The Effect of Professional Sports on the Earnings of Individuals: Evidence from Microeconomic Data

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Abstract

This paper explores the impact of professional sports teams and stadiums on the wages of individuals employed in several narrowly defined occupational groups in cities in the United States. The occupational groups examined are among those that proponents of public funding of professional sports claim will benefit economically from these stadiums. Our analysis uses data from the March Supplement to the Current Population Survey (CPS) for the period 1977 to 1998 as well as sports variables previously utilized by Coates and Humphreys (1999), (2001a). Previous research focused on aggregate measures of income whereas here the focus is on the wages of individual workers. The results of the study confirm conclusions of earlier research that the overall sports environment is frequently statistically significant as a determinant of earnings and that the predicted mean impact of sports on wages is an annual average decrease in inflation adjusted earnings of $46.11 for workers in the sample. The results also show that the effects of the sports environment on wages differ across job-types. Workers in small occupational groups employed in stadiums, like ushers, earn more on average each year due to the presence of professional sports while workers in peripherally related occupations like food services earn less.

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Introduction and Motivation

The economic impact of professional sports on local economies has emerged as an important economic policy issue in recent years. The reason for this is the significant increase in the construction of publicly funded professional sports stadiums and arenas. Over forty five new stadiums and arenas have been built for professional football, basketball and baseball teams since the mid 1980s and many more are currently under construction, in the planning phase, or have been proposed. Most of these construction projects receive substantial government subsidies, and proponents of this subsidization claim increases in employment, income and other economic benefits justify these subsidies. Prospective "economic impact" studies, commissioned and paid for by proponents of public subsidization of sports construction projects, claim to quantify these economic benefits. Sigfried and Zimbalist (2000) recently surveyed this issue.

Opponents of stadium and arena construction counter that the spending and income generation effects of sports are quite limited. Spending on sports substitutes for spending on other types of entertainment, and on other goods and services more generally, so there is very little new income (or employment) generated.[1] Indeed, Coates and Humphreys (1999), (2001a) provide evidence that professional sports reduce local incomes. Coates and Humphreys (2001b) examine the retail and services sectors of local economies, including the eating and drinking establishments, hotels and other lodgings, and amusements and recreation subsectors. Their results indicate that total earnings in some of these subcategories rise and others fall from the sports environment providing indirect evidence of the effects of substituting spending on sports for other types of local spending.

Here we examine the effects of the sports environment in cities on the earnings of individuals working within the service and retail sectors, generally, and these finer segments of those sectors more specifically. We estimate wage equations for individual workers employed in food service, hotel services, retail sales, or sports and recreation. Like the typical human capital wage equations, our models include controls for individual characteristics and the local labor market. Unlike the typical human capital wage equations, sports environment variables are additional explanatory variables. The focus here is on the ability of sports variables to explain wages of individual workers in those sectors of the economy most closely linked to the sports environment, eating and drinking establishments, hotels and other lodging, and retail sales. If the pro-stadium/pro-sports argument is correct, then one should find that wages in each of these occupations is higher with professional sports than without it. If the anti-stadium argument is correct then one might find decreases in, or no effect on, wages of these workers.

[1] See Baade and Dye (1988), (1990); Baade (1996); Baade and Sanderson (1997); Rosentraub, Swindell, Przybylski and Mullins (1994); Rosentraub (1997)

The empirical evidence suggests that the sports environment affects the wages of individuals working in some of these sectors. However, the vector of sports environment variables often reduces wages rather than increasing them, depending on the sector and the city. Thus, the results of this individual level analysis confirms the findings of Coates and Humphreys (2001b) on the data aggregated by sector as well as the overall negative impact reported by Coates and Humphreys (2001a), (1999).

The next section of the paper describes the empirical model and the estimation scheme for the analysis. This is followed by a description of the data. Presentation and discussion of the results comes after the data description. The paper ends with a brief conclusion.

