

THE HOME ADVANTAGE REVISITED: WINNING AND CROWD SUPPORT IN AN ERA OF
NATIONAL PUBLICS

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ABSTRACT

The home team consistently wins over 50% of sporting contests. The sociological appeal of this fact is the assumption that the home advantage is, in part, due to the social support that fans provide the home team. The mechanism of this support is decidedly Durkheimian with the collective inspiring the team to a performance beyond normal achievements. Recent changes in professional sports, however, suggest that the home crowd support may not be as strong as once expected as the structural conditions thought to increase the home advantage have shifted. The increasing distancing of players from fans -- a result of free agency and rapid salary escalation -- coupled with a marketing strategy designed to create national publics (Leifer, 1995a,b) lead us to expect a decline in the home advantage. We do find that levels of the home advantage have decreased in the last twenty years. Moreover, we show that a marked increase in daily game attendance is detrimental to the home team's chances of winning. Our results suggest that teams can still garner support from the home crowd, but professional sports are less likely to be representations for local communities than in the past. Overall, the social bases of the home advantage have been eroded by economic forces and league marketing decisions.

Keywords: home advantage; social support; professional sports; national publics.

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Home teams routinely win over half of sporting contests with the advantage ranging from around 53% in baseball and football to over 65% in basketball and hockey (c.f., Courneya & Carron, 1992). Over twenty years ago Schwartz and Barsky (1977) established that this home advantage was rooted in the social support partisan fans give the home team. Their analyses suggested that it is a greater offensive performance by the home team, rather than a poorer defensive showing by the visitors, that results from the supportive home audience. Moreover, they found that playing on a team's home court was as important a determinant of game outcome as was the quality of the teams in the contest.

Since Schwartz and Barsky's seminal study, the scope of home advantage research has increased. Professional soccer (Pollard, 1986; Nevill, Newell, & Gale, 1996), cricket (Pollard, 1986) and collegiate baseball (Courneya, 1990) have been added to the list of team sports showing a home advantage. A home advantage is also found in some women's sports (Gayton, Mutrie, & Hearn, 1987). College basketball in particular has been extensively studied, in part because some of the largest home advantages are seen for this sport (Varca, 1980; Snyder & Purdy, 1985; Silva & Andrew, 1987). In general, the home advantage is greater in college athletics than for professional sports (Courneya, 1990). A greater winning percentage for the home team can also be found in high school sports (Gayton & Coombs, 1995) and in individual sports (Gayton & Langevin, 1992; McAndrew, 1993) at the scholastic level.

The historical development of the home advantage literature has portrayed the phenomenon as static: Early studies simply established the existence of a home advantage while later ones sought to identify the various factors that lead to a greater chance of victory for the

home team. Little attention has been paid to the possibility that levels of the home advantage may change over time as the underlying causes producing it rise and/or fall. But this is especially likely for the factors underlying sociological explanations of the home advantage in professional sports. The social support of the fans can ebb and flow, franchise shifts can break the traditional bonds between team and city, and league marketing strategies can focus more on individuals than teams.

Such changes can all chip away at a key component of sociological explanations for the home advantage -- the local public. Leifer (1995a) chronicles how developing leagues needed to cultivate local fans who would provide support for the home team regardless of that team's performance. This led to the creation of local publics, groups whose influence can produce a "partisan effect" (Leifer, 1995b, p. 83) that levels any existing performance differences between the competing teams. In this respect, the home advantage is the realization of support provided by the partisan local public.

In the present paper we contend that professional sports have indeed entered an era of reduced support from local fans. Various explanations for the home advantage are reviewed with an emphasis on the social aspects of game location. We then argue that structural changes, coupled with leagues' attempts to court national publics (Leifer, 1995a), have altered the basic relationship between the crowd and the home advantage in two fundamental ways. First, there should be a general decline in the home advantage as sporting events are now less likely to be celebrations of the local community. Data from multiple seasons in hockey and basketball support this claim. Second, jumps in attendance should be evidence of more fans supporting the visiting team and atypically large crowds should therefore be detrimental to the home team's chances of winning. We model the probability that the home team

wins using individual games from two seasons for baseball, basketball and hockey and our results show that crowd effects on the home advantage do not have the linear impact expected by sociological explanations for the home advantage.

EXPLANATIONS FOR THE HOME ADVANTAGE: SOCIOLOGICAL APPROACHES

Sociological accounts of the home advantage center on Durkheimian (1965) notions of solidarity and ritual, Goffman's writings on presentation of self and interaction ritual, or a synthesis of the two (Birrell, 1981). Schwartz and Barsky's (1977) original article focused on the social context of spectators rooting for the home team. They drew upon Durkheim's claims about the effect of social congregation as illustrated by this passage:

"There are occasions when the strengthening and vivifying action of society is especially apparent. In the midst of an assembly animated by a common passion, we become susceptible of acts and sentiments of which we are incapable when reduced to our own forces; and when the assembly is dissolved, and when, finding ourselves alone again, we are then able to measure the height to which we have been raised above ourselves" (1965:240).

Schwartz and Barsky contend that the social support of the home team is "a celebration of the local community in presence of the representatives of alien communities" (1977, p. 658). Moreover, this support from the home town fans stimulates the athletes to performances beyond what they might normally accomplish. Snyder and Purdy (1985) similarly interpret their finding of a home advantage. Durkheim's concept of the common bond of solidarity has been also used to explain why home teams in domed stadia win more games than those in open air facilities (Zeller & Jurkovic, 1988). Presumably the louder noise generated in enclosed buildings allows for a greater demonstration of solidarity.

Mizruchi (1985) extended the basic social support explanation arguing that there should be variation across cities in the extent to which they identified with the home team. That is, the social context of fan support should differ depending upon characteristics such as team tradition, the provincialism of the city and the uniqueness of the arena. A multiple regression confirmed these expectations, leading to the oft-cited conclusion that "the most difficult competitor for a visiting team, then, is a team with a *strong tradition*; playing in a city with intense *local identification and pride*; and located in a distinctive *central city arena*" (1985, p. 517).

One line of reasoning postulates that athletes mediate between the individuals of the audience and the moral order of the community (Birrell, 1981). Through the routine ritualistic behavior displayed on the field, athletes act as role models demonstrating social values held in high esteem by the community. In this sense, sports teams not only convey meaning through symbolic representations, they come to represent the community itself.¹ In any given contest, the crowd supports the home team as it represents the values of the host community.

