53	0.92
NEW YORK	21948	1.22	0.99
NEW JERSEY	11509	1.51	1.19
PENNSYLVANIA	17609	1.47	1.34
OHIO	11998	1.11	1.13
INDIANA	7314	1.32	1.71
ILLINOIS	21239	1.82	1.76
MICHIGAN	13956	1.52	1.59
WISCONSIN	5587	1.16	1.16
MINNESOTA	3708	0.88	0.73
IOWA	3610	1.24	1.51
MISSOURI	5838	1.15	1.33
NORTH DAKOTA	639	0.92	0.88
SOUTH DAKOTA	679	0.95	0.97
NEBRASKA	1074	0.66	0.67
KANSAS	2826	1.14	1.09
DELAWARE	839	1.34	1.10
MARYLAND	5318	1.20	0.94
VIRGINIA	4967	0.86	0.78
WEST VIRGINIA	1502	0.77	1.16
NORTH CAROLINA	4637	0.73	1.06
SOUTH CAROLINA	1946	0.58	1.00
GEORGIA	4905	0.81	1.12
FLORIDA	9326	0.81	0.97
KENTUCKY	3107	0.83	1.36
TENNESSEE	3565	0.74	1.24
ALABAMA	2490	0.61	1.16
MISSISSIPPI	1129	0.43	0.97
ARKANSAS	1072	0.45	0.98
LOUISIANA	2067	0.46	0.73
OKLAHOMA	1971	0.59	0.90
TEXAS	7879	0.48	0.59
MONTANA	577	0.69	0.58
IDAHO	440	0.43	0.51
WYOMING	259	0.50	0.43
COLORADO	1582	0.49	0.38
NEW MEXICO	638	0.44	0.45
ARIZONA	2459	0.76	0.75
UTAH	535	0.32	0.44
NEVADA	871	0.92	1.01
ALASKA	378	0.72	0.46
WASHINGTON	2326	0.52	0.46
OREGON	1576	0.58	0.56
CALIFORNIA	26926	1.01	0.84
HAWAII	790	0.74	0.63

Tennis

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	1751	0.76	0.64
NEW HAMPSHIRE	2265	1.15	0.79
VERMONT	968	0.92	0.65
MASSACHUSETTS	13555	1.18	0.76
RHODE ISLAND	1648	0.86	0.75
CONNECTICUT	10294	1.65	0.99
NEW YORK	38678	1.10	0.90
NEW JERSEY	18334	1.23	0.97
PENNSYLVANIA	20606	0.88	0.80
OHIO	19162	0.91	0.92
INDIANA	9510	0.88	1.14
ILLINOIS	23352	1.03	0.99
MICHIGAN	13924	0.78	0.81
WISCONSIN	7218	0.77	0.77
MINNESOTA	7355	0.89	0.74
IOWA	4871	0.86	1.04
MISSOURI	6904	0.70	0.81
NORTH DAKOTA	737	0.55	0.52
SOUTH DAKOTA	781	0.56	0.57
NEBRASKA	2312	0.73	0.74
KANSAS	4527	0.94	0.90
DELAWARE	1279	1.04	0.86
MARYLAND	10484	1.21	0.95
VIRGINIA	14678	1.31	1.18
WEST VIRGINIA	2379	0.62	0.94
NORTH CAROLINA	12577	1.02	1.47
SOUTH CAROLINA	5648	0.86	1.48
GEORGIA	14123	1.20	1.65
FLORIDA	28151	1.26	1.49
KENTUCKY	6113	0.83	1.37
TENNESSEE	7944	0.85	1.41
ALABAMA	5822	0.74	1.38
MISSISSIPPI	3217	0.63	1.42
ARKANSAS	2662	0.57	1.25
LOUISIANA	7113	0.81	1.29
OKLAHOMA	5335	0.82	1.25
TEXAS	30430	0.94	1.16
MONTANA	917	0.56	0.47
IDAHO	1089	0.55	0.65
WYOMING	677	0.68	0.58
COLORADO	6514	1.02	0.81
NEW MEXICO	1957	0.69	0.70
ARIZONA	5495	0.88	0.86
UTAH	2230	0.69	0.93
NEVADA	1569	0.85	0.93
ALASKA	457	0.45	0.28
WASHINGTON	7241	0.83	0.73
OREGON	4621	0.87	0.84
CALIFORNIA	63447	1.22	1.01
HAWAII	3853	1.86	1.57