The Determination of Wages

Advocates of sports led growth frequently state that the impact of sports will be felt most heavily in specific sectors of the economy. New teams and stadiums will attract people to the area of the stadium where they will spend money on food and beverages, hotels, and consumer items such as souvenirs and team paraphernalia. This new spending will drive up demand for waitresses and waiters, hotel staff, and sales clerks, resulting in higher wages by people employed in these ways.

Opponents of using subsidies to professional sports as a tool of economic development suggest that the job and income creation effects of franchises and stadiums will be minimal.[2] Opponents argue that much of the sales of food and drink and retail merchandise that arises around the stadium will simply substitute for similar sales at establishments in the city that are relatively distant from the stadium. Moreover, consumers may substitute attendance at sporting events for other types of recreational activities, such as attending movies or the theater or going bowling. If this argument is correct then one would expect to find no effect of the sports environment on the wages of workers in the Eating and Drinking, Hotels, and Amusements sectors of the economy.

A large body of literature exists on the determinants of the wages of individual workers. See Topel (1986) and Murphy and Welch (1992) for examples of studies of the determinants of wages based on times series of cross-sections drawn from the Current Population Survey (CPS) March Supplements. This literature uses human capital, measured as experience and education, indicators for riskier activities, union membership and other variables to explain the wages of a given worker. In this paper we posit a wage equation that depends upon the characteristics of the individual worker, city and year specific effects, and the professional sports environment. In other words, our approach controls for the human capital of the individual worker and any time and location specific effects on the market for workers with those skills and asks the question of whether or not the

[2]See, for example, the volume edited by Noll and Zimbalist (1997b).

professional sports environment has any ability to explain wages that is not already captured by the other variables. Second, our approach allows us to compute the contribution to wages that the sports environment makes to these workers whose livelihood is, according to stadium-led growth advocates, most likely to benefit from the stadium.

The dependent variable, w_{ict}, is the log of real average weekly wages of individual i. Following the general practice in the literature on the determination of wages, the determinants of this variable are a vector of variables describing the economic and business climate in city c during year t, as well as factors specific to individual i working in city c in year t, x_{ict}, and a vector of variables which capture the role of stadiums and franchises in the determination of economic activity, z_{ct}.

$$w_{ict} = \beta x_{ict} + \gamma z_{ct} + \mu_{ict} \tag{1}$$

where β and γ are vectors of parameters to be estimated and μ_{it} is a disturbance term. By assumption, the disturbance term takes the form

$$\mu_{ict} = e_{it} + v_c + u_t \tag{2}$$

where v_c is a disturbance specific to MSA c which persists throughout the sample period, u_t is a time t specific disturbance which affects all areas in the same way, and e_{ict} is a random shock to the wages of individual i in MSA c at time t which is uncorrelated across individuals within and between MSAs and over time. Estimated this way, the regression purges the wage of the effect of national events on each jurisdiction in a given year and generates an MSA specific impact. In other words, the level of wages in the market for hotel workers, say, in an MSA at any point in time is determined by time- and location-specific events, the characteristics of hotel workers, and the circumstances regarding sports franchises and stadiums.

In equation (1), x_{ict} is a vector of variables that control for factors other than the professional sports environment that affect wages of individual workers. These variables are described in more detail below, but they include gender, race, age, and educational descriptors, and union membership and coverage by a union contract. We also include descriptors of the job category of the individual. For example, a variable indicates if a worker is or is not in a food service occupation; another indicates if a worker is or is not an athlete. We estimate the model both pooling all the individuals, including these occupation variables as regressors, and as separate equations for each occupational group. By including the occupation variables in the pooled regression we can control for various unmeasured characteristics, including different levels of risk, associated with the various jobs. Regressions for individual occupations implicitly hold these factors constant.

The vector of sports environment variables, z_{ct}, contains a variety of variables to capture the

variation in the sports environment in each of the 37 cities that currently have or, at some time in the 22 years from 1977 through 1998, had a professional football, basketball or baseball franchise. This vector includes: dummy variables indicating the presence of a football, basketball or baseball franchise; dummy variables indicating the ten year periods following all football, basketball and baseball franchise entries and exits; variables indicating the ten year period following construction or renovation of a stadium or arena; variables indicating whether the stadium in each city is a single or multiple use structure. z_{ct} also includes the seating capacity of all football, basketball and baseball stadia and those capacities squared. These capacity variables are intended to capture the idiosyncratic nature of each individual professional sports venue, as well as to reflect the incremental effects of renovation.

