What Are the Benefits of Hosting a Major League Sports Franchise?

By Jordan Rappaport and Chad Wilkerson

Over the last few decades the number of U.S. metropolitan areas large enough to host a franchise from one of the four major professional sports leagues has soared. Even as the National Football League, Major League Baseball, the National Basketball Association, and the National Hockey League have expanded to include more franchises, demand by metro areas continues to exceed supply. As a result, metro areas have been forced to compete with each other to retain and attract franchises.

Large public expenditures on the construction of new sports facilities have been the main form of this competition. Sports stadiums and arenas are extremely expensive. A new football or baseball stadium costs approximately $325 million; a new basketball or hockey arena costs approximately $200 million. The public's share of these costs has averaged $200 million and $100 million, respectively. During the 1990s more than $6 billion in public funds was spent on construction of sports stadiums and arenas. Almost $4 billion has already been allocated toward new facilities scheduled to open by the end of 2004.

The large public spending on sports facilities has been controversial. Usually these costly projects are justified by claims that hosting a sports franchise spurs local economic development by creating numerous new jobs and boosting local tax revenue. However, independent economic studies suggest that taxpayers may not be getting such a good deal. In

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seeking to quantify the job creation and tax revenue benefits produced by a sports franchise, these studies overwhelmingly find that the benefits are much smaller than the outlay of public funds.

Does this mean that public funding of sports franchises is not justified? Perhaps not. An important element missing in the debate is the impact of a sports franchise on a metro area's quality of life. While difficult to measure, the contribution of a sports franchise to quality of life may exceed more traditional job creation and tax revenue benefits. If so, when quality-of-life benefits are included in the calculation, public spending may not appear to be such a bad investment for some metro areas.

The first section of this article reviews the current rush by metro areas to build sports facilities and lays out the arguments both in favor of and against using public funds to do so. The second section shows why the job creation and tax revenue benefits from hosting a major league franchise fall far short of typical public outlays on constructing a new sports facility. The third section argues that the large quality-of-life benefits associated with hosting a major league team may justify the public outlays.

I. THE DEBATE ON PUBLIC FINANCING FOR SPORTS STADIUMS

More than half the U.S. population lives in one of the 38 metro areas that host one or more teams from the four major professional sports leagues. And millions more live in rapidly growing metro areas with populations large enough to make them a potentially attractive place to locate a team. With demand for hosting major league teams exceeding supply, both current and potential host metro areas have been forced to compete to retain and attract franchises. Doing so almost always requires allocating large public expenditures to the construction of sports stadiums and arenas.

This section documents the scope and magnitude of public spending on professional sports franchises. It then summarizes the claims made to justify such spending as well as the critique of these claims by independent economists.

Table 1

STADIUM AND ARENA OPENINGS, 1994–2004

	Number of facilities	Avg. cost ($mil)	Avg. public cost ($mil)	Public cost as percent of total
1994-2000 new				
MLB/NFL	17	286	188	66
NBA/NHL	19	185	84	45
1994-2000 major renovations*				
MLB/NFL	6	110	88	82
NBA/NHL	2	114	98	86
2001-04 new†				
MLB/NFL	15	366	230	63
NBA/NHL	3	225	114	51

* Renovation of at least $60 million
† Facilities approved by January 1, 2001

Source: Sports Facility Reports (National Sports Law Institute)

The scope and magnitude of public financing for sports stadiums

The National Football League (NFL), Major League Baseball (MLB), the National Basketball Association (NBA), and the National Hockey League (NHL) are the four most widely followed professional sports leagues in the United States. Of the 121 teams in these four leagues, 111 play in 92 stadiums and arenas in 38 U.S. metro areas (Appendix 1). The remaining ten teams play in eight stadiums in six different Canadian metro areas.

Since 1994, more than $8 billion has been spent constructing new stadiums to host major league teams. Another $1 billion has been spent on major renovations of existing stadiums. While a few of the stadiums were financed privately, most received large contributions from local and state governments. Public spending on these new and renovated stadiums has totaled $5.4 billion. An additional $3.7 billion in public funds has already been allocated toward the construction of stadiums and arenas scheduled to open by the end of 2004. As a result of all this spending, by 2004 more than two-thirds of the 111 major league teams in the United States will be playing in venues that either opened or were heavily renovated in the previous ten years.

Sports stadiums and arenas are expensive. For the 17 football and baseball stadiums built since 1994, the average public contribution has

been $188 million, or 66 percent of the total cost (Table 1). For the 19 basketball and hockey arenas built during the same period, the average public share has been $84 million, or 45 percent of the total. The average public contribution toward stadiums and arenas currently under construction is even higher: $230 million for baseball and football stadiums (63 percent of the total), and $114 million for basketball and hockey arenas (51 percent of the total). Appendix 2 shows public contributions for individual stadium and arena projects.

To finance their contributions toward stadium and arena projects, local and state governments issue bonds. Such bonds are usually paid off through various sorts of taxes enacted especially for this purpose. Sales taxes directed at tourists (for example, on hotel rooms, rental cars, and convention space) have been an especially popular method used to repay stadium bonds. Also common are general sales taxes that can apply across multiple counties or only in the county or municipality where the stadium is located. Other means of repaying stadium bonds in recent years have included gate taxes (surcharges on tickets to events at the sports facilities), state lottery proceeds, taxes on businesses in specially designated districts, and local and state government general funds.

Justifying public spending on sports facilities

Supporters of using public expenditures to finance the construction of sports facilities argue that hosting a major league franchise helps spur economic development. Impact studies commissioned by stadium proponents attempt to quantify how hosting a team affects a variety of local economic indicators such as output, personal income, jobs, and tax revenue. Stadium advocates suggest that increases in these indicators justify the large public outlays on sports facilities.

Table 2 contains a representative sample of benefit claims made in recent stadium impact studies. A 1996 study, for instance, argued that the NFL Seahawks in their former stadium increased total Seattle annual output by $69 million, increased total Seattle annual personal income by $41 million, created 1,264 Seattle jobs, and raised $3.3 million in state and local taxes per year. Impact studies also often label the expenditures and jobs associated with the construction phase of stadium projects as economic benefits. For instance, a 1996 study supporting the public financing of separate new sports stadiums for Cincinnati's NFL Bengals and MLB Reds suggests that the construction of these two sta-

Table 2

CLAIMED BENEFITS BY PRO-STADIUM IMPACT STUDIES

Year of study	Metro area	Team (league)	Annual economic impact ($mil)	Annual personal earnings ($mil)	Permanent jobs created	State/local taxes ($mil)	Total impact of construction ($mil)	Construction jobs created
1996	Seattle	Seahawks (NFL)*	69	41	1,264	3.3	–	–
1996	Cincinnati	Bengals (NFL)—current stadium*	77	24	1,785	1.4††	–	–
		Bengals (NFL)—new stadium*	92	28	2,134	1.8††	1,100‡	18,461‡
		Reds (MLB)—current stadium*	158	50	3,742	3.0††	–	–
		Reds (MLB)—new stadium*	192	59	4,474	3.7††	1,100‡	18,461‡
1998	Phoenix	Diamondbacks (MLB)	319	–	4,110	14.9	694	4,626
1998	Hartford	Patriots (NFL)†	171	71	2,757	15.6	–	–
1999	Boston	Red Sox (MLB)—current stadium*	120	–	1,597	–	–	–
		Red Sox (MLB)—new stadium*	186	–	2,629	–	492	4,769
1999	Wash/Balt	Ravens (NFL)	202	96	2,772	11.6	–	–
1999	San Antonio	Spurs (NBA)	77	43	–	3.3††	372	–
2000	Green Bay	Packers (NFL)	144	89	1,620	9.6	–	–
2000	Houston	Rockets (NBA)	187	91	2,400	13.0	–	–
2001	Kansas City	Chiefs (NFL) & Royals (MLB)	328	218	4,418	19.8	–	–

* Impacts due only to spending from out-of-area residents

† The Patriots play in the Boston MSA, but proposed moving to Hartford in 1998. Impacts are projections for 2001

†† Local tax revenues only

‡ Total for both Cincinnati stadiums

Sources: Team impact studies

diums would generate $1.1 billion in economic activity for the Cincinnati metro area and create 18,461 temporary jobs.

