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Changes in National-Level Locational Pattern of Professional Sports Franchises in the U.S. during 1950-2001: Focusing on Four Major Sports Leagues

Pillsung Byun* and Young-Jin Ahn**

미국 프로스포츠 프랜차이즈의 입지패턴과 그 변화양상(1950-2001)

변필성* · 안영진**

Abstract : This study has the following two focuses to analyze the changes in national-level locational pattern of the U.S. professional sports franchises during 1950-2001. The first is to empirically clarify spatial orientation in the changing locational pattern of sports franchises. The second is to identify compared characteristics of the relocation cases reflecting the orientation to other cases, for the variables indicative of franchises' and leagues' pursuits of their relocation-related interests ultimately affecting franchises' relocations, by employing a logit model. As a result of the analyses, sports franchises and leagues, respectively have shown spatial orientation toward relocating to and toward locating new franchises in southern and western areas, responding to the changes in U.S. urbanization pattern. And, relocation cases reflecting the orientation have displayed a feature of the higher annual population growth rate in destination urban area than in origin area, in comparison to other cases.

Key Words : Sports franchise, Sports league, Relocation, Expansion, Logit model

요약 : 이 글은 1950년에서 2001년 사이에 미국 프로스포츠 프랜차이즈의 입지패턴과 그 변화양상을 살펴본 것으로, 이를 위해 두 가지 분석을 행하였다. 첫째는 입지패턴의 변화에 있어 공간적 추세를 실증적으로 파악한 것이다. 둘째는 로짓모델(logit model)을 활용하여 다른 입지이전 사례와 비교함으로써, 입지이전 사례가 보여주는 주요 특성과 그 변인들을 파악한 것이다. 분석 결과를 보면, 기존 프랜차이즈와 리그가 미국의 도시화패턴의 변화에 대응하여 각각 남부와 서부 지역으로 이전하고, 그 지역에 신규 프랜차이즈를 입지시키는 공간적 경향이 나타나고 있다. 또한 이러한 공간적 추세를 반영하는 입지이전 사례들은, 그렇지 못한 사례들과 비교해서 입지이전 출발지에서보다 목적지에서 훨씬 더 높은 인구성장률을 보여주고 있다.

주요어 : 스포츠프랜차이즈, 스포츠리그, 입지이동, 팽창, 로짓모델

1. Introduction

1) Research Agenda and Framework

During the past five decades, the U.S. has witnessed big changes in the location of the franchises in four major professional sports leagues, i.e., Major League Baseball, National Football League, National Basketball Association, and National Hockey League. These changes have more implications than the apparent shifts in the spatial distribution of sports franchises. The reason is that such shifts reflect the business interests sought by both sports franchises as urban-based businesses and the related sports leagues as cartel-like organizations of franchise owners. Importantly, the sports franchises'

* Ph.D. Candidate, Department of Geography and Regional Development, University of Arizona, USA.
** Assistant Professor, Department of Geography, Chonnam National University, Gwangju, Korea.

profit-maximizing behaviors and related sports leagues' support for them have been performed under the circumstances of the urban spatial changes and economic transformation unfolded in the U.S. over the past five decades.

Given this context, this study intends to analyze the changes in national-level locational pattern of the U.S. sports franchises during 1950-2001, covering spatial orientations and the characteristics of relocation cases behind such locational pattern changes. The analysis is composed of the following two parts. First, the study seeks to empirically clarify the spatial orientation in the changes in locational pattern of franchises from 1950 to 2001 at national scale. For this purpose, two different explorations will be performed. We will briefly examine the shifts in the relative share of the U.S. official regional categories (i.e., U.S. Census Bureau's census regions) in the total number of sports franchises. Then, considering location processes behind such shifting regional shares, we will investigate the percentage composition in types of the franchises' relocation and expansion cases undertaken since 1950. Specifically, for relocation cases, by using the census regions to which such cases' origin and destination urban areas belong, the study will extract relocation types and explore their shares in total relocation cases. For expansion cases, by relying on destination areas' census regions, such cases will be typified and the proportion of each types will also be investigated.

Second, the study investigates characteristics of relocation cases reflecting the orientation in contrast to other cases in the variables that are in general critical for franchises' relocation actions. For this investigation, the study considers the following two things. First, sports franchises' relocation decisions have to be approved by related sports franchise. For this approval, sports franchises have to fulfill the relocation-related limiting conditions that sports leagues set to seek, as their inherent interests, franchises' collective interests in response to franchises' relocation decisions. Second and simultaneously, the sports franchises pursue their individual business interests through relocation decisions made on the basis of the comparison of market conditions between an origin urban area and a destination area. The market conditions are composed of origin and destination urban areas' population, population growth, per capita income, and competition among franchises based in the same market, etc.