Durkheim's (1965) discussions of the collective influence of rituals and ceremonies has also provided some insights into the home advantage. Ward (1998) has made the best use of these, arguing that the ritual inherent in opening day baseball games should lead the crowd to provide even more support than normal. The desire of the home town players to manage the first impression of their fans should also increase the chances of a victory. Ward found that home teams were more likely to win on opening day than during the regular season or championship games, especially when playing in front of a full crowd. Riordan (1987) shows how the ritual in sport can be functional at a national level as well, providing further identification between spectators and the host country.

One underdeveloped aspect of the Durkheimian underpinning for the home advantage is the nature of the crowd/congregation itself. Just as the performers may feed off the support of the crowd, the congregation is thought to reaffirm the beliefs of its members. Durkheim wrote:

“To strengthen those sentiments which, if left to themselves, would soon weaken, it is sufficient to bring those who hold them into closer and more active relations with one another”
(1965:240-241).

A unified crowd not thus only supports those viewed by it, but the mere fact of congregating in a unified fashion furthers the social bonds that exist between spectators. At one time, such bonds reflected concepts such as ‘community’ and ‘local publics.’ As we will argue shortly, there are reasons to believe that collectives at sporting events are less unified than they once were. Moreover, there are ample reasons to expect that the link between the home team and the community has been eroded in recent years.

OTHER EXPLANATIONS

Not surprisingly, other explanations for the home advantage vary by discipline. Yet these explanations provide crucial connections between the sociological processes just reviewed and the action on the field of play. Psychologists tend to focus on individual performances as the underlying factor. Irving and Goldstein (1990), for example, see the home advantage as a territorial effect with the home territory allowing for superior performances. Adams and Kupper (1994) argue that the home advantage is inversely related to performance as greater home winning percentages represent the inability to transfer expertise (i.e., athletic performance) to other environments. Familiarity with the arena per se, however, does not appear to be a factor in the home advantage (Moore & Brylinsky, 1995).

A basic prediction from Zajonc's (1965) theory of social facilitation is that an audience can increase arousal and facilitate performance on well-learned tasks (e.g., throwing, shooting) while hindering performance on those tasks that are not well-learned. Some evidence supports this kind of spectator effect. Paulus et al. (1972) demonstrated that the presence of spectators lowered the performance of gymnasts. Paulus and Cornelius (1974) found that being highly skilled and knowing that one was going to perform in front of an audience lowered performance more than for those less skilled. Wankel (1984) reviews these kinds of psychological models of spectator effects. In team sports, the total lack of spectators appears to raise the performances of both the home and visiting teams (Moore & Brylinsky, 1993). Conversely, supportive audiences may actually lead to poorer overall performances under some circumstances (c.f., Butler & Baumeister, 1998; Lewis & Linder, 1997).

Social psychological explanations for the home advantage point to the social influence of the crowd upon the participants, including game officials. Greer (1983) found that booing by spectators led to better overall performance of the home basketball teams and an even bigger drop in composite performance of the visiting teams. He also found a marked increase in fouls for visitors and a drop in fouls for the home team after episodes of booing. Greer concluded that it was the visiting team's performance, rather than the judgements of referees that were influenced by spectator outbursts. Thirer and Rampey (1979) reached the opposite conclusion, offering some evidence that the home team's performance deteriorated during episodes of antisocial crowd behavior. Salminen's (1993) analysis of televised matches in Finland found that home team performed better, even when the live audience supported the visiting team.

Also consistent with social psychological explanations is some evidence that referees react to the home fans. Lehman and Reifman (1987) found that the foul calls against star NBA players differed by home and away game location and argue this indicates that officials react to the pressure of the home crowd. Nevill et al. (1996) demonstrated a linear relationship between crowd size and aggressive behavior in soccer as measured by penalties to the visiting team.² They note that this is consistent with the explanation that "larger crowds are able to influence the referee into believing that away players have committed more fouls" (1996, p.185). Crowd noise also appears to influence observers' tendencies to award fouls to the away team (Nevill, Balmer, & Williams, 1999).

Some authors argue that the home advantage is the result of a feedback loop between the fans and the players' performances on the field (Edwards, 1979). McGuire et al. (1992) found an interaction between game outcome and location in their study of professional hockey. Home teams were more aggressive, as measured by different types of penalties, in games they won whereas the visiting teams were more aggressive in games they lost. McGuire et al. suggest that the physical play of the home team gets the home crowd more involved which in turn leads to greater effort and performance by the home team.

Fans are able to exert such influences via noise, either in general support of the team (e.g., applause and cheering) or in more antisocial behavior (e.g., booing or razzing) designed to influence visiting players or the officials. The simple volume of noise made by the crowd is also thought to be influential through disrupting on-field communication between players and perhaps inducing errors (Horn, 1988). Thus professional baseball teams playing in domed stadia have an advantage over team using open-air fields (Zeller & Jurkovic, 1988) as noise levels are higher in domes. By extension, the enclosed venues

used by basketball and hockey likely contribute to the higher home advantages seen in those sports. As Edward and Archambault (1989) note, the 'intimacy' between fans and players is one way of accounting for the differences in home advantage levels between sports.

ATTENDANCE EFFECTS ON THE HOME ADVANTAGE

The "crowd" has been conceptualized as one of the main game location factors responsible for the home advantage (Courneya & Carron, 1992).³ Crowd factors are "intended to reflect the social support and positive reinforcement that home teams receive from their partisan crowds" (1992, p. 15). Whether it is the size of the crowd, the density of the fans in the seats, the proximity of spectators to the playing surface or some other crowd-related factor that conveys this support and reinforcement is the subject of some debate. (See Nevill & Holder, 1999, for a review of this debate.)

From the psychological perspective, absolute crowd size does not appear to be that important (Wankel, 1984). The increased arousal produced by additional spectators does not seem to translate to a change in performance. More important would appear to be the *density* of the crowd as measured by the number of spectators divided by the capacity of the venue. Empty seats convey a message of disinterest to the participants (Wankel, 1984) independent of the number of seats available. People also tend to misestimate absolute levels of crowd size depending upon factors such as training and the configuration of the stands (Kemp, 1984). Consequently, the proportion of the venue that is filled should have a greater psychological impact on players than should the absolute number of spectators in attendance.

Others argue that it is absolute crowd size that is related to the home advantage. Nevill et al. (1996) found that the percentage of home wins was much greater in soccer leagues with relatively large crowds. No home advantage was seen in leagues where crowd sizes were small.

Crowd size per se, however, does not seem to be related to the magnitude of the home advantage across sports as advantages are higher in sports using venues with smaller capacities (Edwards, 1979; Edwards & Archambault, 1989). Edwards also contends that it is crowd density, not size, that is the more important factor for the home advantage. Schwartz and Barsky's (1977) trichotomy of crowd densities confirms this. They conclude that "increments in attendance can directly enhance the home team's performance and chances of winning" (1977, p. 655).