These impact studies that justify stadium projects can be subject to a number of criticisms. Many of the studies look at only the positive effects of hosting a major league franchise. Taking account of negative effects such as offsetting job losses, however, would produce much lower estimates of the net impact on local economic development. Moreover, the impact studies almost always fail to measure benefits in a form that can be compared with public outlays. While increases in output, increases in personal income, and job creation all measure increases in underlying economic activity, how should a metro area value these increases?

In response to the shortcomings of such impact studies, independent economists have attempted to measure the effect of professional sports teams on metro areas in a number of ways. One method is to compare growth rates of metro areas with and without professional teams, after controlling for other variables. For example, in a study of the growth of per capita personal income in 48 metro areas from 1958 to 1987, Baade (1994) found no significant difference between metro areas with major league teams and those without. In a study of 46 metro areas from 1990 to 1994, Walden actually found a negative relationship between economic activity and the presence of a sports team.

A second way of measuring the impact of teams is to examine the subsequent growth of cities that acquire new teams. Baade and Sanderson did this for ten metro areas that obtained new franchises between 1958 and 1993 and found no significant increases in employment or output. Results from Coates and Humphreys showed that per capita income fell when metro areas added teams.

Still another approach to measuring the impact of professional sports teams is to analyze the specific economic activity generated by specific teams in specific locations. For example, Hamilton and Kahn measured the annual returns to Maryland residents from Baltimore's NFL Ravens at approximately $1 million, compared to a $14 million annual public cost for their new stadium. Similarly, Baade (1997) measured the annual returns to Washington state residents from Seattle's MLB Mariners at between $3.8 and $5.1 million, compared to a $28 million annual public cost for their new stadium.

Regardless of method, none of the academic studies has so far been able to find significant economic development benefits sufficient to jus-

tify the large public outlays. As Siegfried and Zimbalist concluded in a recent survey of the economics of sports facilities,

> Few fields of empirical economic research offer virtual unanimity of findings. Yet, independent work on the economic impact of stadiums and arenas has uniformly found that there is no statistically significant positive correlation between sports facility construction and economic development.

Similarly, Noll and Zimbalist introduced a collection of 14 essays on the economics of sports stadiums by stating, "The overriding conclusion of this discussion is that the economic case for publicly financed stadiums cannot credibly rest on the benefits to local business, as measured by jobs, income, and investment."

So which view is correct? Do sports teams promote economic development as claimed by the impact studies? Or are such economic development benefits illusory as suggested by the independent economists? The next section examines whether the economic development benefits from hosting a major league franchise justify typical public outlays on sports stadiums and arenas.

II. MEASURING JOB CREATION AND TAX REVENUE BENEFITS

To measure the benefits associated with hosting a professional sports team, both stadium proponents and their critics focus on the increased economic activity and additional tax revenue that may be generated by a team's presence. The most common measure of economic activity is the creation of new jobs. Correctly measuring the benefit from job creation requires both accurately accounting for the net number of new jobs associated with a team's presence along with valuing the benefit of these jobs to the host metro area. Increased tax revenue resulting from the presence of the professional sports team arises from sales taxes and income taxes. Estimates of the combined benefits from net job creation and increased tax revenue fall considerably short of typical public outlays on new sports stadiums and arenas.

Measuring job creation benefits

Net job creation is a relatively good measure of the possible increase in economic activity associated with hosting a professional sports team. Estimated net job creation can be explicitly valued in terms of its bene-

fit to a metro area's existing residents. Such an approach provides an estimate of benefits that can be directly compared with the public outlay costs while avoiding double counting that may arise from other methods. A possible limitation of this approach is that an increase in economic activity may benefit a metro area's existing residents even without any net job creation—for instance, if hosting a team causes everyone's wages to increase. However, the findings in numerous independent studies suggest that using net job creation to measure economic activity does not miss any large benefits.

Estimating net job creation. To estimate the number of jobs created from hosting a professional sports team, it is necessary to distinguish between gross and net job creation. Gross job creation is the number of jobs that can be observably linked to the presence of a sports team. Such observable jobs are created mainly within the stadium itself and at nearby businesses catering to people who attend sports events. But the presence of a professional sports team also creates job losses, because individuals who spend money to attend sports events have less to spend at businesses elsewhere in the host metro area. Less spending results in job losses. And benefits generally arise only from a net increase in jobs.[1]

Gross jobs created at a sports stadium include the players and other team employees; stadium management, maintenance, and support staff; and the various vendors selling goods at stadium events. Gross jobs created at nearby stadium businesses arise from the before-game and after-game spending of people attending sports events. Depending on the specific design and location of a sports stadium, such spending may support a number of local businesses, such as parking lots, restaurants, nightclubs, and souvenir shops. Some additional tourism-related jobs that can be linked to the presence of a sports team may also be created further away from stadiums. These arise from the spending of people who visit a host metro area to attend a sports event—for instance, at hotels and restaurants located throughout the metro area.[2]

Both stadium and nearby-stadium job creation may be offset by job losses throughout a host metro area. Such job losses must be subtracted from the above job gains to obtain an estimate of net job creation. In particular, economic research shows that people's total spending on entertainment is not affected by the presence of a professional sports team. For example, the more people spend on attending sports events, the less they may spend on movies and restaurants (Baade and Sanderson). Similarly, the more people spend at restaurants and nightclubs

located near a stadium, the less they may spend at restaurants and nightclubs located elsewhere. Because the job losses from lower spending are spread across a large number of businesses and a wide geographic area, they usually cannot be observably linked to the presence of a sports team.

In addition to observable gross jobs, hosting a professional sports team also creates unobservable "local multiplier" jobs. These jobs arise from changes in local spending due to gross job creation and the offsetting job losses. For example, local spending by team players supports jobs across a range of local service industries, including at restaurants, nightclubs, and retail stores. Hence the total number of jobs created in a host metro area is some multiple of the observable number of jobs created. Similarly, the reduced local spending of people who lose jobs causes additional, again unobservable, job losses. Hence the total number of jobs lost is some multiple of the "initial" (also unobservable) number of jobs lost.[3]

Because local multiplier jobs cannot be easily linked to a sports team's presence, the size of the local multiplier is controversial. Estimates of total job creation in the stadium impact studies use local multipliers as high as 2.5. In other words, these studies assume that 2.5 total jobs are created for each initial observable job created from hosting a sports team. In contrast, the independent economic studies suggest that the appropriate local multiplier to apply to the gross jobs created from hosting a sports team is probably no more than 1.25 (Hamilton and Kahn; Siegfried and Zimbalist). The lower local multipliers used by the independent studies appear more reasonable because a large portion of local spending goes to purchase goods and services produced outside the host metro area. In addition, many professional sports players reside outside the metro area in which they play, either during the off-season or following retirement.

Taking explicit account of job losses and using estimates of the local multiplier from independent studies suggest that the net number of jobs created from hosting a professional sports team is quite low. It is almost certainly less than 1,000 and likely to be much closer to zero. For example, the methodology and numbers reported in Hamilton and Kahn suggest that Baltimore's hosting of the Orioles baseball team has created just 770 jobs in the Baltimore metro area. Statistical analysis reported in Baade and Sanderson found evidence of positive net job creation in only three of ten metro areas examined; their highest estimate

of the number of net jobs created from hosting a sports team was 356 (associated with the Kansas City Royals). Surveying the economics literature, Siegfried and Zimbalist concluded that hosting a sports team might actually be associated with net job destruction rather than net job creation.[4]

Valuing the benefits from net job creation. To measure the benefit from increased economic activity, it is not enough just to estimate the net number of jobs created. It is also necessary to value explicitly the benefit of these jobs to the metro area.

It is important to realize that a metro area's existing residents may not benefit at all from net job creation. Consider the case of metro area residents who already have high paying jobs which they enjoy. How do they benefit from more jobs in a metro area? On the positive side, property prices are likely to rise and local governments may be able to raise revenues from a larger tax base, in turn allowing for lower tax rates. On the negative side, a rise in property prices could make housing less affordable, and traffic and other sorts of congestion may increase. For some existing residents, the net result may be that they are hurt rather than helped by net job creation.[5]

Whether and how much a metro area benefits from net job creation is an empirical question that a number of economists have attempted to answer. In particular, statistical techniques have been used to look at the correlations across metro areas among population, employment, wages, and house values. For a given increase in population and employment, benefits accrue through associated rises in wages or house values. For people who do not own their homes, net benefits are likely be negligible as any rise in wages is offset by the higher cost of housing. But for residents who already own a home, there is no offset and so benefits may be positive.