Thus, the variables to be used to secure characteristics of relocation cases showing spatial orientation in comparison to other cases will be operationalized with respect to market condition comparison and sports leagues' relevant criteria. Using these variables as independent variables, this study will employ a logit model. Specifically, the model will consist of the co-variates displaying relocation cases' features in compared market conditions and the limiting condition set for sports leagues' approval and the dependent variable differentiating spatial-orientation relocation cases from other cases. Through the logit model, in terms of sports franchises' and leagues' pursuits of their relocation-involved interests ultimately influencing relocation actions by sports franchises, characteristics of relocation cases showing spatial orientation can be secured, compared to other cases.

2) Delimitation and Definitions

First, the time period for this study is 1950-2001. The reason is that this time period reflects the history of modern professional team sports in the U.S. and thus the period is reasonable for the investigation of the shifting pattern of sports franchises' locations. With respect to this, Jozsa and Guthrie (1998) asserts that the exposure and popularity of the U.S. four major professional sports began to boom in the 1950s. Second, a metropolitan area where a sports franchise is based for its business will be a spatial unit for a logit model to be employed in this study because the area is operationalized as a sports franchise's market territory. Here, for a metropolitan area, we will use official standard metropolitan areas used so far in the U.S. since 1950: until 1950, Standard Metropolitan Area;

from 1950 to 1982, Standard Metropolitan Statistical Area; since 1983, Metropolitan Statistical Area or Primary Metropolitan Statistical Area, excluding Consolidated Metropolitan Statistical Area.

Third, a sports franchise is defined as a business possessing the monopoly right (approved by relevant sports leagues) to provide the spectating services of professional team sports to a certain market area as a general spatial extent of fan-base. In this study, sports franchises are confined to the teams of four major professional sports leagues (MLB, NBA, NFL, and NHL) that have operated their businesses in the U.S. since 1950. Fourth, sports leagues (MLB, NBA, NFL, and NHL) are the cartel-like entities organized by sports franchises owners. Each of them stands for and tries to expand the collective business interests of affiliated sports franchises.

Finally, a sports franchise's location is operationally delineated as the location of stadiums and arenas where they provide their customers, i.e., fans with the services of professional team sports spectating. Thus, relocation is defined as the change in an existing sports franchise's location (i.e. its home). This study covers only relocation cases from one metropolitan area to another metropolitan area. Expansion indicates a sports league's expansion in its total market area by awarding a new franchise to a certain city and its related metropolitan area. Additionally, in this study, relocation year means the year when a franchise moved to a new home area. Expansion year is operationalized as the year when an expansion franchise commenced its first season in its affiliated league, not as the year when the franchise's participation in the league was finally approved by a related sports league.

2. Literature Review

1) National-level Changes in the Locational Pattern of Sports Franchises

Danielson (1997) asserts the existing franchises concentrated in the U.S. northeastern and mid-western major cities have relocated to and the new franchises have been located in the southern and western areas since the 1950s. He also emphasizes such southward and westward diffusion of the four major sports leagues' spatial extents by mapping the relocation-and-expansion-related history of each sports league. However, Danileson tends to focus only on the information about which teams each city has ever had. He does not perform empirical analyses of the national-scale relocation and expansion to extract the spatial orientation and related features. For instance, concerning the clarification of the westward and southward locational shifts, he could have examined the changing regional shares by employing the U.S. official regional categories like census regions. In the same vein, he could have typified all the relocation and expansion cases and investigate the relative shares by types. To put it differently, Danielson does not provide any clarification on the westward and southward trends that he emphasized on franchises' location changes at the national scale.

Jozsa and Guthrie (1999) discuss the economic factors, demographic factors, and team performance which motivated and justified relocation and expansion cases in each of the MLB, NBA, and NFL from 1950 to 1997. Regarding each relocation case, their discussion is based on the comparison between a pre-move metropolitan area (MSA or SMSA) and a post-move metropolitan area in the following variables: per capita income, mean population per team, population growth rate, and the number of possible competing team in relocation year, along with team performance, such as attendance, win-loss percentage, and a franchise's market value of a franchise. Some of these variables can show the market conditions of origin and destination urban areas influencing relocation decisions of sports franchises. However, the team performance variables indicate the results of sports franchises' market activities, not market conditions. This point is not elaborated on in

the discussion of Jozsa and Guthrie based on the comparison between a pre-move and a post-move MSAs (or SMSAs). Also, they do not encompass sports leagues' relocation-related interests.

Mildner and Strathman (1999) build models on the MLB franchises' relocations since 1950s and the NBA franchises' relocations since 1960s by using logit models. In their models, the dependent variable indicates whether or not a franchise' decision to relocate in a certain year, and the independent variables encompass metropolitan population, annual attendance growth, a team's average winning percentage, a league-wide team expansion, characteristics of a sports facility (e.g., public ownership, age, and capacity, etc.) used by a franchise in its origin area. But the decision to relocate is accompanied by a sports franchise's consideration of where it will move, which is involved in the franchise's comparison between the market conditions of a possible destination metropolitan area and an origin area. The opportunity cost of forgoing more profitable condition that can be secured by inter-metropolitan relocation can be the driving force behind the relocation of professional sports franchises, as shown in relocation cases of Dodgers in 1958 (Leeds and Allmen, 2001). Thus, the independent variables used in the models of Mildner and Strathman have to cover the comparison of features like population, population growth, and per capita income level of a destination area to those in an origin area in a sports franchise's relocation decision. Thereby, the variables can reflect sports franchises' business interests involved in their relocation decisions.

