

College Football Attendance at the Highest Level: Another Look at Selected Environment and Demographic Indicators

Aaron Clopton, Marshall University

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Poster

The ever-consuming relationship between big-time intercollegiate athletic contests and economic gains is one that rages incessantly. Data from the 2004-2005 EADA report show that 47 schools of the 117 Division I-A schools reporting tallied over \$35 million in annual expenses (Equity in Athletics Disclosure Act, 2005). Further, the significance of college athletics in economics frequently draws interest and scrutiny from the United States House of Representatives (Centor, 2006) to the NCAA with its formation of the Presidential Task Force on the Future of Intercollegiate Athletics to promote fiscal integrity (Brown, 2005). Further, a wealth of empirical data exist from previous efforts toward exploring through the economic realities of intercollegiate athletics. Most prominent among these is previous research that has been largely aimed at establishing any connection with athletics success and alumni donations (Baade & Sundberg, 1996; Sigelman & Brookheimer, 1994), enrollment demand (McEvoy, 2005; Toma & Cross, 1998), faculty production (McCormick & Tinsley, 1987; Tucker, 1992), and student body graduation rates (Rishe, 2003). Another area of research has been in conditions that influence spectator attendance at intercollegiate athletic contests. In particular, several studies examined a season of data found significant relationships with various attendance predictors, including ticket pricing (Zhang et al, 1995), enrollment and city population (Krohn et al, 1998; Wells et al, 2000), and on-field success (DeSchrive, 1999). Still in question, though, is more insight into the economic picture as it impacts attendance at intercollegiate athletic events, rather than inverse. Economic predictors, such as income, have been used in previous studies on attendance at sporting events. The effect of income on attendance, though, has varied - if its presence was even accounted for, something that a myriad research has left out in the past (Kahane & Shmanske, 1997). Personal and per capita income variables have been shown to possess a negative impact on ice hockey and soccer (Jennett, 1984), both a positive, significant (Kahane & Shmanske, 1997) and an insignificant (McEvoy et al, 2005) relationship with Major League Baseball attendance and, still, a significantly-negative relationship with National League attendance while establishing a significantly-positive relationship with American League attendance in another study (Whitney, 1988). Per capita income has also been used in higher education, showing a significant positive prediction of student body enrollment (Pennington et al, 2002).

From an historical perspective, intercollegiate athletics has been found to be more robust to economic indicators, such as population estimates and per capita income, than professional sports (Rader, 2002). Moreover, in the U.S. economy from 1970 to 2001, when the S&P 500 grew at a compound annual growth rate of 8.4%, there occurred five "bear markets" with significant declining phases. In each of the declines, the sport industry outpaced the overall national economy and proved itself as "bear resistant" (Moag & Co., 2004).

The purpose of this study, then, was to explore this notion that big-time college athletics events would be resistant to economic downturns over the course of 25 years. This would be measured by attendance at football games at the highest level of college football with members of the Bowl Championship Series (BCS). To date, no studies have created an elongated picture of these institutions in respect to certain economic and demographic predictors. The hypotheses guiding the research were, as follows, *ceteris paribus*:

H1: Annual attendance figures will have a positive, significant relationship with the population estimates.

H2: Annual attendance figures will have a positive, significant relationship with the per capita income of the respective metropolitan statistical area of that university.

Data were collected from 32 randomly-selected football teams from the BCS Conferences and Notre Dame University by accessing such archived seasonal data as wins, losses, bowl appearances, and attendance averages from the 1980 - 2004 seasons. Per capita income and population figures were retrieved for each of the Metropolitan Statistical Areas (MSA) housing the respective universities from the annual population estimates of the United States Census Bureau. Finally, the undergraduate enrollment numbers were compiled through the Integrated Postsecondary Education Data System (IPEDS) of the National Center for Education Statistics under the United States Department of Education. Once aggregated, a total of 645 seasons were accounted for between the 32 teams from 1980 - 2004.

Due to the exploratory nature of the research and the predicted linear relationship between both per capita income and attendance and population and attendance, fixed-effects ordinary least squares (OLS) multiple regression analysis with stepwise entry was conducted (Pedhazur, 1997). Cross-validation was held in check in order to monitor any potential overfitting of the

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data (Fox, 1991).

Preliminary results have shown that, over the 25 year period, wins from the previous year (PASTWINS) $\hat{\alpha} = .35$, $t[644]=9.79$, $p<.001$ and current season wins (WINS) $\hat{\alpha} = .28$, $t[644]=7.87$, $p<.001$ were the strongest significant predictors of college football attendance. While on-field success possessed the strongest indication of game-day attendance, the population of the area did not. In fact, there was no significant relationship found and the initial hypothesis (H1) was rejected. However, per capita income (PCINCOME) did display a significant amount of predictability towards attendance with $\hat{\alpha} = .10$, $t[644]=2.25$, $p<.05$. Thus, the second hypothesis (H2) was retained.

Results from the study bring to light a greater depiction of big-time college athletics in the national economy. Further exploration into the data will be necessary to determine if attendance at these college football games over the years outpaced the rate of per capita income growth and to see how robust attendance was to the fluctuations in the market. Moreover, with the lack of significance between attendance and population, the results are dissimilar to previous findings in college sport (Krohn et al, 1998; Wells et al, 2000). Thus, additional follow-up questions are required for further insight.