Data

Our analysis focuses on the effect of professional sports franchises and stadiums on labor market outcomes for workers in several specific types of jobs. These jobs are in food service, such as waiters and waitresses, cooks, busboys, and restaurant managers, in lodgings, such as hotel clerks, maids, and bellhops, in retail sales, including cashiers and sales personnel and sales managers, and in amusements and recreation, including athletes, ushers, and radio and television announcers. Data on individuals reporting one of these occupations is extracted from the Current Population Survey (CPS) for the years from 1977 to 1998. [3]

The individual level data includes socio-demographic characteristics, such as race, gender, age, and education, earnings information, union membership, Metropolitan Statistical Area (MSA) descriptors, and the occupation and industry in which the individual works. Using the MSA data, and a variable created to identify the year the individual observation was collected, the CPS data was merged with sports environment variables indicating the presence of a professional franchise in football, baseball, or basketball, whether or not a franchise had entered or departed the MSA in the last ten years, the seating capacity of the stadiums and arenas in the MSA, whether or not a new arena or stadium had opened in the last ten years. Table 1 presents variable definitions and descriptive statistics for the full sample of $53,890$ individuals.

The dependent variable in our empirical models is the natural logarithm of the real average weekly wages of each individual. We have this information for $53,890$ individual observations spread about equally over the 22 years from 1977 until 1998. As a percentage of the total number of observations, 1989 is the smallest with 4 percent, and 1991 is the largest with 5.05 percent. The

[3] CPS data are available as far back as 1969 but the regional descriptors are far less detailed in the early part of the sample and these observations were unusable.

mean real weekly wage for the full sample is $217 with a standard deviation of $246. There is a slight upward trend in these wages which started at about $183 per week in 1977 and ended at about $273 per week in 1998. This shows an average annual growth in real weekly wages of about 2.2 percent, though there was a decline after 1977 until 1983 during which time the wage was in the $160 to $170 range. In 1983 the wage hit $215 per week, then it rose to between $220 and $230 until 1995 after which it was over $235 and rising. Over this last four years, the average real weekly wage rose by 3.9 percent.

Individual occupation codes in the CPS data have been combined to reflect general types of work and relevant industry classifications. For example, workers reporting occupations in the food services industry such as waiters and waitresses, cooks, bartenders, food counter, fountain and related occupations, kitchen workers, food preparation, miscellaneous food preparation occupations, and supervisors of food preparations are all coded as food service workers. This group makes up about 46 percent of the sample and earns a real average weekly wage of $155. Maids and housemen and baggage porters and bellhops are combined into one category (4.5 percent of the sample, $183 real average weekly wage) as are sales counter clerks and cashiers (27 percent, $152 real average weekly wage). Ushers (1.4 percent, $135 real average weekly wage), athletes (.6 percent, $326 real average weekly wage), announcers (.3 percent, $437 real average weekly wage), sales managers (19.4 percent, $464 real average weekly wage), and hotel clerks (.5 percent, $193 real average weekly wage) each are separate categories of workers.

Other characteristics of the sample are as follows. Eighty-two percent of the individuals are white, 12 percent are black. About 1.4 percent of the individuals are union members and an additional .1 percent are in jobs covered by union contracts. Twenty seven percent did not graduate from high school, 41 percent have bachelor's degrees. Twenty four percent of the sample has some college but did not graduate, and about 37 percent graduated high school but received no further education.

Data on sports franchises and stadia came from information in Noll and Zimbalist (1997a), Quirk and Fort (1992) and the *Information Please Sports Almanac* (1996). Our sample includes 37 cities, the universe of MSAs that had either a professional football, basketball, or baseball franchise during the period 1977 through 1998.