Using such techniques, economists have estimated metro area benefits to range from $0 to $1,500 per net job created (Rosen; Roback; Gyourko and Tracy; and Hamilton and Kahn).[6] At one extreme, if the benefit per net job created is indeed zero, metro areas will not benefit at all from any possible net job creation from hosting a professional sports team. At the other extreme, even if the benefit per net job created is at its upper bound estimate of $1,500, the total benefit to a metro area from any net jobs created will be far smaller than the total of the associated salaries.

Table 3

ESTIMATES OF NET JOB CREATION FROM HOSTING A PROFESSIONAL SPORTS TEAM

Number of net jobs created	0 to 1,000
Benefit per net job created	$0 to $1,500
Baseline annual benefit (500 jobs x $750 benefit per job)	$375,000

Sources: Authors' calculations based on estimates from Hamilton and Kahn, Baade and Sanderson, Gyourko and Tracy, Rosen, and Roback

Valuing the net job creation benefit from a team requires combining the above estimates of the number of net jobs created with the value of these jobs to the host metro area (Table 3). Using the lower and upper bound estimates, respectively, values the net job creation benefit at $0 and $1.5 million per year. Using the midpoints from each of these ranges as a baseline values the net job creation benefit at $375,000 per year (500 jobs times $750 per job).

Measuring tax revenue benefits

The second main source of benefits on which both stadium advocates and independent economists focus is the increased tax revenues that may arise from hosting a team. Fans' spending before, during, and after games is likely to be subject to local and state sales taxes. And the income accruing to any net increase in jobs is often subject to local and state income taxes.

Estimating imported sales tax revenue. The main way in which increased sales tax revenue benefits a host metro area is if it is paid by nonlocal residents. Nonlocal sports fans visiting to attend games pay sales taxes on all local purchases before, during, and after games. Such spending "imports" tax revenue, which in the absence of a professional sports team would have accrued to governments outside the host metro area. Imported sales tax revenue benefits the host metro area by reducing the amount of taxes that need to be raised from local residents.[7]

Estimating the imported sales tax revenues associated with hosting a team is straightforward. To do so, first the number of nonlocal fans who visit to attend sports games must be estimated. This estimate is then multiplied by the fans' estimated average spending before, during, and after games. Finally, this latter result must be multiplied by the rel-

evant local sales tax rate. The difficult part, of course, is estimating the number of visitors and how much they spend on average. Among the four major professional sports leagues, specifics such as ticket prices, average attendance, and the number of home games per season vary enough to require separate estimates. And regardless of league, it is necessary to distinguish nonlocal sports fans who visit for the purpose of attending a game from nonlocal visitors who happen to attend a game.

Table 4 derives the estimated imported sales tax benefit from hosting a team from each of the four major sports leagues. The listed percentages of nonlocal visiting fans are toward the high end of estimates from a number of impact and economic studies.[8] For calculating the imported sales tax revenue benefit attributable to hosting a sports team, what matters is not the number of nonlocal residents who attend games but rather the number of nonlocal residents whose visits are explicitly motivated by the presence of a team. The distinction is crucial. Nonlocal residents who attend games may be visiting the host metro area for non-game-related reasons such as business or family. If so, their spending at games most likely represents a shifting away from spending on other forms of local entertainment and hence the associated imported tax revenues should not be attributed to the presence of the sports team.[9]

Average spending by visiting sports fans is estimated to range from $63 for MLB games to $99 for NBA games. The concession portion of average spending is based on the purchase of a representative bundle of food, merchandise, and parking at the average 2000 season price in the respective league (FOXSports.com). The out-of-stadium portion of average spending is based on a survey of fans attending Baltimore Orioles games in 1992, converted to 2000 dollars (Hamilton and Kahn).

The imported tax revenue from a given amount of visitors' spending obviously depends on the applicable rate of sales tax. Assuming an extremely high local sales tax rate of 5 percent suggests that hosting a sports team imports from $696,000 per year for an NHL team to $1,537,000 per year for an MLB team. At a more typical local sales tax rate of 2 percent, imported sales tax revenues for the four types of teams range from just $278,400 per year for an NHL team to $614,800 per year for an MLB team.[10]

Estimating income tax revenue. Many of the localities in which professional sports teams play levy local income taxes. If so, the income tax revenue on salaries due to any net job creation is imported in the sense that in the absence of a professional sports team, it would be paid to

Table 4

ESTIMATES OF IMPORTED SALES TAX REVENUE PER TEAM, 2000 SEASON

	NFL	MLB	NBA	NHL
Number of home games (including preseason)	10	81	44	44
Average attendance (based on all teams for 2000 season)	66,100	30,125	16,800	16,300
Nonlocal fans	35%	20%	20%	20%
Number of nonlocal fans per season	*231,350*	*488,025*	*147,840*	*143,440*
Average ticket price	$46	$15	$48	$46
Average concessions/parking	$19	$15	$18	$18
Average out-of-stadium spending by non-MSA visiting fans	$33	$33	$33	$33
Average per visit spending by non-MSA fans	*$98*	*$63*	*$99*	*$97*
Total annual spending by visiting non-MSA fans	*$22,672,000*	*$30,746,000*	*$14,636,000*	*$13,914,000*
Annual sales tax revenues with a 5% local sales tax rate	**$1,134,000**	**$1,537,000**	**$732,000**	**$696,000**

Sources: FOXSports.com; authors' calculations based on estimates from impact and independent economic studies

other localities. Such imported income tax revenue does not necessarily benefit the host metro area since at least in part it goes to cover any additional costs in providing municipal services to accommodate the growth in employment and population.[11]

Nevertheless, because player salaries are extremely high, the associated income taxes are likely to far exceed the marginal cost of any municipal services used by players. This is especially so since many players reside outside the host metro area for a significant portion of the year. Moreover, because they tend to be young, few players have children in local public schools. Income taxes on the relatively high salaries of a team's general manager and head coach are also likely to exceed the marginal cost of the additional municipal services these individuals use.

Table 5 derives the estimated imported income tax benefit from hosting a team from each of the four major sports leagues. Applying a 2 percent income tax rate to the estimated team payrolls suggests that

increased local income taxes range from $868,000 per year for NHL teams to $1.4 million per year for NFL teams. The assumed 2 percent local income tax rate is toward the high end of the rate at which local governments tax income. Indeed, many professional teams play in metro areas whose local governments do not levy income taxes. On the other hand, many state governments tax income at higher than a 2 percent rate. Using the highest combined state and local income tax rate from the metro areas that host teams (10.6 percent for New York City) establishes an upper bound on the imported annual income tax benefit ranging from $4.6 million for an NHL team to $7.5 million for an NFL team.

Comparing job creation and tax revenue benefits to public outlays

How do benefits of estimated job creation and tax revenue compare with typical public outlays on sports facilities? Adding together the annual estimated benefit values of the net job creation, imported sales taxes, and increased income taxes yields baseline estimates of the value of hosting a franchise ranging from $1.9 million per year for an NHL team to $2.9 million per year for an NFL team (Table 6).