Skiing Magazines

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	4631	1.18	0.99
NEW HAMPSHIRE	8167	2.43	1.67
VERMONT	5243	2.91	2.05
MASSACHUSETTS	32377	1.65	1.06
RHODE ISLAND	3796	1.16	1.01
CONNECTICUT	22631	2.11	1.27
NEW YORK	66765	1.11	0.90
NEW JERSEY	37451	1.47	1.16
PENNSYLVANIA	41310	1.03	0.94
OHIO	22966	0.63	0.65
INDIANA	9813	0.53	0.69
ILLINOIS	31020	0.80	0.77
MICHIGAN	24928	0.81	0.85
WISCONSIN	14853	0.92	0.92
MINNESOTA	18738	1.32	1.10
IOWA	7243	0.74	0.91
MISSOURI	6698	0.39	0.46
NORTH DAKOTA	2128	0.92	0.87
SOUTH DAKOTA	1979	0.83	0.85
NEBRASKA	4085	0.75	0.77
KANSAS	6718	0.81	0.78
DELAWARE	2134	1.02	0.84
MARYLAND	15447	1.04	0.82
VIRGINIA	16718	0.87	0.79
WEST VIRGINIA	3396	0.52	0.79
NORTH CAROLINA	9062	0.43	0.62
SOUTH CAROLINA	3536	0.31	0.54
GEORGIA	8266	0.41	0.56
FLORIDA	15244	0.40	0.47
KENTUCKY	3466	0.28	0.45
TENNESSEE	4669	0.29	0.48
ALABAMA	2743	0.20	0.38
MISSISSIPPI	1262	0.14	0.33
ARKANSAS	1604	0.20	0.44
LOUISIANA	5157	0.34	0.55
OKLAHOMA	8762	0.79	1.20
TEXAS	37549	0.68	0.84
MONTANA	5933	2.13	1.78
IDAHO	7148	2.11	2.48
WYOMING	4516	2.63	2.27
COLORADO	36790	3.38	2.67
NEW MEXICO	7347	1.50	1.54
ARIZONA	11714	1.09	1.07
UTAH	10746	1.94	2.62
NEVADA	7467	2.37	2.59
ALASKA	4095	2.33	1.48
WASHINGTON	30758	2.07	1.81
OREGON	15318	1.69	1.63
CALIFORNIA	147394	1.66	1.37
HAWAII	1390	0.39	0.33

Sail

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	1329	1.77	1.49
NEW HAMPSHIRE	1153	1.79	1.23
VERMONT	670	1.94	1.37
MASSACHUSETTS	8381	2.23	1.43
RHODE ISLAND	1302	2.08	1.80
CONNECTICUT	5113	2.49	1.49
NEW YORK	11933	1.04	0.84
NEW JERSEY	7248	1.48	1.17
PENNSYLVANIA	5296	0.69	0.63
OHIO	4627	0.67	0.68
INDIANA	1382	0.39	0.50
ILLINOIS	5710	0.77	0.74
MICHIGAN	7612	1.30	1.35
WISCONSIN	1998	0.65	0.65
MINNESOTA	2429	0.90	0.74
IOWA	549	0.29	0.36
MISSOURI	1225	0.38	0.44
NORTH DAKOTA	120	0.27	0.26
SOUTH DAKOTA	87	0.19	0.19
NEBRASKA	217	0.21	0.21
KANSAS	841	0.53	0.51
DELAWARE	633	1.57	1.29
MARYLAND	4833	1.70	1.34
VIRGINIA	4802	1.30	1.18
WEST VIRGINIA	158	0.13	0.19
NORTH CAROLINA	3052	0.75	1.09
SOUTH CAROLINA	1449	0.67	1.16
GEORGIA	3244	0.84	1.16
FLORIDA	11923	1.62	1.93
KENTUCKY	578	0.24	0.39
TENNESSEE	1187	0.39	0.64
ALABAMA	1250	0.48	0.91
MISSISSIPPI	573	0.34	0.77
ARKANSAS	381	0.25	0.54
LOUISIANA	1902	0.66	1.05
OKLAHOMA	1042	0.49	0.74
TEXAS	8851	0.84	1.03
MONTANA	209	0.39	0.33
IDAHO	301	0.46	0.55
WYOMING	84	0.26	0.22
COLORADO	2296	1.10	0.87
NEW MEXICO	376	0.40	0.41
ARIZONA	1054	0.51	0.50
UTAH	488	0.46	0.62
NEVADA	693	1.15	1.25
ALASKA	779	2.31	1.47
WASHINGTON	5543	1.94	1.70
OREGON	2548	1.47	1.41
CALIFORNIA	21984	1.29	1.07
HAWAII	910	1.34	1.13