One study explicitly tested the effect of crowd density versus absolute size on the home advantage. Agnew and Carron (1994), using archival data from two seasons of minor league hockey, regressed points won (two for a win, one for a tie, zero for a loss) on crowd size, density, opponent's division and a dummy variable for first half of the season. All two-way interactions between independent variables were also tested. No interactions proved significant and only the crowd density variable was related to the points won. As the density of the crowd increased, the home advantage rose as well. However, like other regression analyses of the home advantage (Courneya & Carron, 1991; Pace & Carron, 1992; Smith, Ciacchiarelli, Serzan & Lambert, 2000) only a small proportion of variance (1.1%) was accounted for by the variables in the model.⁴

It is the crowd which is the key link to sociological explanations of the home advantage. Fans make their support (or lack thereof) evident to the home team through their vocal behavior, thus influencing play via social psychological and psychological processes. Like the players, the fans engage in the routine ritual of sporting events and the added ritual of opening days and post-season competitions. Spectators are the target of the impression management behavior on the part of the players. Empirically, these processes are represented by

the variables of crowd size and density and the finding of a positive relationship between crowd density and the home team winning.

THE CHANGING CONTEXT OF CROWD SUPPORT

Partisan fans support the home team which in turn leads to greater performances by the home team (Schwartz & Barsky, 1977). The geneses of this support are the home team's representation of the local community (Mizruchi, 1885) and the ritual inherent in sporting events (Birrell, 1981; Ward, 1998). This is the crux of sociological accounts of the home advantage. But there are reasons to believe that these explanations may not be as straightforward as they once were.

Players are rapidly distancing themselves from their fan base. In earlier times players were literally part of the community, cementing the relationship between fan and athlete that was started on the playing field. Koppett (1973) wrote:

"To a great extent the prominent players did become part of the community they played in. They settled in the residential neighborhoods that surrounded the ball parks built in the early years of the century; they frequented local restaurants, shops (yes, bars, too); they mingled with the fans entering and leaving the park" (p. 393).

Much has happened to weaken those types of bonds between players and fans. The 'community' implied by the quote has likely become fragmented and supplemented by different forms of social organization serving the functions of community (cf., Wellman, 1979). Players now probably do not reside in the team's home city during the off season. Free agency has led to much greater player movement (and less fan attachment to individual players) so that athletes often rent a residence for 'home games' during the season.

Today's players are certainly much less like fans economically. Salaries in the four major professional sports have climbed markedly in

the 1990's, continuing a salary escalation that started in the 1980's (Coakley, 1998, p. 356). Now star players can make more in a game than the average fan makes in a year. This further differentiates players from most spectators. Fans have also been alienated by a series of strikes in baseball and the other major team sports. As the cost of attending sporting events escalates to maintain profits and meet increasing salaries for players, the prototypical family of four is unlikely to be sitting in the expensive club seats or luxury boxes. All of these factors should lead to a weakening of support from the home crowd.⁵

Moreover, such changes are likely to impact on the effect the congregation has upon *itself*: If fans are less likely to identify with players and less like to see the teams as a representation of the local community, the bonds among the spectators themselves are weakened. Sporting events then do not celebrate the local community as much as in the past.

In some respects though, nothing has changed. Over 25 years ago Koppett (1973) offered the now usual laments that baseball in particular was becoming more like entertainment than a sporting event; that the games were more likely to be attended by a man and "his client" than a father and his family; that the players were now middle-class and living away from the community surrounding the park. These protestations have been raised in some form after every players strike, every owner-imposed work stoppage, and after each record setting contract given to the highest paid player.

If nothing has changed then we should expect to see a constant home advantage over time. This is indeed what Courneya and Carron (1992) found in their review of the home advantage literature. One of their four main conclusions is that "the magnitude of the home advantage within each sport is consistent and has remained relatively stable over

time" (p. 23). However this conclusion, while accurate when made, may no longer hold. The vast majority of home advantage studies of the four major professional team sports in North America used data from prior to the mid 80's and many of the factors that might reduce the partisan nature of fans have occurred since then.

Still, rising costs, franchise relocations, "sport as business" and so forth are not new. If these haven't yet reduced fan support for the home team, and more importantly the ability of partisan fans to influence the outcome of the contest, then why should they now? The answer, we believe, lies in the added impact of major marketing shifts on the part of professional sports leagues, shifts that have created a threshold effect that cuts into the composition of the once-partisan crowd. In the past, leagues relied on local publics as fans supported the home team win or lose. It was in a league's interest to have the strongest (i.e., winningest) teams in large markets as this guaranteed the greatest economic return for the league as a whole (Leifer, 1995a,b). Leagues now market their games nationally as this ensures the greatest broadcast revenues. But this also creates national publics who support teams from different locales. (Euchner, 1993, calls this the "delocalization of fans.") These publics search for winning teams to support (and watch on broadcast games), jettisoning their support for teams that do not continue to win. Leifer (1995a,b) marshals considerable evidence that publics influence the context and outcomes of sports competitions.

And this influence may counteract the partisan support of local fans. "Once a home crowd can expect an away team to win, and admire its prowess in doing so, the home crowd ceases to be part of the strength of the home team" (Leifer, 1995a, p. 247). While perhaps stated a bit too strongly, the implication is clear: When national publics emerge, the partisan support of the home crowd is diluted, both from the

expectations of the home town fans and from *the support of fans who are there to root for the visiting team.*

The rise of national publics means that 'home' teams may no longer be seen as representations of the local community in the eyes of many of the fans in the arena or stadium. The social support (e.g., cheering, booing) may be spread more equally between the two teams in the competition. Empirically, the impact of national publics should be evident in two respects. First, there should be a decline in the general level of the home advantage as national publics are courted by the professional leagues. That is, across *seasons* we should observe a drop in the percentage of games won by the home team.

Second, the effect of national publics should also be seen on a game-by-game basis. In general, the attendance effects literature leads to the hypothesis of a linear relationship between crowd density and the home team winning. More home town fans provide greater social support for the team. A marked change in crowd density, however, suggests the opposite effect. A large jump in attendance over a team's average audience is indicative of the presence of a national public -- a sizeable proportion of fans drawn by the lure of the visiting team. If so, the home team should be less likely to win games where the crowd is noticeably above average in size.⁶

Note the advantage that accrues to teams who are able to sell out all or most of their stadium/arena with season tickets or multi-game ticket packages. The lack of available seats on a per-game basis provides some insulation against national publics as the possibility for large numbers of fans coming to root for the opposing team does not exist. Of course season ticket sales are confounded with both market size -- teams in larger markets are more likely to sell out their games -- and team quality with good teams drawing better than poor ones. But

those are precisely the kinds of teams for which social support is expected to be the highest (Mizruchi, 1985).