The entry, exit and construction variables take on a value of 1 in each of ten years, the year a franchise moves, or the year a stadium or arena opens, and the nine subsequent years. One might question the choice of this metric as ad hoc. We defend it on the basis of the length of time it takes for the novelty of a new franchise or stadium to wear off, as has been reported in this literature [Baade (1996)], or for the despair from losing a team to subside.[4] The entry and

[4]Baade and Sanderson (1997) estimate the novelty effect for each of ten cities. They find effects in the range of

departure variables (BBE, FBE, BAE, BBD FBD, BAD) combine multiple entries and departures into a single variable. For example, the departure variable would not distinguish between a city that loses one baseball franchise and a city that loses two or more baseball franchises in less than ten years. This approach implicitly forces an equal effect on wages of each event.

Our analysis allows for variable effects of franchises over time through inclusion of dummy variables indicating the presence of a franchise and the entrance or exit of a franchise in the last ten years. We also allow for both the existence and the entrance and exit of franchises in each of three major professional sports, thus allowing for the effects of a franchise in one sport to be net of the effects of goings on with other sports or other franchises in the same sport. Our specification does not, however, control for any symbiotic or mutually detrimental effects of franchises in more than one sport. We control for construction of new facilities with dummy variables and, combined with the presence of a franchise, which must have had an existing facility, we address the issue of whether a new stadium replaces an old stadium or a new stadium is constructed where none previously existed. Additionally, one of the construction variables controls for multiple-sport facilities, as was common in the 1970's. The wide variety of our explanatory variables controls for the gamut of sports environments experienced in the United States. Because we examine the effects of entrance and exit of franchises over a ten year period, few MSAs have no variation in these explanatory variables. For example, a city which obtained its first football franchise in 1965 has a value of 0 for FBE1 throughout the sample. However, if that city obtained its first football franchise in 1977, then FBE takes a value of 1 for each year 1977 through 1986, and zero from 1987 on.

Results and Discussion

Table 2 shows the results of estimating Equation (1) using OLS for the entire sample of individuals and for two of the occupational groups. The empirical models also included city-specific dummy variables, time dummy variables for each year in the sample, and occupational group specific time trends to capture differences in productivity growth in these occupations over time. The results for these variables, as well as the full results for the other occupational groups, are available from the authors on request.

The parameters on the individual-specific controls in the full-sample model and the two occupational groups are precisely estimated and generally the correct sign. The omitted category is a female belonging to a non-black minority group with a graduate degree working in a non-union job and living in the suburbs. Age and hours worked per week both increase average weekly wages. Some individuals from the early part of the sample do not have reported hours worked. We control

from 7 to 10 years.

for this omitted variable with the dummy variable *nohrs*, which is equal to one for those individuals with missing hours worked. The sign of this variable is also positive and significant. The educational variables are also significant and of the predicted sign given that they measure the effect of education on wages relative to someone with a graduate degree.

The omitted category in the occupational dummy variables is Announcers. A description of the jobs of workers in this occupational group can be found in the appendix. Workers in this occupational group had higher weekly earnings than all other groups except sales managers.

Only a few of the variables in the vector of sports environment variables are individually significant. For the full sample, the baseball related variables (presence of a franchise, stadium capacity,capacity squared, and the departure of a baseball franchise) are significant, along with several construction variables. This was also true of the significance of individual sports environment variables in previous research using aggregate data [Coates and Humphreys (1999), (2001a), (2001b).] Because it is difficult to quantitatively measure the sports environment in a city, we rely on F-tests of the overall significance of the vector of sports variables rather than the significance of individual variables in this vector as the appropriate test of the impact of professional sports on average weekly earnings of workers in the sample.

Table 3 shows the F-statistics and P-values of the overall test of significance for the sports environment variables for each of the empirical models. The hypotheses for these F-tests are

$H_o: \ \gamma = 0$

$H_a: \ \text{At least one } \gamma \neq 0.$

The null hypothesis is rejected in the full sample specification and for two of the occupational group models, Food Service and Ushers, suggesting that the vector of sports variables is jointly significant in these empirical specifications. The vector of sports environment variables is not jointly significant for all occupational groups, suggesting that professional sports franchises and stadiums have a differential impact on separate segments of the local labor market. Some of the occupational groups that economic impact studies suggest should benefit from sports franchises and stadiums. Notably employees at hotels and employees and managers in retail sales occupations do not appear to have higher average weekly wages in this sample due to the vector of sports environment variables. The lack of any statistically significant impact in these groups may be due to the relatively small sample size, as the vector of sports environment variables is jointly significant in the overall sample.