Waterski

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	52	0.65	0.55
NEW HAMPSHIRE	85	1.24	0.86
VERMONT	40	1.09	0.77
MASSACHUSETTS	322	0.81	0.52
RHODE ISLAND	32	0.48	0.42
CONNECTICUT	281	1.29	0.77
NEW YORK	466	0.38	0.31
NEW JERSEY	239	0.46	0.36
PENNSYLVANIA	425	0.52	0.48
OHIO	566	0.77	0.78
INDIANA	419	1.11	1.44
ILLINOIS	755	0.95	0.92
MICHIGAN	770	1.23	1.29
WISCONSIN	388	1.18	1.19
MINNESOTA	392	1.36	1.13
IOWA	219	1.11	1.35
MISSOURI	291	0.84	0.98
NORTH DAKOTA	22	0.47	0.44
SOUTH DAKOTA	30	0.62	0.63
NEBRASKA	101	0.92	0.93
KANSAS	195	1.16	1.11
DELAWARE	35	0.82	0.67
MARYLAND	196	0.65	0.51
VIRGINIA	285	0.73	0.66
WEST VIRGINIA	71	0.53	0.81
NORTH CAROLINA	429	1.00	1.44
SOUTH CAROLINA	208	0.91	1.56
GEORGIA	529	1.29	1.78
FLORIDA	1563	2.00	2.38
KENTUCKY	201	0.79	1.29
TENNESSEE	362	1.11	1.85
ALABAMA	380	1.38	2.59
MISSISSIPPI	167	0.93	2.12
ARKANSAS	115	0.71	1.54
LOUISIANA	359	1.17	1.87
OKLAHOMA	262	1.16	1.76
TEXAS	1584	1.41	1.73
MONTANA	59	1.04	0.87
IDAHO	69	1.00	1.18
WYOMING	25	0.72	0.62
COLORADO	276	1.24	0.99
NEW MEXICO	20	0.20	0.21
ARIZONA	133	0.61	0.60
UTAH	57	0.50	0.68
NEVADA	65	1.01	1.11
ALASKA	14	0.39	0.25
WASHINGTON	421	1.39	1.22
OREGON	223	1.21	1.16
CALIFORNIA	2138	1.18	0.98
HAWAII	48	0.66	0.56

Scuba-diving Magazines

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	993	0.98	0.83
NEW HAMPSHIRE	1125	1.30	0.89
VERMONT	437	0.94	0.66
MASSACHUSETTS	5457	1.08	0.69
RHODE ISLAND	997	1.18	1.03
CONNECTICUT	3545	1.28	0.77
NEW YORK	12257	0.79	0.64
NEW JERSEY	6273	0.95	0.75
PENNSYLVANIA	6655	0.65	0.59
OHIO	6160	0.66	0.67
INDIANA	3385	0.71	0.92
ILLINOIS	8686	0.87	0.83
MICHIGAN	6042	0.76	0.80
WISCONSIN	3008	0.72	0.73
MINNESOTA	2899	0.79	0.66
IOWA	1325	0.53	0.64
MISSOURI	3055	0.70	0.81
NORTH DAKOTA	432	0.73	0.69
SOUTH DAKOTA	287	0.47	0.48
NEBRASKA	649	0.46	0.47
KANSAS	1482	0.70	0.66
DELAWARE	523	0.97	0.79
MARYLAND	3639	0.95	0.75
VIRGINIA	4928	0.99	0.90
WEST VIRGINIA	703	0.42	0.63
NORTH CAROLINA	4114	0.76	1.09
SOUTH CAROLINA	2167	0.74	1.29
GEORGIA	4770	0.92	1.26
FLORIDA	28189	2.85	3.39
KENTUCKY	1574	0.49	0.80
TENNESSEE	2869	0.69	1.15
ALABAMA	2865	0.82	1.54
MISSISSIPPI	1519	0.67	1.52
ARKANSAS	1303	0.64	1.38
LOUISIANA	4666	1.20	1.92
OKLAHOMA	2295	0.80	1.22
TEXAS	16180	1.14	1.40
MONTANA	632	0.88	0.74
IDAHO	613	0.70	0.83
WYOMING	394	0.89	0.77
COLORADO	3700	1.32	1.04
NEW MEXICO	870	0.69	0.71
ARIZONA	2529	0.91	0.89
UTAH	1070	0.75	1.01
NEVADA	1140	1.40	1.53
ALASKA	1215	2.68	1.70
WASHINGTON	4119	1.07	0.94
OREGON	2194	0.94	0.90
CALIFORNIA	28781	1.26	1.04
HAWAII	2501	2.73	2.30

International Gymnast

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	169	1.28	1.08
NEW HAMPSHIRE	130	1.15	0.79
VERMONT	110	1.81	1.28
MASSACHUSETTS	794	1.20	0.77
RHODE ISLAND	185	1.68	1.46
CONNECTICUT	515	1.43	0.86
NEW YORK	2350	1.16	0.94
NEW JERSEY	1256	1.46	1.15
PENNSYLVANIA	1641	1.22	1.11
OHIO	1171	0.96	0.98
INDIANA	702	1.12	1.46
ILLINOIS	1398	1.07	1.03
MICHIGAN	719	0.70	0.73
WISCONSIN	802	1.48	1.48
MINNESOTA	896	1.88	1.56
IOWA	280	0.85	1.04
MISSOURI	491	0.86	1.00
NORTH DAKOTA	128	1.64	1.56
SOUTH DAKOTA	134	1.66	1.71
NEBRASKA	265	1.45	1.48
KANSAS	273	0.98	0.94
DELAWARE	56	0.79	0.65
MARYLAND	731	1.46	1.15
VIRGINIA	729	1.12	1.02
WEST VIRGINIA	105	0.48	0.72
NORTH CAROLINA	350	0.49	0.71
SOUTH CAROLINA	115	0.30	0.52
GEORGIA	349	0.51	0.71
FLORIDA	738	0.57	0.68
KENTUCKY	149	0.35	0.58
TENNESSEE	225	0.42	0.69
ALABAMA	165	0.36	0.68
MISSISSIPPI	89	0.30	0.68
ARKANSAS	152	0.57	1.23
LOUISIANA	289	0.57	0.91
OKLAHOMA	325	0.87	1.32
TEXAS	1238	0.67	0.82
MONTANA	140	1.49	1.25
IDAHO	98	0.86	1.01
WYOMING	41	0.71	0.61
COLORADO	784	2.13	1.69
NEW MEXICO	227	1.38	1.41
ARIZONA	371	1.02	1.00
UTAH	139	0.74	1.01
NEVADA	111	1.04	1.14
ALASKA	124	2.09	1.33
WASHINGTON	641	1.28	1.12
OREGON	670	2.19	2.11
CALIFORNIA	3389	1.13	0.94
HAWAII	158	1.32	1.11