A last necessary step toward the goal of comparing benefits and costs is to convert benefits quantified on an annual basis into benefits quantified on a net present value basis. The question is, how much should a metro area be willing to spend for each dollar of *annual* benefits associated with hosting a franchise? Calculating the answer is straightforward. Assuming that metro areas can borrow (by issuing municipal bonds) at a 6 percent interest rate and that the proceeds are used to purchase an annual stream of benefits starting one year in the future and lasting for 30 years (a reasonable estimate for the life of a sports stadium), it follows that each $1 of annual benefits is worth $13.76 to the metro area.[12]

On a net present value basis, the estimated value of the combined jobs and tax benefits from a franchise range from $26.7 million for an NHL team to $40.3 million for an NFL team (Table 6). Such values fall far short of typical public outlays on sports facilities. The average public outlay on new baseball and football stadiums completed between 1994 and 2000 was $188 million. Thus, for most sports stadium projects, costs exceeded the above estimated benefits by well over $100 million. The average public outlay on new basketball and hockey arenas completed over the same period was $84 million. Thus, for most sports

Table 5

ESTIMATES OF INCOME TAX REVENUE PER TEAM, 2000 SEASON

	NFL	MLB	NBA	NHL
Number of players on rosters	53	25	15	23
Average salary, in millions of dollars	1.3	1.9	3.2	1.8
Head coach + general manager	2	2	2	2
Average salary, in millions of dollars	1	1	1	1
Total player, head coach, and general manager payroll, in millions of dollars	*70.9*	*49.5*	*50.0*	*43.4*
Annual income tax revenues with a 2% local income tax, in millions of dollars	**1.4**	**1.0**	**1.0**	**.9**

Source: FOXSports.com; authors' calculations

Table 6

ESTIMATES OF JOBS AND TAX BENEFITS, 2000 SEASON

	NFL	MLB	NBA	NHL
Baseline annual benefit value (% of total job + tax benefit):				
Net job creation benefit	$375,000 (12.8%)	$375,000 (12.9%)	$375,000 (17.8%)	$375,000 (19.3%)
Imported sales taxes benefit	$1,134,000 (38.7%)	$1,537,000 (53.0%)	$732,000 (34.7%)	$696,000 (35.9%)
Increased income taxes benefit	$1,418,000 (48.4%)	$990,000 (34.1%)	$1,000,000 (47.5%)	$868,000 (44.8%)
Total annual benefit value	*$2,927,000*	*$2,902,000*	*$2,107,000*	*$1,939,000*
Net present value of jobs and tax benefits from hosting a team for 30 years using 6% interest rate (annual benefit times 13.76)	**$40,275,520**	**$39,931,520**	**$28,992,320**	**$26,680,640**

Source: Authors' calculations

arena projects, costs exceeded the above estimated benefits by well over $50 million. The amount by which public costs exceed estimated jobs and tax benefits is even higher for the sports stadiums and arenas currently under construction.

If anything, the baseline values estimated above likely overstate rather than understate the benefits they measure. As discussed, there is much doubt that hosting a professional sports team creates any jobs. Moreover, many host metro areas tax spending at a rate lower than the assumed 5 percent baseline. And, many do not tax income at all. As a result, it is reasonable to believe that the net present value of the jobs and tax benefits may be no more than $5 million from hosting an NBA or NHL team and no more than $10 million from hosting an NFL or MLB team. Even using the upper-bound estimates from the analysis above suggests that the public outlays on current sports facility projects far exceed any associated jobs and tax benefits.

The bottom line, then, is that the benefit to a host metro area from increased economic activity as measured by net job creation and increased tax revenues appears to fall far short of the public outlays typically needed to retain and attract professional sports teams. Nevertheless, metro areas continue to approve ever-larger public outlays on new sports facility construction. If such public outlays represent good investments, there must be some other large benefit from hosting a team that the above analysis is not measuring. The next section explores whether a professional sports team's contribution to a host area's quality of life may be exactly such a benefit.

III. QUALITY-OF-LIFE BENEFITS FROM HOSTING A MAJOR LEAGUE FRANCHISE

The presence of a major league sports franchise can help make a metro area an attractive place to live. Nearly all analyses of the benefits from hosting professional sports teams recognize this contribution to a metro area's quality of life. But because quality-of-life benefits are difficult to quantify, stadium proponents and critics usually pay them little attention beyond such acknowledgment.

The term "quality of life" used in this article is meant to capture the satisfaction, or happiness, residents derive from shared metro area attributes. Examples of shared attributes include pleasant weather, scenic vistas, and natural recreational opportunities. Of course, residents' happiness also depends on their individual circumstances, such as having a good job and living in a nice house.

This section discusses how the presence of a major league franchise contributes to the quality of life of a host metro area's residents. Three

possible ways of valuing this benefit are presented. Together they suggest that hosting a major league franchise contributes substantially to quality of life and perhaps justifies public outlays on sports stadiums and arenas.

How hosting a professional sports team contributes to quality of life

Professional sports teams contribute to a metro area's quality of life primarily by increasing the happiness of sports fans. The most visible source of fan happiness comes from attending home games. However, only part of this happiness actually counts as a quality-of-life benefit attributable to hosting a team. This is because fans must pay to attend games. In the absence of a professional sports team, fans could instead use what they paid for game admissions on other sources of happiness, such as watching a movie or traveling to a different metro area to attend a game.

Formally, the quality-of-life benefit to a particular fan who attends a sports game is the amount above the admission price they would have been willing to spend to attend the game. For instance, if someone is willing to spend $30 to attend a game that only costs $20, they receive a $10 quality-of-life benefit. Adding up the individual quality-of-life benefits of all residents who attend games yields the total metro area's quality-of-life benefit from game attendance.[13]

A second source of happiness for fans comes from rooting for a team more generally, independent of actually attending games in person. Fans watch games on television, listen to them on the radio, and read about them in local newspapers. Games serve as an occasion for parties and barbecues. Teams' performance is the subject of long discussions among friends. And second-guessing team decisions is the subject of nearly continuous banter on local talk radio.

It is also possible that hosting a franchise increases the happiness of all metro area residents, regardless of their being sports fans. Home games and rooting for a sports team provide for shared community experiences. And hosting a sports team may increase civic pride—for instance, by contributing to a sense that one lives in a "world class" city.

On the other hand, hosting a team may also decrease the happiness of some metro area residents. Home games impose traffic and congestion in the vicinity of sports facilities. And television viewers face interruption of their favorite syndicated shows by local game broadcasts.

Such possible negative contributions must be subtracted from positive contributions in valuing the net contribution to quality of life from hosting a team.

Valuing quality-of-life benefits

Valuing the happiness metro area residents derive from the presence of a major league team is extremely difficult. A person's happiness from attending a game or from watching one on television is not observable. Nevertheless, there are several possible approaches to valuing quality-of-life benefits. A first approach is to ask a sample of metro area residents how much they would be willing to pay to retain or attract a team. A second approach uses variations in metro area wages and house prices to implicitly value quality-of-life attributes that may be similar in magnitude to hosting a major league franchise. A third approach looks at the actions of metro areas that have lost sports franchises and so may have the best information on the quality-of-life benefits from hosting a team.

Surveying residents. The most direct approach to valuing the quality-of-life benefits from hosting a team is to ask local residents how much they would be willing to pay to keep their team from moving.

In the only major study of this kind, Pittsburgh metro area residents were asked during the winter of 2000, "What is the most you would be willing to pay out of your own household budget each year in higher city taxes to keep the Penguins in Pittsburgh?" (Johnson, Groothuis, and Whitehead). The responses implicitly valued the quality-of-life benefits from hosting the NHL Penguins at somewhere between $0.83 to $2.30 per Pittsburgh metro area resident per year. Given metro Pittsburgh's population of 2.4 million and converting to a net present value basis using a 6 percent interest rate, as described in the previous section, the value of hosting the Penguins for 30 years is estimated to fall somewhere in the range of $26.9 million to $74.7 million.

Note that the lower-bound estimate of the quality-of-life value of hosting the Penguins is nearly the same as the baseline estimate of the job creation and tax benefit value of doing so. The upper-bound estimate of the quality-of-life value of hosting the Penguins begins to approach the $84 million average public contribution to NBA/NHL sports arenas completed between 1994 and 2000.

Moreover, there are several reasons to believe that the quality-of-life benefits to Pittsburgh from hosting the Penguins may be low relative to

such benefits associated with other major league teams. First, the quality-of-life benefits from hosting an NHL team are probably the lowest of the four leagues considered in this article. For instance, only 15 of the 24 NHL teams currently have local network television contracts. And when NHL games are broadcast, their ratings tend to be less than half those for MLB games (*SportsBusiness Journal*). Second, Pittsburgh also hosts the NFL Steelers and the MLB Pirates. So even if it were to lose the Penguins, Pittsburgh would still host two major league teams. Economic theory argues that the additional benefit of something decreases the more you have of it. Third, at the time the survey was conducted, the Penguins organization was in Chapter 11 bankruptcy proceedings. Whatever problems caused the Penguins' financial difficulties may also have lowered the team's contribution to Pittsburgh's quality of life. Fourth, as will be argued below, it may be that only by losing a team do metro area residents come to accurately value the team's contribution to quality of life.[14]

Comparing to quality-of-life valuations of other attributes. The second approach to valuing the quality-of-life contribution from hosting a team considers the valuations of other attributes that also contribute to quality of life. For instance, the quality-of-life net present value associated with one extra day per year of pleasant weather for 30 years turns out to be similar in magnitude to many of the recent public outlays on stadium projects. So if the contribution to quality of life from hosting a major league team is at least as great as the contribution from one extra day per year of pleasant weather, then the public outlays on sports stadiums and arenas may be justified.