THE SPECIAL CASE OF INTERLEAGUE PLAY IN BASEBALL

Interleague play in Major League Baseball was created in part to boost attendance and to give fans some games between regional rivals from different leagues, all as some compensation for the 1994 strike. From a marketing perspective this worked as the attendance at interleague games was 67.7 percent of stadia capacities as opposed to the 56.7 percent of 'regular' games (current data). What interleague play means for the home advantage is less clear.

Certainly the first interleague games were accompanied by more fanfare than usual so that Ward's (1998) linking of ritual to the home advantage might be relevant -- the home team may be significantly more likely to win interleague games for this reason. Similarly, at least for some games the geographic rivalries exploited by the interleague schedule might increase the "local identification" that Mizruchi (1985) found important for the home advantage. This again makes the home team likely to be victorious but only up to a point as some interleague games are between teams from the same city.

Alternatively an increase in the home advantage for interleague games could be expected from learning factors (Courneya & Carron, 1992) as the home team is more familiar with the particulars of the field. It has often been noted that baseball diamonds are the least standardized playing fields in sports and there has been speculation that familiarity with the playing surface may convey an edge to the home team. While evidence for this is slight at best, the beginning of interleague play was one of the few (last?) times that large numbers of professional athletes visited venues for the first time. Even with player movement via free agency and the occasional trade most baseball players never saw stadia from the other league until interleague games.

All of these reasons lead to the expectation that interleague baseball games will provide the home team with an increased chance to win. The impact of interleague play on attendance, however, argues for the opposite effect. Interleague games bring about significant increases in attendance ($r=.205$, $p<.001$) filling seats with customers who are not necessarily rooting for the home team. For example, when the New York Yankees played the New York Mets at the Mets' home field, games were sold out as Yankee fans filled the stadium. This is, of course, exactly Leifer's (1995a,b) mechanism for national publics -- fans coming to see and support the visiting team, not the home team -- though the example is of the odd case of competing *local* publics. In general though, the increased attendance at interleague games should work against the home team, thus reducing the probability that the home team wins the game.

DATA

Possible trends in the home advantage are established using sources that are discussed when those results are presented. Game outcome data come from two seasons each for the National Hockey League (NHL), the National Basketball Association (NBA) and Major League Baseball (MLB).⁷ Game-level results for the NHL and NBA were studied for the 1996-97 and 1997-98 seasons. Baseball results come from the 1996 and 1997 seasons. These were relatively tranquil periods for the three leagues as there were no labor actions or additions of new teams during these seasons. One franchise changed location for the 1997-98 NHL season, but otherwise teams were stable. The seasons studied are, however, atypical in two respects. The 1997 baseball season marked the onset of interleague play which produced some schedule differences between years. The 1997-98 NHL season was the first time that league allowed its athletes to participate in the Olympics. This led to a 17 day break in the middle of the season, but this break appears not to

have had any impact on how the variables used here related to the home advantage.

Game results were taken from preseason publications for each sport (The Sporting News, 1997a,b,c; 1998). This information was supplemented with data available at numerous sites on the Internet. The dependent variable of interest is whether the home team won the contest. A home team victory was coded one, all other outcomes were coded zero.

Edwards (1979) points to the confounding between crowd density and team performance. Attendance is better, and thus the crowds are denser, when the home team is having a winning season so that crowd support and team talent become correlated. Leifer (1995b) replicates these findings. It is therefore crucial to estimate crowd effects controlling for the performance of the home team. Similarly, the quality of the visiting team is obviously related to the chance that the home team will be victorious. Team quality also appears to be related to actual performance at home and on the road (Madrigal and James, 1999). For both the home and visiting teams, we measure "quality" by winning percentage (games won divided by total games played) at the time of the contest.

One persistent alternative explanation for crowd influences on the home advantage is the possible fatigue and disruption from travel experienced by the visiting team or the rest the home team receives from not having to travel (e.g., Pace & Carron, 1992). We include several travel measures, for both clubs, more as statistical controls than to investigate potential travel effects. The game number of the current home stand and the number of days off prior to the game are measures of the rest for the home team. Days on the current road trip and days off before the game are the travel controls for the visiting team.

Ward's (1998) study points to the importance of the home opener for both ritual from a Durkheimian perspective and impression management

ala Goffman. Therefore we include a measure of the home opener in our models with the expectation that the home team will be more likely to win such games. Our variable differs from that used by Ward in two respects. First, we make no allowances for rainouts that necessitated a rescheduling of the opening game. Ward excluded rescheduled opening games with the presumption that ritual (e.g., parades) would be less than for openers being played as scheduled. We take the opposite position. Even for a rescheduled opening game, the pressures for the players to manage first impressions and the ritual attached to the game should be greater than a typical regular season game so that *any* opening day game should convey an advantage to the home team if one is to be found for these reasons. (Obviously the weather is not an issue for opening games in basketball and hockey.)

A similar argument applies to the second difference between Ward's measure of the opening game and the one used here. Ward restricted his analysis to only those games which were the first of the season for both teams such that the 'home opener' was also the initial game for the away team. This excludes half of all opening games from consideration as the first home game when the away team returns to their own stadium is ignored. But the home opener for teams that start the season on the road are also accompanied by high levels of ritual and players are still meeting their hometown fans for the first time even if the team is several games into the season: The sociological reasons for looking at an increased advantage in the opening home game are the same whether it is the initial game of the season just the first home game of the season. Thus our variable for home opener identifies all initial home games for the teams and sports studied.

For the 1997 baseball season, we created a variable that identifies games played between teams from the American and National Leagues. As discussed above, the expectations for this variable are not

clear as interleague games could increase the home advantage due to a greater fan support and familiarity with playing conditions, or it could reduce the advantage via an increase in spectators rooting for the visiting team. Minimally, a variable for interleague baseball games is needed as a statistical control for increases in attendance due to the novelty of these games.