Bowling Magazines

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	425	0.39	0.33
NEW HAMPSHIRE	420	0.45	0.31
VERMONT	581	1.17	0.82
MASSACHUSETTS	2219	0.41	0.26
RHODE ISLAND	533	0.59	0.51
CONNECTICUT	2832	0.96	0.57
NEW YORK	18737	1.13	0.92
NEW JERSEY	6829	0.97	0.77
PENNSYLVANIA	11829	1.07	0.98
OHIO	15621	1.56	1.59
INDIANA	7373	1.44	1.87
ILLINOIS	15497	1.44	1.39
MICHIGAN	15072	1.78	1.86
WISCONSIN	11115	2.50	2.51
MINNESOTA	6149	1.58	1.30
IOWA	4631	1.72	2.10
MISSOURI	5034	1.08	1.25
NORTH DAKOTA	1354	2.12	2.01
SOUTH DAKOTA	1339	2.03	2.08
NEBRASKA	2525	1.69	1.72
KANSAS	3416	1.50	1.43
DELAWARE	800	1.38	1.14
MARYLAND	3462	0.85	0.67
VIRGINIA	3909	0.74	0.67
WEST VIRGINIA	1442	0.80	1.21
NORTH CAROLINA	3156	0.54	0.78
SOUTH CAROLINA	1717	0.55	0.95
GEORGIA	2396	0.43	0.59
FLORIDA	8510	0.80	0.96
KENTUCKY	2421	0.70	1.15
TENNESSEE	2409	0.54	0.91
ALABAMA	1448	0.39	0.73
MISSISSIPPI	682	0.28	0.64
ARKANSAS	1232	0.56	1.22
LOUISIANA	2189	0.52	0.84
OKLAHOMA	2439	0.79	1.21
TEXAS	8833	0.58	0.71
MONTANA	1315	1.71	1.43
IDAHO	1174	1.25	1.48
WYOMING	753	1.59	1.37
COLORADO	3631	1.21	0.96
NEW MEXICO	1033	0.77	0.78
ARIZONA	2667	0.90	0.88
UTAH	1182	0.77	1.04
NEVADA	1016	1.17	1.28
ALASKA	669	1.38	0.87
WASHINGTON	4359	1.06	0.93
OREGON	2619	1.05	1.01
CALIFORNIA	19430	0.79	0.66
HAWAII	1478	1.51	1.27

Cycling Magazines

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	2910	1.08	1.28
NEW HAMPSHIRE	3768	1.34	1.94
VERMONT	1756	1.19	1.68
MASSACHUSETTS	14617	0.83	1.29
RHODE ISLAND	2027	0.93	1.07
CONNECTICUT	8896	0.86	1.44
NEW YORK	30599	0.72	0.88
NEW JERSEY	14794	0.79	1.00
PENNSYLVANIA	20661	0.81	0.89
OHIO	20702	1.01	0.99
INDIANA	10803	1.31	1.01
ILLINOIS	22600	0.97	1.01
MICHIGAN	16119	0.95	0.91
WISCONSIN	12034	1.30	1.29
MINNESOTA	10124	1.03	1.24
IOWA	6609	1.43	1.18
MISSOURI	7147	0.85	0.73
NORTH DAKOTA	1159	0.82	0.87
SOUTH DAKOTA	1313	0.98	0.95
NEBRASKA	2875	0.93	0.92
KANSAS	4982	1.00	1.04
DELAWARE	1284	0.87	1.06
MARYLAND	7730	0.71	0.90
VIRGINIA	10695	0.87	0.96
WEST VIRGINIA	1928	0.77	0.51
NORTH CAROLINA	8550	1.01	0.70
SOUTH CAROLINA	3662	0.97	0.56
GEORGIA	6863	0.81	0.59
FLORIDA	18090	0.97	0.82
KENTUCKY	3685	0.83	0.51
TENNESSEE	5999	1.08	0.65
ALABAMA	3584	0.86	0.46
MISSISSIPPI	1810	0.81	0.36
ARKANSAS	2290	1.08	0.50
LOUISIANA	5048	0.93	0.58
OKLAHOMA	5250	1.24	0.82
TEXAS	23727	0.92	0.74
MONTANA	1862	0.97	1.16
IDAHO	2098	1.26	1.07
WYOMING	1141	0.99	1.15
COLORADO	11689	1.47	1.86
NEW MEXICO	3212	1.17	1.14
ARIZONA	6985	1.10	1.12
UTAH	2994	1.26	0.93
NEVADA	2404	1.44	1.32
ALASKA	1574	0.98	1.55
WASHINGTON	12460	1.27	1.45
OREGON	6921	1.27	1.32
CALIFORNIA	80759	1.30	1.57
HAWAII	2142	0.88	1.04