The quality-of-life benefits of certain attributes that naturally differ across metro areas, such as the weather, can be measured by variations in wages and house prices. All else equal, metro areas with attributes that positively contribute to residents' happiness attract population inflows. This puts downward pressure on local wages and upward pressure on local house prices as people who move in try to find jobs and housing. The lower wages and higher house prices serve as negative "compensation" for the high quality of life. Conversely, metro areas that offer low levels of happiness lose population, putting upward pressure on local wages and downward pressure on local house prices as firms try to retain workers and the people who move out vacate housing. The higher wages and lower house prices serve as positive "compensation" for the low quality of life.[15]

Using data on a large number of individuals and households living in more than 100 different metro areas, statistical techniques can measure the variations in wages and house prices that are due to each of several metro area attributes. The quality-of-life value of a given metro area attribute can then be calculated as the sum of the lower wages individuals are willing to accept and the higher house prices they are willing to pay to live in an area with such an attribute.[16] Table 7 summarizes a few results from research that estimates such "compensating differentials."

The quantitative benefits from quality of life are found to be quite large. For instance, the estimates suggest that the annual value to a metro area of one extra sunny day per year is between $7 to $12 per person. So a metro area with two million people should be willing to pay between $14 million and $24 million per year for the extra annual sunny day (or roughly between $193 million and $330 million up front for an average extra sunny day over each of the subsequent 30 years). Quantitatively similar valuations are estimated for the quality-of-life benefits of one less rainy day per year and one inch less snow per year.

Unfortunately, this second approach cannot be used directly to value the quality of life from hosting a major league team. The reason is that nearly all teams choose to locate in metro areas with high levels of population and employment. This makes it impossible to distinguish between the variations in wages and house prices that are due to the presence of a sports team and those that are due to the high population and employment.

Nevertheless, the high valuations of the quality-of-life benefits that flow from geographic attributes such as pleasant weather serve as a useful benchmark for the quality-of-life benefits from hosting a major league team. In particular, large public outlays to attract and retain a major league team may make sense if the team's contribution to the area's quality of life is similar in magnitude to that of one extra sunny day per year (or one less rainy day per year or one inch less snow per year). Fan willingness to endure extreme weather to attend games at outdoor stadiums suggests that the positive contribution to happiness from hosting a professional sports team may exceed such a threshold.

The experience of metro areas that lost teams. A third approach to valuing quality-of-life benefits points to the actions of metro areas that hosted a major league team that then moved elsewhere. These metro areas should be among those with the best information on the quality-of-life benefits from hosting a team since they can compare happiness

Table 7

ESTIMATE OF ANNUAL PER PERSON CONTRIBUTION TO QUALITY OF LIFE

Attribute	Annual per person value, 1999$	Source
Weather: 1 less rainy day per year	$12+	Rosen
Weather: 1 extra sunny day per year	$ 7	Gyourko and Tracy
	$12	Blomquist et al
Weather: 1 inch less snow per year	$11	Roback
Pollution: 10 fewer micrograms suspended particulates per cubic meter air	$ 3	Blomquist et al
	$24	Gyourko and Tracy
Pollution: 1 less Superfund site per county	$93	Blomquist et al
Violent crime: 100 fewer violent crimes per year per 100,000 population	$ 91	Blomquist et al
	$114	Gyourko and Tracy

both with and without a team. Subsequent to losing a team, many of these metro areas were willing to significantly increase the size of their public outlays on constructing new sports facilities. This willingness suggests that residents revised upward their estimates of a major league team's contribution to their happiness. The resulting success of such metro areas in attracting replacement teams indicates that quality-of-life benefits may indeed justify the large public outlays.

Since 1980, only 12 U.S. metro areas have lost major league teams.[17] Six of these lost National Football League teams: Oakland (1983), Baltimore (1984), St. Louis (1988), Los Angeles (two teams in 1995), Cleveland (1997), and Houston (1997). Four metro areas lost National Hockey League teams: Atlanta (1980), Denver (1982), Minneapolis/St. Paul (1993) and Hartford (1997). And two metro areas lost National Basketball Association teams: Kansas City (1984) and San Diego (1984).

Losing a football team seems clearly to have caused metro area residents to revise upward their estimates of the associated quality-of-life benefits.[18] Of the metro areas that lost NFL teams, all but Los Angeles subsequently allocated considerably more public financing to attract a new NFL team than it would have cost to keep their old team. For example, St. Louis' NFL Cardinals departed in 1987 after the city refused to allocate $120 million toward the construction of a new foot-

ball stadium (Quirk and Fort). Less than three years later, St. Louis voters approved $280 million in public funds for a new football stadium—even before they had a team to play in it.[19] And two years following the departure of the NFL Browns, Cleveland allocated $214 million toward construction of a football stadium for a newly awarded expansion team. The owner of the former Cleveland Browns commented, "The only regret I have, to be honest with you, is that if they gave me half of what they're doing now, I'd still be in Cleveland" (Meyer). Similarly, Oakland, Baltimore, and Houston each increased by at least one-third the amount of public funds they were willing to spend on building new football stadiums.[20]

The experience of metro areas that lost NHL and NBA teams has been more mixed. Minneapolis-St. Paul would probably have needed to spend only about $17 million to prevent the 1993 departure of its NHL team (Bremner). But in 1999 it decided to allocate $130 million to attract a new NHL team. At the same time, Atlanta and Denver managed to endure the loss of their NHL teams for 19 and 13 years, respectively. They were eventually able to attract replacement NHL teams at what is probably a lower public cost than what would have been required to prevent the original losses. Hartford has been more aggressive in attempting to attract an NFL team rather than a replacement for its departed NHL team. And neither Kansas City nor San Diego has made an extensive effort to replace their NBA teams.[21]

Taking account of quality-of-life benefits

The previous section's discussion of the job creation and tax revenue benefits from hosting a major league franchise suggested that such benefits fall far short of typical public outlays on the construction of new sports facilities. Can quality-of-life benefits make up the difference?

Based on results of a survey asking Pittsburgh metro area residents how much they would be willing to be taxed to keep the NHL Penguins, the answer may be yes. However, caution warns against generalizing the results from a single survey.

Alternatively, results of economic studies of compensating differentials provide a benchmark in assessing quality-of-life benefits. For instance, if the contribution to metro area residents' happiness from hosting a major league sports franchise is similar in magnitude to that from an additional day of pleasant weather per year, the net present

value quality-of-life benefit may indeed approach the magnitude of recent public outlays on sports facility construction.

Finally, the aggressive bids by metro areas to replace teams that have departed further supports the view that the overall value to a metro area from hosting a professional sports team may exceed the associated large public expenditures. Of course, this will not always be the case as is illustrated by the metro areas that have not made extensive efforts to reattract lost teams. But for those metro areas that have bid aggressively, this would almost certainly have to be due to a large contribution to residents' quality of life.

IV. SUMMARY AND CONCLUSIONS

U.S. metro areas have had to compete with each other to retain and attract major league sports franchises. The resulting large public outlays to finance the construction of sports facilities have been quite controversial. Proponents of using public funds to finance stadium construction argue that the benefits from increased economic activity and increased tax revenue collection exceed the public outlays. But independent economic studies universally find such benefits to be much smaller than claimed.

So does it makes sense for metro areas to use public funds to attract and retain major league sports franchises? The answer is definitely not if benefits are limited to increases in economic activity and tax revenue collection. A strong case can be made, however, that the quality-of-life benefits from hosting a major league team can sometimes justify the large public outlays associated with doing so.[22]

Quality-of-life benefits are rarely explicitly included in the debate on using public funds to attract and retain a major league sports franchise. Acknowledging that the main benefit from hosting a team comes from improved metro-area quality of life should help to value this contribution. Doing so does not require impact studies. Residents and elected officials who understand that the benefits of a sports team are the same sort that flow from parks, zoos, museums, and theater can decide on their own how much hosting a major league team is worth.