The social support of the crowd is usually operationalized by crowd density (game attendance divided by arena/stadium capacity). This is the measure we use. It is expected that increases in crowd density will increase the chance that the home team wins as higher densities are suggestive of more supportive audiences. As discussed earlier, *changes* in attendance levels may indicate the increased presence of national publics which create a drag on the support given to the home team. To test this hypothesis, we computed the change in attendance for a particular contest relative to a team's average attendance prior to that date. This was divided by venue capacity to yield a measure of change in average density for a given game. Positive numbers indicate higher than average densities, while negative numbers point to crowds that are smaller than usual. The percentage change in attendance is hypothesized to be negatively related to the likelihood that the home team wins.⁸

RESULTS: TRENDS

Home advantage data for Major League Baseball were computed from Baseball Database for the Internet (2000).⁹ MLB has consistently shown the lowest home advantages and this is reiterated in Figure 1. The home advantage ranges from the atypical high of 57.3% in 1978 to a low of 51.7% during the strike-shortened 1994 season. Aside from these anomalies, the home advantage in MLB is confined to a tight range between 52% and 55%. No trend, either upward or downward, is evident in these percentages. Thus, despite all that has been written about

diminished fan support for baseball, we can detect no broad changes in the home advantage over time.

[Figure 1 about here]

National Hockey League data are taken from the Hockey Data base for the Internet (2000). These data demonstrate the trends to be expected if fan support is waning. As is standard practice, trends are reported both including games ending in a tie (Figure 2a) and excluding tied games (Figure 2b). While there is a bit of a decline in the mid 70's in the home advantage, the probability of a home win declines dramatically from the 1992-'93 season onward. The trend is more evident when tied games are excluded. The drop is from a high of 65.6% in 1974-'75 to a low of 54.3% during the 1997-'98 season. While playing at home still confers an edge in the NHL, the advantage is much less than in the past.

[Figure 2 about here]

Complete figures documenting trends in the National Basketball Association are available in preseason publications (Sporting News, 1997b). The home advantages in the NBA from the 1974-'75 season through 1997-'98 are graphed in Figure 3. Between 1980 and 1985, there is a noticeable drop in the NBA home advantage. This could correspond to the initial climb in salaries for the sport. More apparent is the consistent drop in home winning percentage that begins after the 1988-'89 season. This likely coincides with the league's (successful) marketing of a few stars and teams. Figure 3 thus provides evidence of a decline in the home advantage due to the creation of national publics.

[Figure 3 about here]

GAME OUTCOMES

The trends in the home advantage are indicative of changes in social factors that are also expected to be related to individual game outcomes. In particular, the density of the crowd, changes in crowd

density relative to normal attendance and the ritualistic overtones of home openers are expected to influence who wins the contest. We test these hypotheses through a series of logistic regression models for the dependent variable of a home team win. For each sport a baseline model with only team winning percentages and travel measures is estimated. Ritual and crowd variables are then added, allowing for a global assessment of the impact of basic sociological variables on the home advantage.

Table 1 presents descriptive statistics by sport when the two seasons worth of games are combined. Home hockey teams win 47.1% of their games. (Another 14.5% of the games end in a tie. Excluding games that are tied, the home teams wins 55.0% of the time.) NBA teams win 58.4% of the time at home, while Major League Baseball home teams win 54.2% of the games. This rank ordering of sport by home advantage mirrors previous findings. Means for a number of variables expected to influence the probability that the home team wins are also shown in Table 1. Home and away teams average roughly the same winning percentage at the time of the contest, though note the much larger standard deviations in the NBA relative to the other leagues. Travel measures average roughly the same amounts in the NHL and the NBA with most differences attributable to the 17-day layoff for the Olympics during the 1997-'98 NHL season.

[Table 1 about here]

Season opening games, where unusually high ritual and ceremony should boost the home team's chances of victory, constitute 2.44% of all games in the NHL and NBA; 1.22% of the games in MLB. (Baseball teams play exactly twice as many games as do professional hockey and basketball teams.) Interleague games comprise 4.74% of the sample analyzed. As others have found, hockey and basketball teams play in relatively full venues averaging at or near 90% capacity. The average

baseball game is played in a stadium that is 56.4% full, but there is also a large standard deviation (25.2) around this average. Mean changes in attendance are positive for all sports with the NHL having the highest mean on this measure. The variability in attendance change is about the same for basketball and baseball and both sports have more potential for the presence or absence of national publics than does hockey.

Several variables at the bottom of Table 1 help to put the attendance variables and differences across leagues in some context. Arenas for hockey and basketball are roughly the same size¹⁰, vary relatively little across sport and city and because of average attendance levels, have quite dense crowds (in enclosed buildings) for most games. These are factors various authors have suggested might be responsible for why home advantages are historically higher in these sports and why the crowd may be more likely to have some effect on games outcomes.

In contrast, baseball games, while played in front of audiences averaging over 10,000 spectators more than at hockey and basketball games, occur in stadiums that are over twice the size of hockey/basketball arenas. Even with these larger crowds, densities are much lower (and the fans are further from the field of play). If teams do accrue some advantage in crowd support from playing before a packed audience, this is more likely in basketball and hockey where slightly over 40% of the teams average attendance levels at 95% or more of capacity. Few baseball teams consistently play to such high capacities - those that did were housed in the only new, smaller stadiums available during those seasons. Three teams in each league averaged attendance jumps of 4 or more percent, in either direction, over the course of the two seasons studied. These teams should be the most susceptible to the diluting influence of national publics.

Logistic regression models predicting game outcome in the NHL are presented in Table 2. As noted earlier (Figure 2), the literature traditionally presents results for this sport both including games ending in a tie and excluding those games. We did the same and the conclusions were identical either way. In the interests of space, we present only results with tied games excluded.

[Table 2 about here]

The basic model including team quality and travel indicators accounts for a mere 1.9% of the variation in game outcome. Not surprisingly, the past performances of the teams playing are most important. Every one percent increase in the prior winning percentage of the home team increases the log odds of a home team victory by .009. This is easily offset by a good visiting team. A one percent increase in the winning percentage of the visitors reduces the log odds of a home win by .013.

Including the three variables representing key sociological aspects of the home advantage (Model Two) does little. The pseudo R^2 remains low (.021), though the prior records of the team still predict the odds of a home team win. As expected, playing the home opener greatly increases the log odds of the home team winning, but this effect does not reach conventional significance levels. Crowd effects are also in the expected directions as increases in density are positively related to a home win, while increases above average attendance levels reduce the odds of a home victory, but neither of these effects are significant either.

While even less predictive of overall game outcomes, the results for MLB shown in Table 3 are actually more favorable to hypotheses about individual variables. From the base model we see that each percentage increase in the winning record of the visiting team decreases the log odds of a home team win by .007. The travel measures for the visiting

team also suggest an improvement in the chance of a victory for the home team: An additional day on the road raises the log odds of a home team victory ($p=.080$), as does each day off for the away team prior to the game ($p=.061$). These results, however, must be couched within the context of an exceedingly low pseudo R^2 .