Running Magazines

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	3312	0.96	1.13
NEW HAMPSHIRE	3351	0.92	1.34
VERMONT	1807	0.95	1.35
MASSACHUSETTS	18024	0.79	1.23
RHODE ISLAND	2464	0.88	1.01
CONNECTICUT	9873	0.74	1.24
NEW YORK	40874	0.74	0.92
NEW JERSEY	18842	0.78	0.99
PENNSYLVANIA	25951	0.79	0.87
OHIO	23347	0.88	0.87
INDIANA	13500	1.27	0.98
ILLINOIS	30370	1.01	1.05
MICHIGAN	22531	1.03	0.99
WISCONSIN	12746	1.07	1.06
MINNESOTA	13130	1.03	1.25
IOWA	8304	1.40	1.15
MISSOURI	10409	0.96	0.82
NORTH DAKOTA	1765	0.97	1.03
SOUTH DAKOTA	1816	1.05	1.02
NEBRASKA	5551	1.40	1.38
KANSAS	8473	1.32	1.38
DELAWARE	1596	0.84	1.02
MARYLAND	10187	0.73	0.92
VIRGINIA	15875	1.00	1.11
WEST VIRGINIA	2890	0.90	0.59
NORTH CAROLINA	14257	1.31	0.91
SOUTH CAROLINA	5245	1.08	0.62
GEORGIA	11629	1.07	0.77
FLORIDA	23021	0.96	0.81
KENTUCKY	5452	0.96	0.58
TENNESSEE	7701	1.07	0.64
ALABAMA	6191	1.15	0.61
MISSISSIPPI	4199	1.45	0.64
ARKANSAS	3322	1.22	0.56
LOUISIANA	7601	1.08	0.68
OKLAHOMA	6616	1.21	0.80
TEXAS	33897	1.01	0.82
MONTANA	2827	1.14	1.36
IDAHO	2703	1.26	1.07
WYOMING	1787	1.21	1.40
COLORADO	15451	1.51	1.90
NEW MEXICO	3924	1.11	1.08
ARIZONA	8830	1.08	1.10
UTAH	4108	1.35	0.99
NEVADA	2621	1.22	1.12
ALASKA	2592	1.26	1.98
WASHINGTON	16462	1.30	1.49
OREGON	9624	1.37	1.43
CALIFORNIA	83249	1.04	1.26
HAWAII	6610	2.11	2.50

Muscle and Fitness

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	1137	0.65	0.55
NEW HAMPSHIRE	1320	0.88	0.61
VERMONT	634	0.79	0.56
MASSACHUSETTS	7235	0.83	0.53
RHODE ISLAND	1268	0.87	0.76
CONNECTICUT	4541	0.96	0.57
NEW YORK	25200	0.95	0.77
NEW JERSEY	13249	1.17	0.93
PENNSYLVANIA	14915	0.84	0.77
OHIO	14716	0.91	0.93
INDIANA	5857	0.71	0.92
ILLINOIS	14391	0.83	0.80
MICHIGAN	11046	0.81	0.85
WISCONSIN	5519	0.77	0.77
MINNESOTA	4748	0.76	0.63
IOWA	3290	0.76	0.93
MISSOURI	4974	0.66	0.77
NORTH DAKOTA	856	0.83	0.79
SOUTH DAKOTA	751	0.71	0.73
NEBRASKA	1814	0.75	0.77
KANSAS	5392	1.47	1.40
DELAWARE	798	0.86	0.70
MARYLAND	6135	0.93	0.73
VIRGINIA	9413	1.10	1.00
WEST VIRGINIA	1678	0.58	0.87
NORTH CAROLINA	8220	0.88	1.26
SOUTH CAROLINA	4362	0.87	1.50
GEORGIA	9525	1.06	1.47
FLORIDA	18769	1.10	1.31
KENTUCKY	3817	0.68	1.12
TENNESSEE	5992	0.84	1.40
ALABAMA	3665	0.61	1.15
MISSISSIPPI	2050	0.52	1.19
ARKANSAS	1964	0.56	1.21
LOUISIANA	7787	1.16	1.86
OKLAHOMA	4735	0.96	1.46
TEXAS	29568	1.21	1.48
MONTANA	1033	0.84	0.70
IDAHO	1299	0.86	1.02
WYOMING	1139	1.49	1.29
COLORADO	9805	2.03	1.61
NEW MEXICO	3444	1.59	1.63
ARIZONA	7520	1.58	1.54
UTAH	2897	1.18	1.59
NEVADA	2057	1.47	1.61
ALASKA	1909	2.45	1.55
WASHINGTON	6570	1.00	0.87
OREGON	3643	0.91	0.87
CALIFORNIA	48885	1.24	1.03
HAWAII	4242	2.69	2.27