Appendix 1

LARGEST U.S. METRO AREAS AND THEIR MAJOR LEAGUE TEAMS

Size	Metro area	Pop 2000	MLB	NFL	NBA	NHL	Teams	Venues	Pop/team
1	New York	21,199,865	2	2	2	3	9	6	2,355,541
2	Los Angeles	16,373,645	2	–	2	2	6	4	2,728,941
3	Chicago	9,157,540	2	1	1	1	5	4	1,831,508
4	Washington/Baltimore	7,608,070	1	2	1	1	5	4	1,521,614
5	SF/Oakland/San Jose	7,039,362	2	2	1	1	6	5	1,173,227
6	Philadelphia	6,188,463	1	1	1	1	4	2	1,547,116
7	Boston	5,819,100	1	1	1	1	4	3	1,454,775
8	Detroit	5,456,428	1	1	1	1	4	4	1,364,107
9	Dallas/Fort Worth	5,221,801	1	1	1	1	4	3	1,305,450
10	Houston	4,669,571	1	1	1	–	3	3	1,556,524
11	Atlanta	4,112,198	1	1	1	1	4	3	1,028,050
12	Miami	3,876,380	1	1	1	1	4	3	969,095
13	Seattle	3,554,760	1	1	1	–	3	3	1,184,920
14	Phoenix	3,251,876	1	1	1	1	4	3	812,969
15	Minneapolis/St. Paul	2,968,806	1	1	1	1	4	3	742,202
16	Cleveland	2,945,831	1	1	1	–	3	3	981,944
17	San Diego	2,813,833	1	1	–	–	2	1	1,406,917
18	St. Louis	2,603,607	1	1	–	1	3	3	867,869
19	Denver	2,581,506	1	1	1	1	4	3	645,377
20	Tampa	2,395,997	1	1	–	1	3	3	798,666
21	Pittsburgh	2,358,695	1	1	–	1	3	3	786,232
22	Portland	2,265,223	–	–	1	–	1	1	2,265,223
23	Cincinnati	1,979,202	1	1	–	–	2	1	989,601
24	Sacramento	1,796,857	–	–	1	–	1	1	1,796,857
25	Kansas City	1,776,062	1	1	–	–	2	2	888,031
26	Milwaukee	1,689,572	1	–	1	–	2	2	844,786
27	Orlando	1,644,561	–	–	1	–	1	1	1,644,561
28	Indianapolis	1,607,486	–	1	1	–	2	2	803,743
29	San Antonio	1,592,383	–	–	1	–	1	1	1,592,383
30	*Norfolk/Va. Beach*	*1,569,541*	–	–	–	–	–	–	–
31	*Las Vegas*	*1,563,282*	–	–	–	–	–	–	–
32	Columbus	1,540,157	–	–	–	1	1	1	1,540,157
33	Charlotte	1,499,293	–	1	1	–	2	2	749,647
34	New Orleans	1,337,726	–	1	–	–	1	1	1,337,726
35	Salt Lake City	1,333,914	–	–	1	–	1	1	1,333,914
36	*Greenboro/Win-Salem*	*1,251,509*	–	–	–	–	–	–	–
37	*Austin*	*1,249,763*	–	–	–	–	–	–	–
38	Nashville	1,231,311	–	1	–	1	2	2	615,656
39	*Providence*	*1,188,613*	–	–	–	–	–	–	–
40	Raleigh/Durham	1,187,941	–	–	–	1	1	1	1,187,941
41	*Hartford*	*1,183,110*	–	–	–	–	–	–	–
42	Buffalo	1,170,111	–	1	–	1	2	2	585,056
43	*Memphis*	*1,135,614*	–	–	–	–	–	–	–
44	*West Palm Beach*	*1,131,184*	–	–	–	–	–	–	–
45	Jacksonville	1,100,491	–	1	–	–	1	1	1,100,491
155	Green Bay	226,778	–	1	–	–	1	1	226,778
U.S. metro areas with pro sports		**147,176,402**	**28**	**32**	**27**	**24**	**111**	**92**	**1,325,914**
Total United States		**281,421,906**	**28**	**32**	**27**	**24**	**111**	**92**	**2,535,332**

Appendix 2

FINANCING OF NEW SPORTS FACILITIES AND MAJOR RENOVATIONS, 1994–2004

Metro area, Facility (League)	Total cost ($mil)	Public cost ($mil)	Source of public funding	Type of tax used to repay bonds or other means of public financing
1994–2000 new				
Atlanta Turner Field (MLB)	235	0	–	n/a
Atlanta Philips Arena (NBA/NHL)	214	173	County	Gate/concession, Hotel/rental-car
Boston Fleet Center (NBA/NHL)	160	0	–	n/a
Buffalo HSBC Arena (NHL)	123	54	State,County,City	Gate/concession
Charlotte Ericcson Stadium (NFL)	298	10	City	General fund
Chicago United Center (NBA/NHL)	150	11	City	General fund
Cincinnati Paul Brown Stadium (NFL)	452	452	State,County,City	Sales
Cleveland Jacobs Field (MLB)	173	152	County	Alcohol/tobacco, Gate/concession
Cleveland Gund Arena (NBA)	152	73	State,County	Alcohol/tobacco, Capital improvement fund
Cleveland Cleveland Browns Stadium (NFL)	309	216	County	Alcohol/tobacco
Columbus Nationwide Arena (NHL)	150	0	–	n/a
Dallas/Fort Worth Ballpark at Arlington (MLB)	191	153	City	Sales, General fund
Denver Coors Field (MLB)	215	161	Multi-county	Sales
Denver Pepsi Center (NBA/NHL)	165	5	County	General fund
Detroit Comerica Park (MLB)	290	145	County	Hotel/rental-car, casino revenues
Houston Enron Field (MLB)	266	180	County	Hotel/rental-car
Indianapolis Conseco Fieldhouse (NBA)	175	72	City	Sales, Capital improvement fund
Los Angeles Staples Center (NBA/NHL)	321	71	City	
Miami National Car Rental Arena (NHL)	212	184	City	Hotel/rental-car
Miami American Airlines Arena (NBA)	241	142	City	Hotel/rental-car
Minneapolis/St. Paul Xcel Energy Center (NHL)	130	130	State,City	Sales
Nashville Gaylord Entertainment Center (NHL)	144	144	City	General fund
Nashville Adelphia Coliseum (NFL)	292	292	State,City	Hotel/rental-car, Gate/concession, General fund
Philadelphia First Union Center (NBA/NHL)	206	23	State,City	General fund
Phoenix BankOne Ballpark (MLB)	355	270	County	Sales, Gate/concession
Portland Rose Garden (NBA)	262	200	City	Gate/concession, General fund
Raleigh Raleigh Entertainment/ Sports Arena (NHL)	160	139	State,County	Hotel/rental-car, General fund
Seattle Safeco Field (MLB)	517	393	State,County	Sales, Hotel/rental-car, Gate/concession
SF/Oakland/San Jose Pacific Bell Park (MLB)	306	15	City	Special financing district
St. Louis Savvis Center (NHL)	160	24	City	General fund
St. Louis TWA Dome (NFL)	300	300	State,County,City	
Tampa Ice Palace (NHL)	139	86	State,County,City	General fund