[Table 3 about here]

Adding the crowd and ritual variables to the base model doubles the, still low, explained variance. Playing before the home crowd in the season opener increases the likelihood of a home victory, but as with hockey, the rather large coefficient does not reach statistical significance. The significant coefficient for an interleague game supports an expectation that these contests actually heightened the chance for a celebration of the local community. The log odds of a home victory increased by .368 when playing a team from the other league. The expected crowd effects also emerge. Increases in crowd density improve the home advantage, but an increase above average attendance levels significantly decreases the odds of a home team win. Conversely, lower than average crowds provide an atmosphere more favorable for a home team win. The variables added for Model Two also appear to suppress travel effects. The travel variables for the away team are now significant, as is the days off for the home team, though for the latter the suggestion is that each day of rest for the home team decreases the chance of being victorious.¹¹

Relative to the other sports, games in the NBA are much more deterministic and this is primarily due to the quality of the teams playing. Good home teams are more likely to win while good visiting teams are more likely to deter a home victory (Model One, Table 4). These two variables alone account for about 25% of the variation in game outcome. Away team days off before the game is marginally significant, $p=.062$. This suggests that better rested visiting teams provide more of

an obstacle to a home team victory, a conclusion that is supported in the models that follow.

[Table 4 about here]

Adding the crowd and season opener variables (Model Two) produces an unexpected result. For the NBA, the home team is very significantly less likely to win the home opener: The log odds of a home win decrease by almost 1.0 when playing the first home game of the season. Why this is is unclear, but it provides strong evidence that any ritual surrounding the opening game operates much differently in the NBA than other sports. Further, this effect does not support the contention that players may wish to produce a favorable impression for the home crowd during the first game of the season (Ward, 1998).

The attendance variables, however, support the hypotheses. Larger crowds increase the chances that the home team wins while increases over average attendance put a drag on the odds of a home team victory. These effects are over three times the size of those seen in hockey and baseball. Even with high average capacities and almost half the teams averaging a near sell-out, crowds at NBA games are able to exert some influence on the outcome of the game. Larger crowds provide more social support for the home team, but increases in attendance -- evidence of a national public -- provide a boost for the visiting team.

DISCUSSION

Athletes believe that fans can influence their performance (Bray & Widmeyer, 2000) and fans believe that they can influence the outcomes of sporting contests (Wann, Dolan, McGeorge, & Allison, 1994). These beliefs provide possible mechanisms translating the social support of the crowd into the home advantage. Athletes react, often positively (Zajonc, 1965) though possibly negatively (Butler & Baumeister, 1998) to the presence of a supportive audience. As Durkheim noted long ago, the result can be performances well above what is expected by the

individual. And, in true Durkheimian fashion, the sociological 'fact' of crowd support as a factor comes before other explanations such as psychological or social psychological ones. All processes start with, and are modified, by the crowd and its behavior.

The importance of the crowd underlies many of the explanations for the home advantage. Psychological models stress the way that a crowd can facilitate learned behaviors or produce a change in self-concept. Social psychological processes are used to explain how the noise and support of the crowd influence the decisions of game officials and how game strategy and player aggressiveness feed on the ebb and flow of the crowd's reactions to occurrences on the field. In general, these effects are expected to be stronger as crowds get larger and more vocal in support of a team, especially the home team.

Sociological explanations of the home advantage also share the assumption that larger crowds are better: Home town fans provide more support when in larger numbers than in smaller numbers. Larger collectives may also better convey a sense of ritual or ceremony thus sharpening the context in which the social support occurs. For two of the three professional sports studied here, such expectations were confirmed. The odds that the home team was victorious increased as the proportion of the venue filled increased.

But the strength of social support cannot be assumed constant across either time or location. We have presented evidence of a general decline in the home advantage in professional hockey and basketball, sports where the home advantage has traditionally been greatest. Such a decline is to be expected if the bonds between teams and fans are being weakened by forces such as free agency and gentrification. If, as Leifer (1995a,b) argues, leagues are cultivating national publics at the expense of local publics, the home team is less likely to be seen as a

representation of the local community. This too predicts the kind of general decline in the home advantage that we have observed.

Schwartz and Barsky (1977) concluded that playing at home as was important as team quality in determining the outcome of the contest. Our findings suggest that this is not true for the NBA, a league that prides itself on the marketing of teams and stars nationwide. Team quality was a much better predictor of NBA outcomes than were attendance measures, though crowd variables were significantly related to the probability of the home team winning. For the NHL and MLB, it was much more difficult to account for game outcomes. In this context, visiting team quality was as important as crowd and ritual measures in determining whether the home baseball team was victorious. Only team quality was, minimally, related to game outcomes in hockey.

The extent of the crowd's support varies by locale as well. Here too the reasons accord well with the expectations of fragmented social support in an era of national publics. Teams that are consistently sold out via season tickets have a competitive edge in social support. If the venue is sold out, it is much less likely for fans of the visiting team to get tickets. And, as we have seen in basketball and baseball, increases above average attendance levels are detrimental to the chances that the home team will win. Conversely, lower than average attendance levels produce audiences that are *more* supportive of the home team as it is less likely that portions of the crowd are there to root on the visitors.

Mizruchi's (1985) conclusions about the support for the home team that accrues from strong tradition and local identification and pride thus need to be qualified to take into account current social and market realities. Tradition and strong local identification are likely to increase demand for season tickets producing sold out arenas. This becomes one mechanism that keeps support for the home team from being

diluted by fans of the visitors. Even if these season tickets are being purchased by corporations who do not treat the contests as a representation of local identity, the purchase still functions to fill the venue. But even this economic support can come at a social cost if the spectators actually filling the seats and luxury boxes are not the vociferous fans of yore. Passive spectators dilute the context upon which the social support of the crowd is based.

Our results are less supportive of hypotheses suggesting that the ritual and impression management surrounding the opening game conveys an edge to the home team. For hockey and baseball, the odds of a home win increased on opening day, but the effect was not significant. In the NBA, it was the visiting team that was more likely to win the home team's opener. Interleague games in Major League Baseball, however, produced the expected result. These games were scheduled to take advantage of geographical rivalries, rivalries that should have heightened the home team's representation of the local community and thus increased the social support for the home team. Playing an interleague opponent did indeed significantly increase the chance of a home team victory. Unfortunately, the novelty of these games appears to now be wearing off and, as a consequence, so too may the boost to social support and the home advantage.

Schwartz and Barksy explain the home advantage as arising out of the celebration of the local community that occurs at sporting events. For them, the home advantage ultimately comes from "the integrity, vitality, and self-consciousness of the home community" (1977:658). But the vitality and celebration that translates to the support for the home team is itself a social construction that needs to be nurtured. Durkheim was perceptive on this point as well:

"There can be no society which does not feel the need of upholding and reaffirming at regular intervals the collective

sentiments and the collective ideas which make its unity and its personality. Now this moral remaking cannot be achieved except by the means of reunions, assemblies and meetings where the individuals, being closely reunited to one another, reaffirm in common their common sentiments" (1965:474-475).