For those empirical specifications where the vector of sports environment variables are significant, we calculated three separate forecasted impacts of the vector of sports environment variables

on the log of average weekly earnings. These mean predicted impacts are shown on the last three columns of Table 3. To arrive at these predicted impact, we multiplied the point estimate for each parameter in the vector of sports environment variables by the mean value of the variable associated with that parameter in the sample and then summed each of these terms. The overall effect uses all the sports environment variables, the departure effect uses only the mean values of the three departure dummy variables, and the arrival effect is the difference in the overall and departure effects. The rationale for this method of computing the arrival effect is that when a team arrives the city obtains a franchise, so the franchise dummy variable becomes relevant, and the city must have a stadium or arena with seating capacity which may have been refurbished or built new very recently. One can, of course, compute the effects for entry or departure in a given sport, of the effects of franchises distinctly from the effects of entry, and so on.

The mean predicted value for the overall sample, -0.081, converts to a \$0.92 drop in average weekly earnings of workers in the sample, or an annual decrease of \$46.11 in before tax earnings based on a fifty week work year. This is quantitatively similar to the impact on real per capita income reported in previous research based on aggregate data over the period 1968-1997. The figure for workers in Food Service occupations is a decrease in annual earnings of about \$42 and the figure for ushers an increase in annual earnings of about \$87.

The increase in wages for ushers can be interpreted as a direct positive impact of sports on the local economy. Along with announcers and some athletes, this occupational group is employed inside the stadium and these workers clearly stand to benefit from the sports environment in a city. However, the size of this occupational group is small and from Table 2 workers in this occupational group earn the lowest average weekly wages in the sample, probably because of the seasonal nature of the work.

The negative predicted impact of the sports environment on average weekly wages in the Food Service occupational group, as well as for the entire sample, can be interpreted as an indirect impact. Sigfried and Zimbalist (2000) describe two possible indirect channels through which professional sports might decrease earnings of workers in some occupational groups. The first is a "Substitution Effect" resulting from the budget constraint faced by consumers. Sports competes with other entertainment goods and services in the local economy. Each dollar spent at the ballpark is a dollar not spent on a meal in a local restaurant, bowling alley, etc. Reduced consumer spending at local bars and restaurants could lower earnings of employees at these establishments. The second possible channel is Sigfried and Zimbalist's "Leakages and Multipliers" effect. Simply put, spending on sports may have a much lower local multiplier than spending on other entertainment goods and services. Coupled with the Substitution Effect, this effect implies that the dollars spent on sports do not recirculate through the larger community to the same extent as dollars spent on other types

of entertainment. This would also reduce earnings of workers in occupational groups like Food Services.

As expected, the effect of a franchise entry is to improve the wages of ushers. However, departure of a franchise is detrimental to ushers. But entry reduces the wages of food service workers while departure has virtually no effect. One hypothesis for this difference is that ushers are exclusively a sports facility occupation, so that the fortunes of such workers is closely linked to the presence of a franchise. Food service workers, on the other hand, suffer competition from concession stands inside the stadium or arena. People buying food and drinks inside the stadium do not buy so much of those items outside the stadium as they would if there were no team. Consequently, there is less demand for meals and drinks at restaurants and pubs, so there is less demand for food service workers.

Finally, the results in this paper represent a robustness check on previously reported results. Much of the retrospective evidence on the economic impact of sports on local economies, including the findings of a negative impact, are based on aggregated data. Mostly, this data is published by the Bureau of Economic Analysis as part of the Regional Economic Information System (REIS). These data are aggregated across individuals in specific geographical areas. Aggregation of this type can lead to a number of econometric problems, as was pointed out by Zellner (1966). Serial correlation is another common econometric problem associated with aggregate data. The similarity of the results in this paper and those obtained from aggregate data suggest that previously published results do not have serial correlation problems.