Shooting Times

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	1160	1.17	0.99
NEW HAMPSHIRE	986	1.16	0.80
VERMONT	662	1.46	1.03
MASSACHUSETTS	2692	0.54	0.35
RHODE ISLAND	348	0.42	0.37
CONNECTICUT	2009	0.75	0.45
NEW YORK	11445	0.76	0.62
NEW JERSEY	3482	0.54	0.43
PENNSYLVANIA	11756	1.17	1.06
OHIO	7517	0.82	0.84
INDIANA	3979	0.85	1.10
ILLINOIS	7498	0.77	0.74
MICHIGAN	7127	0.92	0.96
WISCONSIN	4040	1.00	1.00
MINNESOTA	3273	0.92	0.76
IOWA	2347	0.96	1.17
MISSOURI	4984	1.17	1.35
NORTH DAKOTA	856	1.47	1.39
SOUTH DAKOTA	822	1.37	1.40
NEBRASKA	1440	1.06	1.07
KANSAS	3057	1.47	1.40
DELAWARE	405	0.77	0.63
MARYLAND	2790	0.75	0.59
VIRGINIA	5310	1.10	0.99
WEST VIRGINIA	1744	1.06	1.60
NORTH CAROLINA	3560	0.67	0.97
SOUTH CAROLINA	1545	0.54	0.94
GEORGIA	3952	0.78	1.07
FLORIDA	7200	0.75	0.89
KENTUCKY	2834	0.90	1.47
TENNESSEE	3368	0.83	1.39
ALABAMA	2119	0.62	1.17
MISSISSIPPI	1605	0.72	1.64
ARKANSAS	1590	0.79	1.73
LOUISIANA	3571	0.94	1.51
OKLAHOMA	4024	1.44	2.18
TEXAS	18438	1.33	1.63
MONTANA	1820	2.59	2.17
IDAHO	1743	2.04	2.40
WYOMING	1427	3.30	2.85
COLORADO	4456	1.62	1.29
NEW MEXICO	1722	1.40	1.43
ARIZONA	3927	1.45	1.42
UTAH	2082	1.49	2.02
NEVADA	1353	1.70	1.86
ALASKA	2380	5.38	3.41
WASHINGTON	5732	1.53	1.34
OREGON	3463	1.52	1.46
CALIFORNIA	25727	1.15	0.95
HAWAII	989	1.10	0.93

Horseman

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	830	1.09	0.92
NEW HAMPSHIRE	636	0.97	0.67
VERMONT	496	1.41	1.00
MASSACHUSETTS	1630	0.43	0.27
RHODE ISLAND	298	0.47	0.41
CONNECTICUT	1059	0.51	0.31
NEW YORK	5224	0.45	0.36
NEW JERSEY	2026	0.41	0.32
PENNSYLVANIA	5048	0.65	0.59
OHIO	5380	0.76	0.78
INDIANA	3706	1.03	1.33
ILLINOIS	4907	0.65	0.63
MICHIGAN	4827	0.81	0.85
WISCONSIN	3597	1.15	1.15
MINNESOTA	4052	1.47	1.22
IOWA	3295	1.74	2.12
MISSOURI	4337	1.32	1.52
NORTH DAKOTA	1194	2.66	2.52
SOUTH DAKOTA	1308	2.82	2.89
NEBRASKA	2198	2.09	2.12
KANSAS	3507	2.18	2.09
DELAWARE	225	0.55	0.45
MARYLAND	1547	0.54	0.42
VIRGINIA	2984	0.80	0.72
WEST VIRGINIA	1287	1.01	1.53
NORTH CAROLINA	3533	0.86	1.24
SOUTH CAROLINA	1562	0.71	1.23
GEORGIA	3222	0.82	1.13
FLORIDA	5569	0.75	0.89
KENTUCKY	2116	0.87	1.42
TENNESSEE	3014	0.97	1.61
ALABAMA	2190	0.83	1.57
MISSISSIPPI	1475	0.86	1.96
ARKANSAS	2075	1.34	2.92
LOUISIANA	2854	0.97	1.56
OKLAHOMA	4389	2.03	3.09
TEXAS	16263	1.52	1.86
MONTANA	2218	4.10	3.43
IDAHO	2020	3.07	3.61
WYOMING	1407	4.22	3.64
COLORADO	3788	1.79	1.42
NEW MEXICO	2212	2.33	2.39
ARIZONA	2906	1.39	1.36
UTAH	1485	1.38	1.86
NEVADA	1124	1.83	2.01
ALASKA	650	1.90	1.21
WASHINGTON	4600	1.59	1.40
OREGON	3555	2.02	1.94
CALIFORNIA	15931	0.92	0.76
HAWAII	590	0.85	0.72