Appendix 2 continues on following page

Appendix 2, continued

Metro area, Facility (League)	Total cost ($mil)	Public cost ($mil)	Source of public funding	Type of tax used to repay bonds or other means of public financing
Tampa Raymond James Stadium (NFL)	190	190	City	Sales
Washington/Baltimore FedEx Field (NFL)	251	70	State,City	General fund
Washington/Baltimore MCI Center (NBA/NHL)	260	60	State,City	General fund
Washington/Baltimore PSINet Stadium (NFL)	229	200	State	General fund, Lottery proceeds
1994–2000 renovations				
Buffalo Ralph Wilson Stadium (NFL)	63	63	State	General fund
Jacksonville Alltel Stadium (NFL)	135	122	State,City	General fund, Hotel/rental-car, Gate/concession
Los Angeles Edison International Field (MLB)	117	30	City	Gate/concession, Hotel/rental-car, General fund
San Diego Qualcomm Field (MLB/NFL)	78	60	City	General fund
Seattle Key Arena (NBA)	107	75	City	General fund
SF/Oak/SJ Network Associates (MLB/NFL)	200	200	County,City	General fund
SF/Oak/SJ Oakland Arena (NBA)	121	121	County,City	General fund
Tampa Tropicana Field (MLB)	65	51	State,City	Hotel/rental-car, Gate/concession, General fund
2001–2004 new*				
Boston New Patriots stadium (NFL)	325	70	State	General fund
Chicago New Bears stadium (NFL)	587	387	City	Hotel/rental-car
Cincinnati Great American Ballpark (MLB)	297	224	County	Sales
Dallas/FW American Airlines Arena (NBA/NHL)	325	125	City	Hotel/rental-car
Denver Invesco Field (NFL)	360	270	Multi-county	Sales
Detroit Ford Field (NFL)	245	125	County	Hotel/rental-car, General fund
Green Bay New Lambeau Field (NFL)	295	169	County	Sales
Houston Reliant Stadium (NFL)	402	287	County	Hotel/rental-car
Houston New Rockets arena (NBA)	175	70	County	Hotel/rental-car, General fund
Milwaukee Miller Park (MLB)	322	232	State,County,City	Sales, General fund
Philadelphia New Eagles stadium (NFL)	642	304	State,City	General fund, Gate/concession
Philadelphia New Phillies stadium (MLB)	367	170	State,City	General fund, Gate/concession
Phoenix New Cardinals stadium (NFL)	331	229	County	Hotel/rental-car, Player income
Pittsburgh PNC Park (MLB)	233	193	State,County,City	Gate/concession, General fund
Pittsburgh New Steelers stadium (NFL)	244	177	State,County	General fund, Sales
San Antonio SBC Arena (NBA)	175	147	County	Hotel/rental-car
San Diego New Padres stadium (MLB)	411	296	City	Hotel/rental-car, General fund
Seattle New Seahawks stadium (NFL)	430	323	County	Sales, Gate/concession, Hotel/rental-car, Lottery proceeds

* Facilities approved by January 1, 2001

Sources: Sports Facility Reports, ballparks.com, newspaper reports

ENDNOTES

[1] Benefits may also arise when high-paying jobs replace low-paying ones.

[2] Impact studies usually attribute to the presence of a professional sports team gross job creation due to all local spending by nonlocal residents who attend a sports game. But some of this spending is likely to have occurred anyway, as many of the nonlocal residents who attend a game may be visiting the metro area for other reasons (e.g., to visit family or for business).

[3] Equivalently, local multiplier jobs can be thought of as implying that total net job creation will be some multiple of observable jobs created less unobserved jobs lost.

[4] Many impact studies also claim large benefits from the actual construction jobs associated with building stadiums. But such jobs are unlikely to produce large metro area benefits. Except in the depths of a recession, any very large construction project must either hire workers from elsewhere who temporarily relocate into a metro area or else hire local workers away from other local construction projects. In both cases, wages for local construction workers should rise, which for them is certainly a benefit. But the remaining residents of the metro area will temporarily face higher costs for doing any construction. Even if the former benefit exceeds the latter cost, the one-time nature of construction implies that any net benefit will be small in magnitude (i.e., it is already on a net present value basis and so is not scaled up as is the permanent job creation annual benefit).

[5] The ambiguity of whether a metro area benefits from net job creation sharply contrasts with the common perception that local net job creation is a benefit in and of itself. The perception is easy to understand given that net job creation usually reflects beneficial underlying metro area fundamentals. For instance, Denver has seen explosive employment and population growth during the late 1990s. Many firms and individuals cite the natural beauty and recreational opportunities afforded by the nearby Rocky Mountains as key reasons for choosing to locate in Denver. It is this natural beauty and recreational opportunity which benefit Denver's residents, both long-time and newly arrived. The job growth just reflects such benefits.

[6] To the extent that such statistical techniques fail to control for underlying fundamentals that cause simultaneous increases in jobs, wages, and property values, they will overestimate the benefits associated with increases in employment. For instance, statistical analysis will tend to attribute Denver's rapidly rising wages and house values to its explosive population and employment growth. But as argued in note 5 above, probably the growth of all three should be attributed to individuals' increasing desire to enjoy the natural beauty and recreational opportunities afforded by the nearby Rocky Mountains. Rappaport (2000) shows how an increase in either quality of life or productivity lends to simultaneous changes in population, employment, wages, and home values.

[7] A second way that increased sales tax revenue benefits a host metro area is if it is due to local residents' spending a greater proportion of their entertainment dollars within the host metro area rather than elsewhere. For example, in the absence of a local professional sports team, local sports fans may travel to other metro areas to watch games. If their total expenditures on entertainment are to remain unchanged, such fans will end up spending less in their home metro area and hence contribute less to local sales tax revenue. By spending money in other tax jurisdictions, these fans are exporting sales tax revenue. From the perspective of local residents, the recovery of exported sales tax revenue by the shifting of their spending

from outside to a home tax jurisdiction is definitely a benefit. After all, if they are going to pay sales taxes, they should prefer to do so to their own local government rather than the local government of someone else. Local residents nevertheless implicitly may choose to export tax revenue if the things they wish to purchase are not available locally (or if they are more expensive locally). For local sports fans, hosting a team makes available locally something they formerly had to travel to purchase. However, it is not actually clear that hosting a professional sports team recovers exported sales tax revenue. No good estimates exist on the magnitude of exported sales tax revenues due to a metro area's not hosting a professional sports team. In addition, it is possible that host metro area fans' traveling to attend away games of their home team may export as much sales tax revenue as is recovered by fans' not traveling to attend "home" games in the absence of a local team.

Hosting a professional sports team may also increase local sales tax revenue if local residents' spending on admissions and concessions at sports games is subject to higher than average sales taxes. However, any such increase in local tax revenue represents a cost rather than a benefit to the host metro area. To see this, consider that the host metro area could also increase its sales tax revenue simply by raising the sales tax rates which apply to all local spending (with the caveat that the higher rates are not more than offset by lower spending). Local residents' willingness to pay the higher local sales tax on stadium admissions and concessions shows that they perceive an attached benefit (that such taxes support the presence of a sports team). But all else equal, locally residing fans should certainly prefer not to be taxed at a higher than average rate.

[8] Of course, depending on particular circumstances, visits by non-MSA fans may vary tremendously. For instance, a study of fans attending Baltimore Orioles games in 1992 concluded that 46 percent were from outside the Baltimore metro area and 31 percent were from outside the state of Maryland. A likely factor contributing to such a high percentage of nonlocal fans is Baltimore's location less than a one-hour drive from Washington D.C., a metro area that lacks a baseball team. In addition, 1992 was the first year the Orioles played in the new Camden Yards stadium which also might have contributed to above-average nonlocal attendance (Hamilton and Kahn).

[9] However, any revenue due to such visitors' spending at games being taxed at higher than average rates does count as a benefit attributable to hosting a sports team.

[10] On the other hand, 5 percent is not an uncommon state sales tax rate. But for states, imported tax revenue accrues only from visits by out-of-state sports fans, which is likely to be a smaller percentage than for non-metro sports fans.

[11] To the extent that any increased income tax revenue from net job creation does exceed the marginal cost of providing any associated increased municipal services, the resulting benefit is largely what underlies the explanation of how net job creation benefits a metro area's existing residents. To include it again as an imported income tax benefit would be to double count. Hence Table 5 excludes assistant coaches along with the approximately 100 people team organizations employ in "front office" positions, for instance managing business operations, selling advertising, and maintaining physical facilities.

[12] Using a 5 percent interest rate instead implies that each dollar of annual benefits is worth $15.37. Using a 7 percent interest rate implies that each dollar of annual benefits is worth $12.41.

[13] This aggregate quality-of-life benefit is known as "consumer surplus." Estimates of consumer surplus from major league game attendance range from $2 million to $54 million per team per year (Alexander et al, Irani).

[14] On the other hand, many economists argue that people overestimate their willingness to pay for things when answering surveys (Diamond and Hausman).