2) Relocation-related Business Interests of Sports Franchises and Leagues

(1) Sports Franchises

Fundamentally, a sports franchise is an urban-based business seeking maximum revenue and profit. In general, ticket and broadcasting right sales are major revenue sources of a sports franchise (Leeds and Allmen, 2001). Therefore, a sports franchise is sensitive to population, population growth, and per capita income level influencing magnitude of such main revenue sources within an urban area as its market territory. Bruggink and Zamparelli (1999) summarize these factors affecting a sports franchise's revenue sources in the following ways. First, the larger the population of a metropolitan area where a sports franchises is based is, the greater the potential attendance for a sports franchise's home games becomes. Moreover, population is correlated with TV market in most metropolitan areas. Second, population growth rate of a metropolitan area can also be measured as one of the market viability factors for a sports franchise. Third, per capita income of an urban area shows residents' abilities or desires to spend some portion of their income or time on spectating professional team sports. Taken these factors together, it follows that a sports franchise's market size mainly depends on a metropolitan area's population, population growth, and per capita income as the basis of the attendance at and the broadcasting of the franchise's sports events.

Actually, an urban area having big population, rapid population growth, and high level per capita income represents the opportunities for more ticket sales, and importantly, for wider demand base for local and national broadcasting of the relevant franchise's home games. Such demand base for broadcasting can also be the foundation for the advertising demands by sponsors as local or national broadcasting companies' main revenue sources, and finally can boost franchises' revenues from broadcasting contracts. Thus, a sports franchise basically pursues to locate itself in an urban area having larger-size and rapidly growing population and income level for its bigger profit. Given this context, such a sports franchise's desire for bigger profit structurally requires sports franchises to conform to the changing urbanization pattern (e.g., the rising Sunbelt cities and the declining Rust-belt cities) that primarily influences sports franchises' current market size (Newsome and Comer, 2000). Additionally, some

sports franchise share the same metropolitan area with franchises of different leagues or in some case, even with franchises belonging to the same league. The competition among two and more franchises for the same market area can affect each franchise's market size negatively and it has often forced some sports franchises to move to other areas with less or no possible competition for the same market area.

(2) Sports Leagues

Sports leagues are the cartel-like business organizations of sports franchise owners. They try not only to enhance their affiliated sports franchises' aggregate interests, i.e., financial stability and competitive balance of a league but also to protect individual franchises' territorial rights (Leeds and Allmen, 2001). With respect to franchises' locations, each sports league has the inherent purpose of protecting existing teams' market areas from possible market overlapping due to relocation and expansion. Each league also has another purpose of increasing its spatial extent of league-wide market. For these intrinsic purposes, by setting criteria, sports leagues make final decisions for awarding expansion franchises to a certain urban localities and they approve the relocation decisions by the existing franchises (Zimbalist, 1998; Leeds and Allmen, 2001; Bruggink and Zamparell, 1999). In so doing, they are substantially involved in the changing locational pattern of franchises.

Usually, each sports league has had expansion teams locate in the newer and smaller but economically and demographically growing metropolitan areas, of which the local governments frequently offer more favorable public subsidy plans for expansion franchises, rather than in metropolitan areas that have existing franchises (Newsome and Comer, 2000). Regarding the relocation of existing franchises, sports leagues have made the agreement of other franchises' owners, especially franchise owners who come to share the same metropolitan area, mandated in order to minimize the possible overlap in market area among existing franchises. Also, sports leagues basically make efforts to maximize the distance to the nearest franchise from a relocating franchise.

3. Methods and Data of Analyses

1) Spatial Orientation

(1) Method

In order to identify the changing spatial distribution of sports franchises during 1950-2001 at the national level, such changes will be visualized for 1950 and 2001 by using GIS software, Arc-View 3.2. Then, to extract the spatial orientation in the changing locational pattern of franchises, the following two methods will be employed in this study in sequence.

First, we will classify the U.S. by using census regions[1] (e.g., North East, Midwest, West, and South) as regional categories and examine the changes in each division's relative share in total number of sports franchises during 1950-2001. Then, Chi-square test on the significance of difference between 1950 and 2001 in the regional shares will be undertaken in order to statistically confirm the changing regional shares over the past five decades.