Skydiving

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	27	0.90	0.76
NEW HAMPSHIRE	21	0.81	0.56
VERMONT	24	1.73	1.22
MASSACHUSETTS	17	0.11	0.07
RHODE ISLAND	10	0.40	0.35
CONNECTICUT	123	1.50	0.90
NEW YORK	304	0.66	0.54
NEW JERSEY	202	1.03	0.82
PENNSYLVANIA	267	0.87	0.79
OHIO	137	0.49	0.50
INDIANA	103	0.72	0.94
ILLINOIS	185	0.62	0.60
MICHIGAN	133	0.57	0.59
WISCONSIN	99	0.80	0.80
MINNESOTA	55	0.51	0.42
IOWA	86	1.15	1.40
MISSOURI	62	0.48	0.55
NORTH DAKOTA	14	0.79	0.75
SOUTH DAKOTA	24	1.31	1.34
NEBRASKA	24	0.58	0.59
KANSAS	62	0.98	0.93
DELAWARE	14	0.87	0.71
MARYLAND	96	0.84	0.66
VIRGINIA	106	0.72	0.65
WEST VIRGINIA	24	0.48	0.72
NORTH CAROLINA	246	1.52	2.19
SOUTH CAROLINA	96	1.11	1.91
GEORGIA	198	1.28	1.76
FLORIDA	510	1.73	2.06
KENTUCKY	31	0.32	0.53
TENNESSEE	106	0.86	1.43
ALABAMA	147	1.41	2.66
MISSISSIPPI	17	0.25	0.57
ARKANSAS	48	0.79	1.71
LOUISIANA	48	0.41	0.66
OKLAHOMA	96	1.12	1.71
TEXAS	571	1.35	1.66
MONTANA	44	2.06	1.72
IDAHO	17	0.65	0.77
WYOMING	44	3.34	2.88
COLORADO	236	2.82	2.23
NEW MEXICO	65	1.73	1.78
ARIZONA	116	1.41	1.38
UTAH	58	1.36	1.84
NEVADA	44	1.82	1.99
ALASKA	51	3.78	2.40
WASHINGTON	222	1.94	1.70
OREGON	62	0.89	0.86
CALIFORNIA	859	1.26	1.04
HAWAII	21	0.77	0.65

Golf World

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	221	0.62	0.52
NEW HAMPSHIRE	258	0.85	0.58
VERMONT	132	0.81	0.57
MASSACHUSETTS	1712	0.96	0.62
RHODE ISLAND	281	0.95	0.82
CONNECTICUT	1313	1.36	0.81
NEW YORK	4016	0.74	0.60
NEW JERSEY	1777	0.77	0.61
PENNSYLVANIA	3219	0.89	0.81
OHIO	4377	1.34	1.36
INDIANA	2885	1.72	2.23
ILLINOIS	3377	0.96	0.92
MICHIGAN	5109	1.84	1.92
WISCONSIN	1190	0.82	0.82
MINNESOTA	1261	0.99	0.82
IOWA	790	0.90	1.09
MISSOURI	1010	0.66	0.76
NORTH DAKOTA	164	0.78	0.74
SOUTH DAKOTA	136	0.63	0.65
NEBRASKA	398	0.81	0.83
KANSAS	693	0.93	0.89
DELAWARE	347	1.83	1.50
MARYLAND	1010	0.75	0.59
VIRGINIA	1497	0.86	0.78
WEST VIRGINIA	391	0.66	1.00
NORTH CAROLINA	2140	1.12	1.62
SOUTH CAROLINA	970	0.95	1.64
GEORGIA	2780	1.53	2.10
FLORIDA	4653	1.34	1.59
KENTUCKY	689	0.61	1.00
TENNESSEE	1989	1.37	2.28
ALABAMA	2710	2.21	4.16
MISSISSIPPI	1641	2.06	4.68
ARKANSAS	658	0.91	1.99
LOUISIANA	1064	0.78	1.25
OKLAHOMA	872	0.87	1.32
TEXAS	4026	0.81	0.99
MONTANA	170	0.67	0.57
IDAHO	171	0.56	0.66
WYOMING	102	0.66	0.57
COLORADO	812	0.82	0.65
NEW MEXICO	276	0.62	0.64
ARIZONA	1099	1.13	1.11
UTAH	229	0.46	0.62
NEVADA	274	0.96	1.05
ALASKA	46	0.29	0.18
WASHINGTON	905	0.67	0.59
OREGON	513	0.63	0.60
CALIFORNIA	6054	0.75	0.62
HAWAII	312	0.97	0.82