Further, results from aggregate data depend on the sampling methodology underlying the REIS. Obtaining quantitatively similar results from a different data set composed of observations at a different level of aggregation using a different modeling approach suggests that previously published results are robust to problems stemming from the data and the model specification.

Conclusions

In this paper we have examined the impact of professional sports on average weekly earnings of a sample of workers in narrow occupational groups drawn from the Current Population Survey March Supplement. These occupational groups are among those that proponents of public funding of professional sports claim will benefit economically from these subsidies. The approach here contrasts with that in previous research which focused on aggregate measures of income. However, the results of this study confirm conclusions of earlier research that the overall sports environment is frequently statistically significant as a determinant of earnings and that the predicted mean impact of sports on wages is negative. In this study, the effect of sports is an annual average decrease

in inflation adjusted earnings of $46.11 for workers in the sample. However, the results also show that the effects of the sports environment differ across job-types. For example, for some workers, particularly those in small occupational groups employed in stadiums, like ushers, annual earnings rise on average due to the presence of professional sports.

Our results cast further doubt on the idea that professional sports can be an effective economic development tool in metropolitan areas. Although some specific occupational groups clearly benefit from the presence of professional sports franchises and facilities in our sample of 37 cities, it does not appear that workers in other related occupational groups benefit. Instead, workers in these other occupational groups have lower wages as a result of the wider impact of professional sports on the local economy.

References

Baade, R. A. (1996). Professional sports as catalysts for metropolitan economic development. *Journal of Urban Affairs 18*(1), 1–17.

Baade, R. A. and R. F. Dye (1988). Sports stadiums and area development: A critical review. *Economic Development Quarterly 2*(3), 265–275.

Baade, R. A. and R. F. Dye (1990). Stadiums and professional sports on metropolitan area development. *Growth and Change 12*(114), 1–14.

Baade, R. A. and A. R. Sanderson (1997). The employment effect of teams and sports facilities. In R. G. Noll and A. Zimbalist (Eds.), *Sports, Jobs and Taxes: The Economic Impact of Sports Teams and Stadiums*, pp. 92–118. Washington, D. C.: Brookings Institution.

Coates, D. and B. R. Humphreys (1999). The growth effects of sports franchises, stadia and arenas. *Journal of Policy Analysis and Management 18*(4), 601–624.

Coates, D. and B. R. Humphreys (2001a). The economic consequences of professional sports strikes and lockouts. *Southern Economic Journal 67*(3), 737–747.

Coates, D. and B. R. Humphreys (2001b). The effect of professional sports on earnings and employment in the services and retail sectors in u.s. cities. Unpublished mimeo.

Houghton Mifflin Co. (1996). *The Information Please Sports Almanac*. Boston, MA: Houghton Mifflin Co.

Murphy, K. M. and F. Welch (1992). The structure of wages. *Quarterly Journal of Economics 107*(1), 285–326.

Noll, R. G. and A. Zimbalist (1997a). Build the stadium, create the jobs! In R. G. Noll and A. Zimbalist (Eds.), *Sports, Jobs and Taxes: The Economic Impact of Sports Teams and Stadiums*, pp. 1–54. Washington, D. C.: The Brookings Institution Press.

Noll, R. G. and A. Zimbalist (Eds.) (1997b). *Sports, Jobs and Taxes: The Economic Impact of Sports Teams and Stadiums*. Washington, DC: The Brookings Institution Press.

Quirk, J. P. and R. D. Fort (1992). *Pay Dirt: The Business of Professional Team Sports*. Princeton, NJ: Princeton University Press.

Rosentraub, M. S. (1997). *Major League Losers: The Real Cost of Sports and Who's Paying For It*. New York, NY: Basic Books.

Rosentraub, M. S., D. Swindell, M. Przybylski, and D. R. Mullins (1994). Sport and downtown development strategy: If you build it, will jobs come? *Journal of Urban Affairs 16*(3),

221–239.