Second, the spatial orientation will be discussed in terms of expansion and relocation cases as processes behind the changing locational pattern. Considering the shifting regional shares, we will extract the relocation and expansion types and the percentage composition of the types. Specifically, for relocation cases since 1950 (in total 44 cases since 1950), by using the census regions to which the cases' origin and destination areas belong, types of relocation case will be extracted and each type's proportion in total number of relocation cases will be examined. In similar manner, all the expansion cases will be classified into several types. Then, the percentage of each type in the total number of expansion cases (in total 61 cases since 1950) will be explored.[2]

(2) Data

For basic data on the changing locational pattern of the franchises since 1950, every franchise's or league's relocation or expansion history will be collected from its homepage, from three studies - Danielson (1997), Mildner and Strathman (1999), and Jozsa and Guthrie (1999) - dealing with the history of the existing sports franchises' relocations and new franchises' expansions, and from a homepage, www.ballparks.com.

2) Characteristics of Relocation Cases Reflecting Spatial Orientation

(1) Method

At first, in order to investigate characteristics of relocation cases representing spatial orientation, we will specify the variables indicating relocation cases's features in compared markets, i.e., franchises' seeking of relocation-related interests as well as sports league's interests with respect to a franchise's relocation. Unlike the variables on sports franchises' relocation-related interests, the variable reflecting those of sports leagues might not be based on comparisons of markets. As provided above, in the cases of relocation, mostly sports franchises make comparisons on markets, and sports leagues set limiting conditions to franchises' relocation decisions in order to prevent possible market overlapping.

After specifying variables, by running a logit model, characteristics of relocation cases reflecting spatial orientation in comparison to other cases will be investigated. The logit model is based on maximum likelihood estimation technique provided in a statistical software, SPSS-WIN because the number of a dependent variable's values for a vector of independent variables' values is less than 2. The variables and a logit model to be used are as follows:

$$\mathrm{Ln}\left(\frac{P(SOR_i=1)}{1-P(SOR_i=1)}\right) = \beta_0 + \beta_1 POPR_i + \beta_2 PGRD_i + \beta_3 PPIR_i + \beta_4 CD_i + \beta_5 NOCS_i + \beta_6 NOCS_i * DNS_i$$

in other words,

$$P(SOR_i=1) = \frac{\exp(\beta_0 + \beta_1 POPR_i + \beta_2 PGRD_i + \beta_3 PPIR_i + \beta_4 CD_i + \beta_5 NOCS_i + \beta_6 NOCS_i * DNS_i)}{1+\exp(\beta_0 + \beta_1 POPR_i + \beta_2 PGRD_i + \beta_3 PPIR_i + \beta_4 CD_i + \beta_5 NOCS_i + \beta_6 NOCS_i * DNS_i)}$$

where

SOR_i : Dummy variable. If a relocation case i reflects spatial orientation, this variable will be 1. But, otherwise, it will be 0.

$P(SOR_i=1)$: Probability that SORi will be 1 given co-variates' values for a relocation case i. Importantly, $P(SOR_i=1)$ is a predicted value of SORi for a relocation case i's co-variate values.

$POPR_i$: Ratio of the population of a destination metropolitan area to that of an origin area in year t-1(t: relocation year) for a relocation case i.

$PGRD_i$: Subtraction of the annual population growth rate of an origin metropolitan area from that of a destination area during t-5 year to t-1 year for a relocation case i.

$PPIR_i$: Ratio of per capita personal income of a destination metropolitan area to that of an origin metropolitan area in t-1 year for a relocation case i.

CD_i : Subtraction of the number of competing franchises affiliated with the same or different league(s) located in a destination metropolitan area from that of an origin area in year t-1 for a relocation case i.

$NOCS_i$: Dummy variable. In case a destination metropolitan area for a relocation case i does not have any competing franchise of the same league in year t-1, the value of this variable will be 1. Otherwise, it will be 0, and in this case, competing franchise(s)'s owner(s)'s agreement(s) is required as discussed before.

DNS_i : Distance to nearest sports franchise affiliated with the same league in year t-1 from a destination urban area.

$NOCS_i$*DNS_i : Interaction terms.

β_0 : Intercept; β_1, β_2, β_3, β_4, β_5, and β_6: Regression coefficients.

As shown above, this study intends to use data on population, population growth, per capita income, and competition, and distance to the nearest franchise. Usually, a sports franchise continues to compare the market condition of its origin urban area to that of a possible destination area until it makes a final relocation decision. However, the franchise was unlikely to use population or income data of the relocation year for comparison of market conditions. Thus, this study presupposes that a sports franchise having the intention for relocation will compare market conditions (i.e., population, population growth, income, and competition, etc.) of at least one year before relocation.

The distance to the nearest franchises affiliated with the same league reflects that sports leagues as cartel-like organizations of franchise owners make efforts to minimize the possible market overlapping to be caused by relocations in each league. The minimization of the possible overlaps in markets can be operationalized as the maximization of the distance to the nearest franchises from a destination area. In the logit model, the distance will be considered only when there is no competing franchise belonging to the same league in a destination urban area. In other case, competing franchise(s) that have already based in a certain destination metropolitan area is considered to have agreed on a new franchise's relocation to the destination area.