Much about modern sports works against the reaffirmation of the local community at professional sporting events. Free agency reduces the bond between player and community. Gentrification decreases the chance the all members of the community can attend games, especially on a regular basis. Leagues actively promote national publics, further drawing attention and support away from most local teams. In the extreme, we see shifts in the metaphors used by fans from ones demonstrating stability and loyalty to those implying instability and infidelity such as those detected by Mitrano (1999).

Indeed, this points to a more general shift in the relationship between teams and their local publics. The mass marketing techniques used to create the national publics that transcend a team's geographic region are being directed toward its local public as well. As teams take steps to bring fans back to the park, superstars are given more coverage than the team as a whole. The proliferation of sports bars and talk-radio provide outlets where local publics can be quite critical of the home town team, producing even more need to court local fans.

While we have treated jumps in attendance as indicative of the presence of national publics, boosts in attendance could represent fans coming out to support the home team when facing particularly hated rivals. As noted earlier, marked shifts in daily attendance could also indicate a successful promotion such as "bat day." Whatever the underlying cause, large jumps in attendance are not favorable to the performance of the home team. Our results suggest that, if anything, a big jump in the size of the crowd is detrimental for the chances of a

home team victory.

New stadiums in particular produce increases in attendance over prior years. But this "honeymoon" or "novelty effect" is often relatively short-lived, lasting at most between three and seven years. (See Noll, 1974, Baade & Sanderson, 1997, and Hamilton & Kahn, 1997 for discussions of how stadium novelty effects attendance.) More importantly, marketing strategies now often stress the total experiences of the new venues (as captured by the term "mallparks") rather than the support for the team. In a very real sense, this can further dilute the social support provided by the fans.

The home advantage in sports remains sociologically interesting precisely because explanations of it draw upon social support, community, ceremony and ritual. These concepts continue to be relevant to an understanding of how teams can receive a competitive edge from the home crowd. But, as we have argued here, the explanatory power of the sociological aspects of the home advantage can be eroded by changes in those same social processes, changes that work against a victory for the home team.

FIGURE 1

Trends in the Home Advantage in Major League Baseball

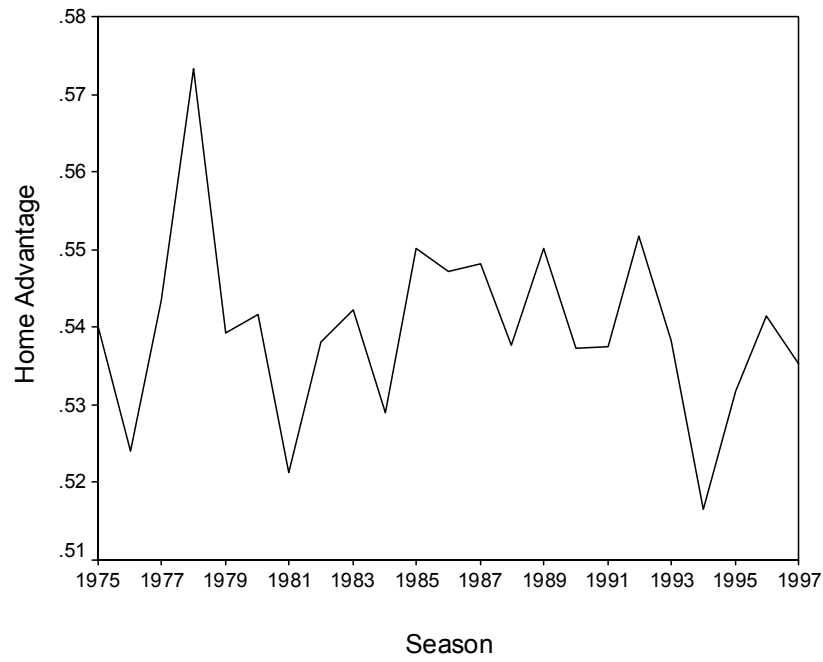


FIGURE 2

Trends in the Home Advantage in the National Hockey League

2a - Tie Games Included



2b - Tie Games Excluded



FIGURE 3

Trends in the Home Advantage in the National Basketball Association

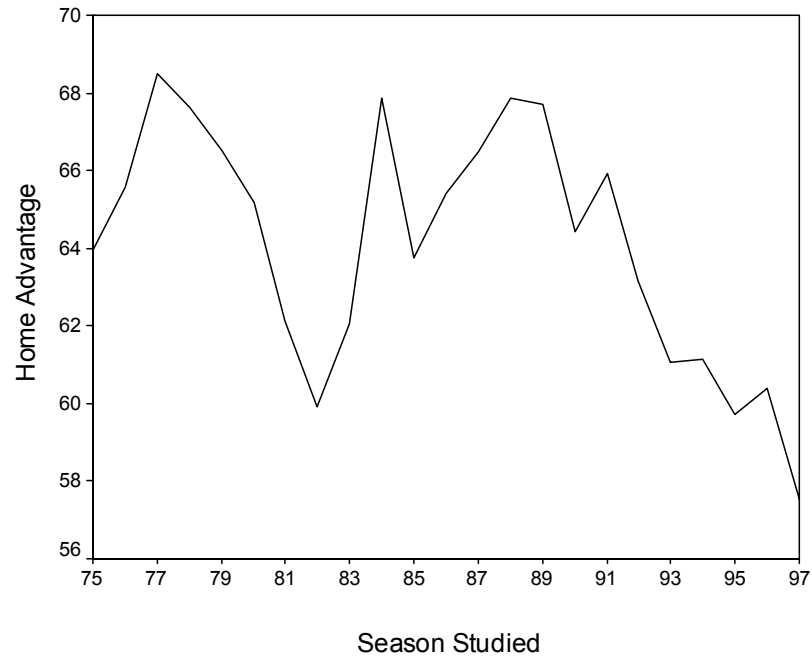


TABLE 1
 Descriptive Statistics for Various Influences on the Home Advantage
 (Standard Deviation in Parentheses)