Sigfried, J. and A. Zimbalist (2000). The economics of sports facilities and their communities. *Journal of Economic Perspectives 14*(3), 95–114.

Topel, R. H. (1986). Local labor markets. *Journal of Political Economy 94*(3), 111–143.

Zellner, A. (1966). On the aggregation problem: A new approach to a troublesome problem. In K. A. Fox (Ed.), *Economic Models, Estimation, and Risk Programming: Essays in Honor of Gerhard Tintner*, pp. 335–62. New York, NY: Springer-Verlag.

Appendix: Occupational Group Descriptions

The following are the SOC and Census Occupation Codes, titles and descriptions for several of the more esoteric occupational groups in the sample.

Announcers

27-3011/280 *Radio and Television Announcers*

"Talk on radio or television. May interview guests, act as master of ceremonies, read news flashes, identify station by giving call letters, or announce song title and artist."

27-3012/280 *Public Address System and Other Announcers*

"Make announcements over loud speaker at sporting or other public events. May act as master of ceremonies or disc jockey at weddings, parties, clubs, or other gathering places."

Athletes

27-2021/272 *Athletes and Sports Competitors*

"Compete in athletic events."

27-2022/272 *Coaches and Scouts*

"Instruct or coach groups or individuals in the fundamentals of sports. Demonstrate techniques and methods of participation. May evaluate athletes' strengths and weaknesses as possible recruits or to improve the athletes' technique to prepare them for competition."

27-2023/272 *Umpires, Referees, and Other Sports Officials*

"Officiate at competitive athletic or sporting events. Detect infractions of rules and decide penalties according to established regulations. Include all sporting officials, referees, and competition judges."

Ushers

39-3031/442 *Ushers, Lobby Attendants, and Ticket Takers*

"Assist patrons at entertainment events by performing duties, such as collecting admission tickets and passes from patrons, assisting in finding seats, searching for lost articles, and locating such facilities as rest rooms and telephones."

Table 1: Variable Definitions, Means and Standard Deviations

Variable	Definition	Mean	Std. Dev.
male	1 if male, 0 otherwise	0.443	0.497
white	1 if white, 0 otherwise	0.821	0.384
black	1 if black, 0 otherwise	0.123	0.329
lnage	natural log of years of age	3.407	0.415
unioncov	1 if job covered by union contract, 0 otherwise	0.001	0.039
unionmem	1 if a union member, 0 otherwise	0.014	0.119
athlete	1 if an athlete, 0 otherwise	0.006	0.078
announce	1 if a radio or tv announcer	0.003	0.055
saleman	1 if a sales manager	0.194	0.396
salesret	1 if a sales clerk, cashier, or sales counter worker	0.269	0.444
hotelclrk	1 if a hotel clerk	0.005	0.070
foodserv	1 if a food services worker (waiter, cook, bartender, etc.)	0.462	0.499
ushers	1 if an usher	0.014	0.118
maidbell	1 if a maid or bellhop	0.046	0.210
nohschl	1 if did not graduate high school	0.269	0.443
bachdgr	1 if earned a bachelors degree, but no more	0.409	0.492
somecoll	1 if attended some college	0.238	0.426
hschlgrd	1 if a high school graduate, but no college	0.373	0.484
rwkwage	real weekly wage in dollars	217.2	246.1
fbfr	1 if a professional football franchise in the city	0.802	0.398
bafr	1 if a professional basketball franchise in the city	0.749	0.433
bbfr	1 if a professional baseball franchise in the city	0.769	0.421
bae	1 if a basketball franchise entered city in last 10 years	0.154	0.361
bbe	1 if a baseball franchise entered city in last 10 years	0.028	0.166
fbe	1 if a football franchise entered city in last 10 years	0.086	0.281
bad	1 if a basketball franchise left city in last 10 years	0.067	0.249
bbd	1 if a baseball franchise left city in last 10 years	0.012	0.109
fbd	1 if a football franchise left city in last 10 years	0.092	0.289
bbcap	seating capacity of the basketball arena in the city	49.095	32.407
fbcap	seating capacity of the football stadium(s) in the city	61.817	38.473
bacap	seating capacity of the baseball stadium(s) in the city	15.501	11.158
bbco	baseball stadium construction in last 10 years	0.051	0.221
fbco	football stadium construction in last 10 years	0.104	0.306
bbfbc	joint football and baseball stadium construction in last 10 years	0.048	0.214
baco	basketball arena construction in last 10 years	0.268	0.443