(2) Data[3)]

The spatial units for population and income data collection are counties which consist of metropolitan areas, such as Standard Metropolitan Areas (SMAs), Standard Metropolitan Statistical Areas (SMSAs), Metropolitan Statistical Areas (MSAs), and Primary Metropolitan Statistical Areas (PMSAs) as origin and destination areas of each relocation case. The counties will be used in accordance with the official definitions of these metropolitan areas applied to each relocation case one year (i.e., year t-1; t is relocation year) before relocation.

Regarding population data of metropolitan areas, this study will utilize the data provided in the homepage of the Bureau of Economic Analysis (BEA), the homepage of Census Bureau, and County and City Data Book. Additionally, for annual population growth rate during t-5 to t-1 year, i.e., some time period before relocation year t, this study will use the following formula.

$$\sqrt[n]{(POP_{t-1}/POP_{t-5})} - 1$$

POP_{t-1} : Population in the year t-1
POP_{t-5} : Population in the year t-5
n : Subtraction from year t-5 from t-1

For per capita personal income data in the year t-1, county-level aggregate income and population data provided by the BEA homepage will be made use of. Aggregate income of County and City Data Book 1952, 1956, 1962, and 1967 will be also used.

The data on the number of competing sports franchises in origin and destination urban areas have basically been secured by processing the data on relocation history collected from the home-pages of franchises and of leagues. And we will complement the processed data with Danielson (1997), Mildner and Strathman (1999), and Jozsa and Guthrie (1999). The counting of the number of competing franchises can be complicated by the relocation of two franchises from the same metropolitan area in the same year, for example, the inter-urban moves of the two MLB franchises, Dodgers and Giants in 1958. In such a case, the two franchises both are assumed to have the relocation plan at least one year before relocation (i.e., the year t-1). Furthermore, these two teams are not considered as the competitors to each other in the same origin area.

The distance to the nearest franchise of the same league is operationalized as the spherical distance to the home city of the nearest franchise from a destination city. Here, the franchises' spatial distribution to be considered for the calculation of the distance is based on the situation of one year before relocation

(i.e., year t-1). The distance has been secured though the measuring tool in Arc-View 3.2.

4. Results of Analyses

1) Spatial Orientation in Sports Franchises' Changing Locational Pattern

(1) Locational Patterns of Sports Franchises: 1950 and 2001

The results of visualizing the national-level locational patterns of sports franchises both in 1950 and in 2001 are shown in Figure 1. The locations of sports franchises on Figure 1 indicate the cities where the franchises were located in 1950 and are currently placed in 2001. As shown in Figure 1, almost all of the U.S. franchises were concentrated in northeastern and mid-western areas in 1950. On the other hand, in 2001, sports franchises are comparatively dispersed and spread out across the U.S. In particular, more franchises have become located in western and southern areas as well as in the existing northeastern and mid-western areas.