[15] Population inflows drawn to high quality of life may also result in large-scale job creation. The straightforward intuition is that firms desire to locate where they can affordably hire good workers. High quality of life is commonly cited as a reason for rapid job growth in a number of U.S. states including Arizona, California, Colorado, Florida, and Nevada. Looking across U.S. counties at the relationship between weather and 1990 employment levels, statistical analysis suggests that a one degree Celsius higher mean January temperature is associated with a 3 percent increase in employment. For a medium-sized metro area with 2 million residents, such an increase is more than 30 times the size of even the most optimistic estimates of the observable job creation from hosting a professional sports team.

Because all else is not equal, metro areas with high quality of life may be observed to have high rather than low average wages. First, individuals who can earn a high income regardless of where they live may be more likely to choose to do so in high quality-of-life metro areas. Hence, measuring the effect of metro area attributes on metro area wages requires taking account of individual-specific characteristics such as education and occupation. Second, attributes that contribute positively to a metro area's quality of life may also contribute positively to its productivity and so raise wages. For instance, location on an ocean coast provides both recreational opportunities and access to low-cost seaborne transport (Rappaport and Sachs). Indeed, the unobservable job creation due to high quality of life may itself be a source of high productivity by bringing external economies of scale to a metro area's firms.

[16] More specifically, individuals' wages are regressed on individual-specific characteristics and metro area characteristics. Negative coefficients on the metro area characteristics measure positive contributions to quality of life. House prices are regressed on house-specific characteristics and metro area characteristics. Positive coefficients on the metro area characteristics measure positive contributions to quality of life.

[17] In addition, two relatively small Canadian metro areas, Quebec and Winnipeg, lost NHL teams in the mid-1990s.

[18] It could also be that the metro areas revised upward their estimates of the job creation and tax revenue benefits. But this seems unlikely given economists' unanimous inability to find evidence of any large such benefits.

[19] Additional incentives were later added to lure the NFL Rams in 1995.

[20] Los Angeles, as well, committed to a $100 million public outlay in a bid to win an NFL expansion team that was awarded in 1999. Given the large quantity and variety of alternative entertainment venues in the Los Angeles metro area (e.g., four major league teams, two top college athletic programs, four major amusement/theme parks, beaches, nearby mountains), it is not surprising that the quality-of-life benefits from hosting an additional team may be lower to Los Angeles than they are to other metro areas.

[21] One reason that Kansas City and San Diego may not have done so is that both cities already host both an MLB and an NFL team. As was argued above with regard to the NHL Pittsburgh Penguins, the additional quality-of-life benefit from a third team may be much smaller than the benefit from a first or second team. In

addition, both of the departing NBA teams had losing records in the several seasons prior to leaving, which also may have lowered their contributions to quality of life.

[22] A conceptually different question is whether metro areas would be better off if all public contributions to the building of sports stadiums were prohibited. On the one hand, the competition among metro areas for sports teams transfers benefits from metro area residents to team owners and players. On the other hand, competition for teams should cause the teams to locate in metro areas where total benefits will be greatest.

REFERENCES

Alexander, Donald L., William Kern, and Jon Neill. 2000. "Valuing the Consumption Benefits from Professional Sports Franchises," *Journal of Urban Economics*, September.

Baade, Robert A. 1997. "Mariner Economic Analysis," prepared for Citizens for Leaders with Ethics and Accountability Now, March.

_____. 1994. "Stadiums, Professional Sports, and Economic Development: Assessing the Reality," Heartland Institute Policy Study, No. 62.

Baade, Robert A., and Allen R. Sanderson. 1997. "The Employment Effect of Teams and Sports Facilities," in Roger G. Noll and Andrew Zimbalist, eds., *Sports, Jobs, and Taxes: The Economic Impact of Sports Teams and Stadiums*. Washington: Brookings Institution Press.

Blomquist, Glenn C., Mark C. Berger, and John P. Hoehn. 1988. "New Estimates of Quality of Life in Urban Areas," *American Economic Review*, March.

Bremner, B. 1990. "Ice Folly in Minneapolis," *Business Week*, February 26.

CSL International. 2000a. "Green Bay Packers Impact Analysis," prepared for the Green Bay Packers.

_____. 2000b. "Houston Rockets Impact Analysis," prepared for Central Houston, Inc.

Center for Economic Education, University of Cincinnati. 1996. "The Effects of the Construction, Operation, and Financing of New Sports Stadia on Cincinnati Economic Growth," prepared for the Hamilton County Administrator, January.

Coates, Dennis, and Brad R. Humphreys. 2000. "The Stadium Gambit and Local Economic Development," *Regulation*, no. 2.

Conway, Dick, and Associates. 1996. "Seattle Seahawks Economic Impact," prepared for HOK Sport and King County, March.

Diamond, Peter A., and Jerry A. Hausman. 1994. "Contingent Valuation: Is Some Number Better Than No Number?" *Journal of Economic Perspectives*, Fall.

Gyourko, Joseph, and Joseph Tracy. 1991. "The Structure of Local Public Finance and the Quality of Life," *Journal of Political Economy*, August.

Hamilton, Bruce W., and Peter Kahn. 1997. "Baltimore's Camden Yards Ballparks," in Roger G. Noll and Andrew Zimbalist, eds., *Sports, Jobs, and Taxes: The Economic Impact of Sports Teams and Stadiums*. Washington: Brookings Institution Press.

Irani, Daraius. 1997. "Public Subsidies to Stadiums: Do the Costs Outweigh the Benefits?" *Public Finance Review*, March.

Johnson, Bruce K., Peter A. Groothuis, and John C. Whitehead. 2001. "The Value of Public Goods Generated By a Major League Sports Team: The CVM Approach," *Journal of Sports Economics*, February.

Johnson, C.H., Consulting, Inc. 1999. "Economic Impact Analysis of the Proposed Ballpark for the Boston Red Sox," prepared for Greater Boston Convention and Visitors Bureau and Greater Boston Chamber of Commerce, June.

KPMG. 1998. "Economic and Fiscal Impact Analysis for a Proposed New Stadium to Host the New England Patriots in Hartford, Connecticut," prepared for State of Connecticut, November.

Meyer, Ed. 1997. "Cleveland Sells NFL on Its Abilities," *Akron Beacon Journal*, January 22.

Mid-America Regional Council. 2001. Update to "Economic Impact of the Kansas City Chiefs and Kansas City Royals on the State of Missouri," prepared for Jackson County Executive, January.

National Sports Law Institute of Marquette University Law School. 2000. *Sports Facility Reports*, vol. 1, no. 2.

Noll, Roger G., and Andrew Zimbalist, eds. 1997. *Sports, Jobs, and Taxes: The Economic Impact of Sports Teams and Stadiums*. Washington: Brookings Institution Press.

Office of Business and Economic Research, Maryland Department of Business and Economic Development. 1999. "Impact of the Baltimore Ravens Pro Football Team on the Maryland Economy: 1999 Update," October.

Pollack, Elliott D., and Company. 1998. "Economic and Fiscal Impact of BankOne Ballpark and the Arizona Diamondbacks," prepared for Downtown Phoenix Partnership, September.

Quirk, James, and Rodney Fort. 1992. *Pay Dirt: The Business of Professional Team Sports*. Princeton: Princeton University Press.

Rappaport, Jordan. 2000. "Why Are Population Flows So Persistent?" Federal Reserve Bank of Kansas City, working paper no. 99-13, August.

_____, and Jeffrey Sachs. Forthcoming. "The U.S. as a Coastal Nation," Federal Reserve Bank of Kansas City, working paper.

Roback, Jennifer. 1982. "Wages, Rents, and the Quality of Life," *Journal of Political Economy*, December.

Rosen, Sherwin. 1979. "Wage-Based Indexes of Urban Quality of Life," in Miezkowski and Straszheim, eds., *Current Issues in Urban Economics*. Baltimore: Johns Hopkins University Press.

Siegfried, John, and Andrew Zimbalist. 2000. "The Economics of Sports Facilities and Their Communities," *Journal of Economic Perspectives*, Summer.

Street and Smith's SportsBusiness Journal. 2000. "Special Report: Broadcast Media," April 17-23.

Texas Perspectives, Inc. 1999. "The Role of the Spurs in the San Antonio Economy," prepared for City of San Antonio.

Walden, Michael. 1997. "Don't Play Ball," *Carolina Journal*, October/November.