	League		
	National Hockey League (N=2,131)	National Basketball League (N=2,376)	Major League Baseball (N=4,519)
Home Advantage	47.1%	58.4%	54.2%
<u>Team and Travel Measures</u>			
Home Team Win Percentage	42.2% (15.1)	49.3% (22.1)	50.0% (11.1)
Away Team Win Percentage	42.2% (14.8)	49.4% (22.0)	49.4% (11.1)
Game Number of Homestand	1.94 (1.19)	1.86 (1.12)	4.26 (2.60)
Home Days Off before Game	1.56 (1.60)	1.26 (.93)	.15 (.44)
Days on Current Road Trip	2.01 (1.29)	1.99 (1.30)	4.28 (2.62)
Away Days Off before Game	1.23 (1.66)	.94 (.94)	.14 (.43)
<u>Ritual/Crowd Measures</u>			
Season Home Opener	2.44%	2.44%	1.22%
Interleague Game	-	-	4.74%
Percentage of Venue Filled	91.6% (13.3)	89.8% (17.3)	56.4% (25.2)
Percentage Change in Attendance	1.59 (9.2)	.68 (15.2)	1.38 (15.7)
Average Game Capacity	17,907.3 (1,624.7)	18,970.8 (2,055.6)	49,704.5 (6,885.0)
Average Game Attendance	16,372.5 (2,726.6)	17,056.8 (3,953.4)	27,574.5 (12,024.2)
Teams Averaging 95%+ Capacity	11 of 26	13 of 29	3 of 28
Teams Averaging +/- 4% Changes in Attendance	3 of 26	3 of 29	3 of 28

TABLE 2
 Logistic Regression Models for Hockey - Ties Excluded (N=1,822)

<u>Variable</u>	<u>Model One</u>		<u>Model Two</u>	
	<u>Coeff.</u>	<u>Exponent</u>	<u>Coeff.</u>	<u>Exponent</u>
Home Team Winning Percentage	.009**	1.009	.010**	1.010
Away Team Winning Percentage	-.013**	.987	-.012**	.988
Game Number of Home Stand	.019	1.019	.024	1.024
Home Days Off before Game	-.013	.987	-.017	.983
Days on Current Road Trip	-.039	.962	-.036	.965
Away Days Off before Game	-.021	.979	-.019	.981
<u>Ritual/Crowd Measures</u>				
Season Home Opener			.439	1.551
Percentage of Venue Filled			.004	1.004
Percentage Change in Attendance			-.007	.993
Constant	.460		-.006	
Nagelkerke R ²	.019**		.021**	

* p<.05
 ** p<.001

TABLE 3
Logistic Regression Models for Baseball (N=4,519)

<u>Variable</u>	<u>Model One</u>		<u>Model Two</u>	
	<u>Coeff.</u>	<u>Exponent</u>	<u>Coeff.</u>	<u>Exponent</u>
Home Team Winning Percentage	.004	1.004	.003	1.003
Away Team Winning Percentage	-.007*	.993	-.006*	.994
Game Number of Home Stand	-.011	.989	-.009	.991
Home Days Off before Game	-.195	.823	-.230*	.795
Days on Current Road Trip	.022	1.022	.028*	1.029
Away Days Off before Game	.222	1.248	.233*	1.263
<u>Ritual/Crowd Measures</u>				
Season Home Opener			.249	1.283
Interleague Game			.368*	1.446
Percentage of Venue Filled			.005**	1.005
Percentage Change in Attendance			-.006*	.994
Constant	.247		-.058	
Nagelkerke R ²	.005*		.011*	
* p<.05				
** p<.001				

TABLE 4
Logistic Regression Models for Basketball (N=2,376)

<u>Variable</u>	<u>Model One</u>		<u>Model Two</u>	
	<u>Coeff.</u>	<u>Exponent</u>	<u>Coeff.</u>	<u>Exponent</u>
Home Team Winning Percentage	.036**	1.037	.029**	1.030
Away Team Winning Percentage	-.036**	.965	-.036**	.964
Game Number of Home Stand	.020	1.021	.017	1.017
Home Days Off before Game	.016	1.016	.018	1.018
Days on Current Road Trip	-.010	.990	-.012	.988
Away Days Off before Game	-.092	.051	-.098*	.907
<u>Ritual/Crowd Measures</u>				
Season Home Opener			-.928**	.396
Percentage of Venue Filled			.019**	1.019
Percentage Change in Attendance			-.020**	.980
Constant	.468		-.807	
Nagelkerke R ²	.255**		.268**	

* p<.05

** p<.001

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NOTES

¹ The nationalism evident in international competitions is a good example of this.

² In contrast, Pollard (1986) found no relationship between crowd size and the home advantage in English soccer, though he used fewer leagues than the more inclusive Nevill et al. (1996) study. Pollard also found that the home advantage did not vary with crowd density.

³ The other important game location factors postulated by Courneya and Carron are learning (i.e., familiarity with the site of the competition), travel (e.g., disruption and fatigue) and rule factors such as the home team batting last in baseball.

⁴ Agnew and Carron (1994) interpret the effect of crowd density as suggesting "enhanced psychological support" presumably from the fans to the participants. More likely, the finding represents increased *social* support

⁵ The argument extends even to the architecture and location of stadia as the fields themselves used to link the community and the team. The so-called 'cookie-cutter' suburban stadia have been criticized for breaking connections with residential areas within the city. (See Euchner, 1993, p. 156.)

⁶ There are, of course, other reasons for an increase in attendance aside from coming out to root for the visiting team. Promotional giveaways, especially in baseball, are used to increase the gate. Note that such promotions are usually scheduled when a weaker (i.e. poor drawing) team is the opponent. Fans may also attend in greater numbers on the lure of record-setting performances (e.g., the recent home run chases in baseball or setting career scoring marks in basketball/hockey). While the extra gate drawn by these attractions may not represent a national public, it is also questionable whether one can claim a priori that these are the same kinds of fans that normally frequent games and root for the home team.

⁷ We do not study professional football, despite the National Football League's success in cultivating national publics (Leifer, 1995a). NFL teams generally do not play a balanced schedule outside of their division and play many fewer games over the course of a season. To get the number of games comparable to the other sports studied would require many more seasons worth of data, introducing additional confounding factors.

⁸ The only source of missing data for the variables used is the lack of attendance figures. This varies slightly by sport. Hockey and basketball are relatively complete with attendance figures absent for .047% and .084% of the games across the two years studied. Thirteen of 4,532 (.029%) baseball games had no reported attendance.

⁹ The choice of the first year to present is arbitrary. Going back to the creation of a league is uninformative as franchises have changed locations many times since then. As well, many of the factors expected to undermine the social basis of the home advantage (free agency, high

salaries, national publics) are much more recent phenomena. We start trend figures at the advent of free-agency in professional sport.

¹⁰ Often the same arena is used for hockey and basketball in cities with professional teams in both leagues.

¹¹ This could be because the day off is actually spent traveling back home for the next day's game.