Golf

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	2741	0.74	0.63
NEW HAMPSHIRE	3100	0.98	0.68
VERMONT	1537	0.91	0.64
MASSACHUSETTS	20148	1.09	0.70
RHODE ISLAND	3558	1.16	1.00
CONNECTICUT	13392	1.33	0.80
NEW YORK	47526	0.84	0.68
NEW JERSEY	23606	0.98	0.78
PENNSYLVANIA	37753	1.00	0.91
OHIO	41740	1.22	1.25
INDIANA	18466	1.06	1.37
ILLINOIS	41583	1.14	1.09
MICHIGAN	36815	1.28	1.33
WISCONSIN	15755	1.04	1.04
MINNESOTA	15059	1.13	0.94
IOWA	9635	1.05	1.28
MISSOURI	12279	0.77	0.89
NORTH DAKOTA	1818	0.84	0.79
SOUTH DAKOTA	1698	0.76	0.78
NEBRASKA	5236	1.03	1.05
KANSAS	8880	1.14	1.09
DELAWARE	2089	1.06	0.87
MARYLAND	12092	0.87	0.68
VIRGINIA	18299	1.01	0.91
WEST VIRGINIA	4255	0.69	1.05
NORTH CAROLINA	19867	1.00	1.44
SOUTH CAROLINA	9823	0.92	1.60
GEORGIA	16052	0.85	1.17
FLORIDA	47637	1.32	1.57
KENTUCKY	7976	0.67	1.11
TENNESSEE	11107	0.74	1.23
ALABAMA	7911	0.62	1.17
MISSISSIPPI	4090	0.49	1.12
ARKANSAS	4286	0.57	1.24
LOUISIANA	8194	0.58	0.92
OKLAHOMA	10034	0.96	1.46
TEXAS	44983	0.87	1.07
MONTANA	2434	0.93	0.78
IDAHO	2760	0.87	1.02
WYOMING	1603	0.99	0.86
COLORADO	11775	1.15	0.91
NEW MEXICO	3128	0.68	0.70
ARIZONA	12486	1.23	1.21
UTAH	5070	0.97	1.31
NEVADA	4026	1.36	1.48
ALASKA	778	0.47	0.30
WASHINGTON	14081	1.01	0.88
OREGON	8527	1.00	0.96
CALIFORNIA	90229	1.08	0.89
HAWAII	7856	2.35	1.98

Golf Digest

NAME	TOTCIRC	LASTIND	TOTIND
MAINE	4104	0.81	0.68
NEW HAMPSHIRE	4688	1.08	0.74
VERMONT	2458	1.06	0.75
MASSACHUSETTS	27324	1.08	0.69
RHODE ISLAND	4471	1.06	0.92
CONNECTICUT	18625	1.35	0.81
NEW YORK	61170	0.79	0.64
NEW JERSEY	31990	0.97	0.77
PENNSYLVANIA	51969	1.01	0.92
OHIO	59577	1.27	1.30
INDIANA	26274	1.10	1.42
ILLINOIS	56613	1.13	1.09
MICHIGAN	46666	1.18	1.23
WISCONSIN	23351	1.12	1.13
MINNESOTA	19711	1.08	0.89
IOWA	14615	1.16	1.42
MISSOURI	17911	0.82	0.95
NORTH DAKOTA	2817	0.94	0.89
SOUTH DAKOTA	2641	0.86	0.88
NEBRASKA	7521	1.08	1.09
KANSAS	13869	1.30	1.24
DELAWARE	2867	1.06	0.87
MARYLAND	14367	0.75	0.59
VIRGINIA	25141	1.01	0.91
WEST VIRGINIA	6081	0.72	1.09
NORTH CAROLINA	30283	1.11	1.60
SOUTH CAROLINA	14290	0.98	1.69
GEORGIA	22348	0.86	1.18
FLORIDA	57472	1.16	1.38
KENTUCKY	12612	0.78	1.28
TENNESSEE	17209	0.83	1.38
ALABAMA	11893	0.68	1.28
MISSISSIPPI	6103	0.54	1.22
ARKANSAS	6693	0.65	1.42
LOUISIANA	11930	0.61	0.98
OKLAHOMA	14251	0.99	1.51
TEXAS	62049	0.87	1.07
MONTANA	3801	1.06	0.89
IDAHO	4144	0.95	1.11
WYOMING	2232	1.01	0.87
COLORADO	16406	1.17	0.92
NEW MEXICO	5069	0.80	0.82
ARIZONA	16679	1.20	1.18
UTAH	5508	0.77	1.04
NEVADA	4507	1.11	1.21
ALASKA	900	0.40	0.25
WASHINGTON	21074	1.10	0.96
OREGON	12238	1.05	1.01
CALIFORNIA	123894	1.08	0.89
HAWAII	7850	1.71	1.44

TOTCIRC = Circulation
LASTIND = Unweighted Index
TOTIND = Weighted Index

VITA

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