Table 2: Regression Results

Variable	Full Sample		Ushers		Food Services	
	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.
lnage	0.651	83.23	0.658	7.79	0.701	60.78
hrs	0.008	26.99	0.019	5.00	0.008	18.12
nohrs	0.141	11.63	0.513	4.96	0.138	7.90
male	0.314	48.06	0.131	1.89	0.285	30.44
white	0.070	5.18	-0.147	-0.86	0.076	4.02
black	0.067	4.22	-0.220	-1.12	0.062	2.78
unioncov	-0.002	-0.03	1.472	1.62	-0.143	-1.31
unionmem	0.102	3.91	0.076	0.22	0.023	0.54
nohschl	-0.514	-29.65	-0.217	-1.08	-0.405	-11.80
bachdgr	-0.033	-1.64	0.249	1.04	0.044	1.12
somecoll	-0.201	-11.83	0.154	0.77	-0.068	-1.93
hschlgrd	-0.284	-16.89	0.078	0.39	-0.179	-5.19
centcity	0.038	5.44	-0.012	-0.15	0.095	9.36
bbcap	0.040	2.03	-0.580	-2.30	0.060	1.99
fbcap	-0.001	-0.44	0.015	0.52	-0.005	-1.28
bacap	0.000	0.00	-0.032	-0.46	-0.015	-1.44
bbco	0.049	2.64	0.091	0.40	0.049	1.73
fbco	0.015	0.99	0.247	1.48	0.029	1.36
bbfbc	-0.061	-3.14	-0.044	-0.24	-0.043	-1.52
baco	0.039	3.28	0.253	1.85	0.061	3.51
fbfr	0.012	0.10	-1.347	-0.97	0.209	1.13
bafr	0.024	0.32	0.540	0.75	0.170	1.51
bbfr	-1.204	-2.10	16.195	2.25	-1.738	-2.02
bbcapsq	0.000	-1.97	0.005	2.27	-0.001	-2.01
fbcapsq	0.000	0.66	0.000	0.10	0.000	1.44
bacapsq	0.000	-0.38	0.000	0.25	0.000	1.16
bae	-0.004	-0.24	-0.238	-1.42	0.007	0.30
bbe	0.011	0.37	0.915	2.69	-0.015	-0.36
fbe	0.029	1.47	0.058	0.26	0.035	1.21
bad	0.016	0.93	-0.464	-2.14	0.002	0.09
bbd	-0.071	-1.96	0.184	0.61	-0.120	-2.36
fbd	-0.003	-0.17	-0.447	-2.09	0.014	0.49
athlete	-0.596	-3.58	–	–	–	–
saleman	0.278	1.83	–	–	–	–
salesret	-0.478	-3.17	–	–	–	–
hotelclrk	-0.302	-1.41	–	–	–	–
foodserv	-0.544	-3.61	–	–	–	–
ushers	-0.864	-5.46	–	–	–	–
maidbell	-0.347	-2.23	–	–	–	–
N	53383		753		24656	–
R^2	0.34		0.33		0.24	–

Table 3: F-Tests and Forecast Mean Impact on Earnings

			Forecast Mean Impact		
Model	F-Statistic	P-Value	Overall	Departure	Arrival
Full Sample	2.36	0.00	-0.081	-0.00009	-0.080
Maids and Bellhops	0.87	0.62	—	—	—
Athletes	1.04	0.41	—	—	—
Food Service	1.61	0.04	-0.146	-0.001	-0.146
Ushers and Ticket Takers	1.81	0.02	0.550	-0.066	0.615
Retail Sales	1.08	0.36	—	—	—
Retail Sales Managers	0.61	0.91	—	—	—
Hotel Clerks	0.90	0.58	—	—	—
Announcers	1.05	0.41	—	—	—