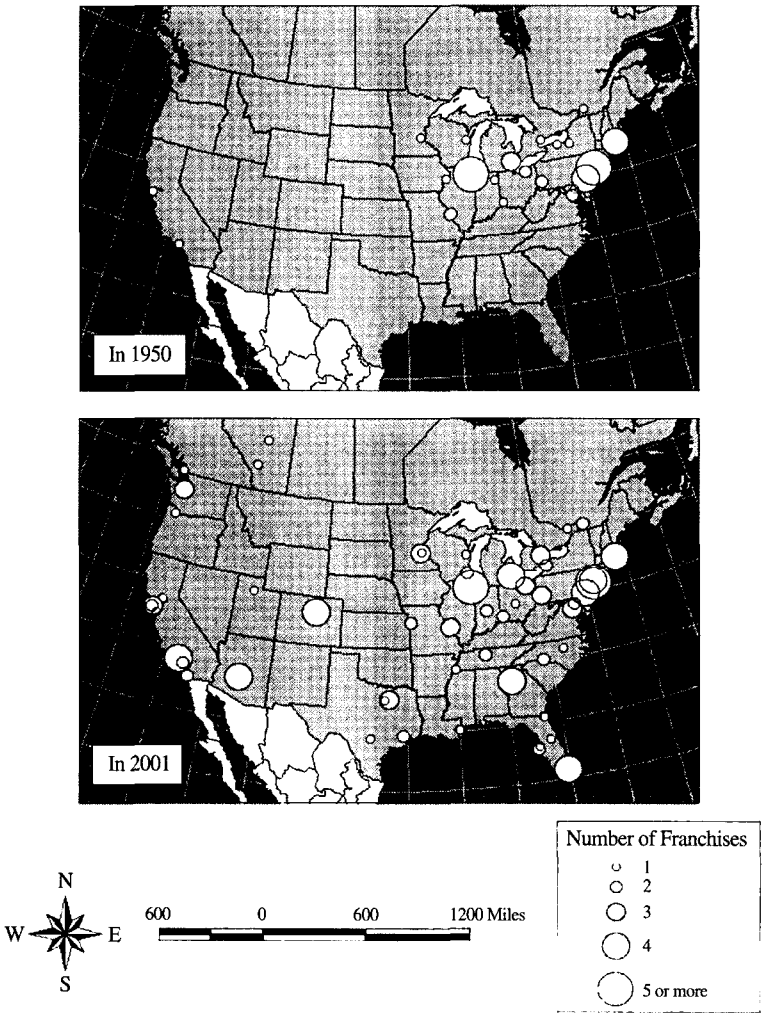

Figure 1. Spatial Distribution Pattern of Sports Franchises: 1950 and 2001

(2) The Changing Regional Shares: 1950-2001

The changing shares of regional categories classified on the basis of four census regions (i.e., Northeast, Midwest, South, and West) are presented in Table 1. To these four divisions, Canada as another regional category is added because not a few U.S. sports franchises was or are based in Canada. The numerical values in parentheses of Table 1 indicate the regional categories' percentages in the total number of sports franchises affiliated with MLB, NFL, NBA, and NHL during 1950-2001. Figure 2 shows visually the changes in these percentages by decades in the same period. According to Table 1 and Figure 2, during 1950-2001, both North East and Midwest have continuously witnessed the declines in their regional shares. However, in each of South and West, the regional share has continued to grow.[4]

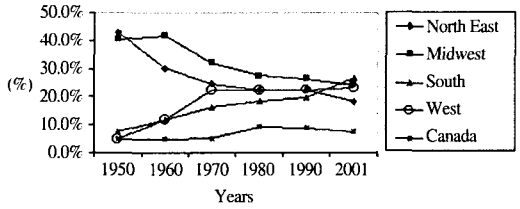

Figure 2. Changes of Regional Shares in the Total Number of Franchises: 1950-2001

Table 2. Chi-square Test: Regional Shares of 1950 and of 2001

	Observed Number	Expected Number	Residual
North East	22	51.4	-29.4
Midwest	29	8.6	23.4
South	32	48.6	-19.6
West	28	5.7	22.3
Canada	9	5.7	3.3

x^2= 177.567; D.F.= 4; Asym. Sig.= 0.000

In order to confirm the changes in the regional shares during 1950-2001 statistically, the Chi-square test for the significance of the difference in regional share between 1950 and 2001 has been undertaken. The result is as shown in Table 2. In Table 2 observed number reflects the regional share of 2001, and expected number has been derived from multiplying the total observed number (i.e., 120) of 2001 by the regional percentage of the year 1950. As shown in the table, degree of freedom is 4 and test statistic of Chi-square is 177.567. Thus, the null hypothesis that there is no difference between 1950 and 2001 with respect to the regional percentages in total number of sports franchises has to be rejected. Considering the values of residual's column, this Chi-square test result confirms that the regional percentages of South and West have increased while those of North East and Midwest have shrunk during the period 1950-2001.

(3) The Composition of the Types of Relocation and Expansion Cases

The changes in sports franchises' spatial distribution during the past five decades discussed so far on the basis of four census regions and Canada are focused on the relative shares of the regional categories. In order to grasp spatial orientation in the five-decade locational changes of franchises more clearly, the fact that there have so far been a lot of

Table 1. Changing Regional Shares in Total Number of Franchises: 1950-2001

	1950	1960	1970	1980	1990	2001
North East	18 (42.9%)	13 (30.2%)	20 (24.7%)	22 (22.4%)	23 (22.5%)	22 (18.3%)
Midwest	17 (40.5%)	18 (41.9%)	26 (32.1%)	27 (27.6%)	27 (26.5%)	29 (24.2%)
South	3 (7.1%)	5 (11.6%)	13 (16.0%)	18 (18.4%)	20 (19.6%)	32 (26.7%)
West	2 (4.8%)	5 (11.6%)	18 (22.2%)	22 (22.4%)	23 (22.5%)	28 (23.3%)
Canada	2 (4.8%)	2 (4.7%)	4 (4.9%)	9 (9.2%)	9 (8.8%)	9 (7.5%)
Total	42(100.0%)	43(100.0%)	81(100.0%)	98(100.0%)	102(100.0%)	120(100.0%)

Table 3. Percentages of Relocation Types (1)

		Destination				
		NE	MW	S	W	CAN
Origin	NE	1 (2.3%)	3 (6.8%)	1 (2.3%)	4 (9.1%)	0 (0.0%)
	MW	0 (0.0%)	5 (11.4%)	6 (13.6%)	5 (11.4%)	0 (0.0%)
	S	0 (0.0%)	2 (4.5%)	3 (6.8%)	1 (2.3%)	1 (2.3%)
	W	1 (2.3%)	3 (6.8%)	1 (2.3%)	4 (9.1%)	0 (0.0%)
	CAN	0 (0.0%)	0 (0.0%)	1 (2.3%)	2 (4.5%)	0 (0.0%)

Note: Percentage of each Types in total 44 relocation cases; NE: North East, MW: Midwest, S: South, W: West, and Can: Canada

Table 4. Percentages of Relocation Types (2)

Type		Number of Cases	Percentage
from	to		
NE or MW	S or W	16	36.4%
S or W	NE or MW	6	13.6%
NE or MW	NE or MW	9	20.5%
S or W	S or W	9	20.5%
CAN	S or W	3	7.8%
S or W	CAN	1	2.3%
Total		44	100.0%

Table 5. Percentages of Expansion Types

Type	Number of Cases	Percentage
toward NE	6	9.8%
toward MW	13	21.3%
toward S	20	32.8%
toward W	16	26.2%
toward CAN	6	9.8%
Total	61	100.0%

relocation and expansion cases as the processes behind such changing regional percentages has to be addressed.

We have typified such relocation and expansion cases by using origin or destination areas based on the five regional categories. We have also considered the contrast between 'South and West' and 'Northeast and Midwest' in the changing regional shares during 1950-2001 examined earlier. Given this condition, the percentage of each type in total number either of relocation or of expansion cases has been explored. The results are presented in Table 3, 4, and 5.

As regards the percentages of relocation types (see Table 3 and 4), the type of 'from North East or Midwest to South or West' (16 cases out of total 44 cases, 36.4%) has larger percentage than 'from North East or Midwest to North East or Midwest' (9 cases, 20.5%). Concurrently, 'from South or West to South or West' (9 cases, 20.5%) show higher percentage than 'from South or West to North East or Midwest' (6 cases, 13.6%). From this composition of relocation types, one process behind the rising shares of South and West and the declining shares of North East and Midwest is found. Table 5 indicates that the expansion types of 'toward South' (20 cases, 32.8%) and 'toward West' (16 cases, 26.2%), respectively have the first and the second largest percentages in total 61 expansion cases. This is another process for the increasing regional percentages of South and West and decreasing percentages of North East and Midwest.

2) Characteristics of Relocation Cases Reflecting Spatial Orientation

In accordance with the definition of spatial orientation presented above, the relocation cases display-

ing the orientation are delineated as the cases representing the moves both from South or West to North East or Midwest and within South or West. The relocation cases indicating the orientation are named 'orientation' cases, and other cases are named 'non-orientation' cases, hereafter. For each of orientation and non-orientation types, the value of the variable 'SORi' is '1' and '0,' respectively. For these two types, the mean values and standard deviations of the six variables to be used in the logit model presented before are shown in Table 6.

The comparative characteristics of the two types of cases will be secured on the variables operationalizing the relocation cases' features in compared market conditions and league's relocation-related limiting condition within the logit model provided above. Additionally, such features can display interests that sports franchises and leagues seek in relation to relocation. By running the logit model, the characteristics of relocation cases reflecting spatial orientation will be grasped in comparison to the other cases. The result of the logit model is summarized in Table 7.[5)]

According to Table 7, at the significance level of 0.05, only the coefficient of variable 'PGRD' indicating the subtraction of an origin metropolitan area's annual population growth rate from that of a destination area turns out to be significant. This means only PGRD can be used to differentiates the orientation cases from the other cases. Considering that coefficient of PGRD has a positive sign in the logit model, all other things being equal, as the value of PGRD increases by 0.01, so the value of the model's dependent variable, i.e., $Ln(P(SOR_i=1)/1-P(SOR_i=1))$ increases by about 2.78. Simply put, as the value of PGRD continues to increase, SOR_i is more likely to become 1 than not to become 1. Concretely, if annual population growth rate of a destination area is larger than that of a origin area by difference of 0.01(1%) for a relocation case i, then $P(SOR_i=1)$ is about 16.09 times bigger than $1-P(SOR_i=1)$, i.e., $P(SOR_i=0)$. In short, compared to non-orientation cases, one can characterize orientation cases by a sports franchise's pursuit of relocating to an urban area showing higher annual population growth rate than an existing area for profit maximization.

By inputting values of intercepts, coefficients, and variables into the logit model for each relocation case, the predicted value of SOR_i, $P(SOR_i=1)$ for each case's

Table 7. Results of Logit Model

Coefficients & Intercept	Value	Std. Error	Sig. (2-tailed)	Variables
β_0	-0.501	4.106	0.903	
β_1	-0.202	0.446	0.651	POPR
β_2	277.791*	126.000	0.028*	PGRD
β_3	0.341	4.398	0.938	PPIR
β_4	0.320	0.471	0.946	CD
β_5	-2.007	131.965	0.988	NOCS
β_6	0.041	0.468	0.930	NOCS*DNS

*: significant at 0.05; -2 Log Likelihood: 28.538; x^2= 24.387; D.F.= 6; Sig.= 0.0004

Table 6. Descriptive Statistics of Orientation and Non-Orientation Types of Cases

Variables		No. of Cases	Mean	Std. Dev.	Variables		No. of Cases	Mean	Std. Dev.
POPR	Non-Orientation	15	2.781	4.309	CD	Non-Orientation	15	0.133	2.232
	Orientation	25	1.172	1.120		Orientation	25	0.800	1.683
	Total	40	1.775	2.839		Total	40	0.550	1.908
PGRD	Non-Orientation	15	-0.004	0.012	NOCS	Non-Orientation	15	0.933	0.258
	Orientation	25	0.013	0.016		Orientation	25	0.920	0.277
	Total	40	0.006	0.017		Total	40	0.925	0.017
PPIR	Non-Orientation	15	0.973	0.083	NOCS* DNS	Non-Orientation	15	191.077	111.689
	Orientation	25	1.007	0.134		Orientation	25	287.483	340.099
	Total	40	0.995	0.118		Total	40	251.331	279.092

Table 8. Classification Table of Relocation Cases

		Predicted		Row Total
		0	1	
Observed	0	12 (80.0%)	4 (20.0%)	15
	1	3 (12.0%)	22 (88.0%)	25
Column Total		14	26	40

given co-variates' values can be gained. If a predicted value 0.5 is designated as a cut value between orientation and non-orientation types of cases, the following classification table is derived as shown Table 8. This table shows the membership compositions of the 40 relocation cases on the basis of each case's observed value and predicted value of SOR_i.

According to Table 8, for the non-orientation relocation cases where the observed values of SOR_i equal 0,12 cases out of 15 cases (80.0%) turn out to be correctly predicted by the logit model. For the orientation relocation cases, the cases correctly predicted by the model are 22 cases out of 25 cases (88.0%). Overall, the model predicts 33 cases out of 40 cases (85.0%) accurately. Thus, in terms of the model's prediction quality, the logit model are significant in differentiating orientation relocation cases from non-orientation cases for the variables reflecting sports franchises' and leagues' relocation-involved interests.

5. Conclusion

This study has the following two focuses. One is about the clarification of spatial orientation in changing locational pattern of sports franchises in the U.S. during the period of 1950-2001. The other is about characteristics of the relocation cases reflecting such orientation, compared to other cases. This is also based on the variables indicating sports franchises' and leagues' seeking of business interests with respect to relocation, using a logit model.

First, spatial orientation has been clarified in the following two ways. (1) In the past five decades, the sports franchises of North East or Midwest have displayed the trend toward relocating to South or West rather than within North East or Midwest, and the franchises of South or West have had the tendency to move within the same areas rather than to North East or Midwest. (2) Additionally, there has been the trend of more expansion franchises toward being located in South or West than in North East or Midwest. These two trends are closely related to the increasing regional shares of South and West in the total number of sports franchises and the concurrent decrease in shares of North East and Midwest during 1950-2001. Second, the 'orientation' relocation cases have shown as their feature the higher annual population growth rate in destination urban area than in origin area, in comparison to 'non-orientation' cases. Moreover, one can conclude that the sports franchises of orientation relocation cases have been strongly oriented to the rapid growth in metropolitan areas of South and West which reflects the U.S. changing urbanization pattern in the past five decades.

For the better understanding of location decision-related interests of sports franchises and leagues in the U.S. setting, the structural contexts and agents' actions influencing such interests need to be studied. In this respect, this study has a limitation. The structural contexts encompass declining Rust-belt cities and rising Sun-belt cities, suburbanization and deteriorating central cities, urban revitalization, intense competition among urban localities for economic development, and the transition in urban political atmosphere (i.e., shift in emphasis from social redistribution to economic development) in the U.S. In addition, significant agents affecting the relocation and expansion decisions and related interests of sports franchises and leagues are pro-development local elites (mainly, taking the forms of partnership of locally-based private businesses and local governments) with which sports franchises and leagues deal in existing and possible markets. The studies in these urban changes as structural contexts and local

elites' actions can enrich the investigation of the five-decade changes in locational pattern of sports franchises in the U.S. more than this study.

Notes

1) The delineation of the four census regions are available in www.census.gov or from the author on request.
2) The list of relocation and expansion cases during 1950-2001 can be secured from the author on request.
3) For unavailable population and per capita income data of certain time periods, some of available data have been employed as surrogates. And the more detailed information on data sources and manipulation in relation to characteristics of relocation cases showing spatial orientation can be gained from the author on request.
4) The possible impact of the official merger of NFL and AFL (American Football League) in 1970 and the absorption of ABA (American Basketball Association) and WHA (World Hockey Association) franchises into NBA and NHL in the 1970s on the tendency in changing regional shares of 1950-2001 is minimal. The detailed information on this will be available from the author on request.
5) The total number of relocation cases to be used for the logit model is 40, not 44. The reason is that the relocation cases related to Canadian cities because of the difference between the U.S. and Canada in the time series of the relevant data.

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