Incentives and the Factors Impacting Attendance in Minor League Baseball

Steven Howell, Northern Illinois University
David Klenosky, Purdue University

Understanding the factors that impact sporting event attendance is a crucial issue in the sporting literature and as such, holds important implications for sport researchers and practitioners. Prior research has examined a variety of factors influencing sport attendance including promotions (e.g., McDonald & Rascher, 2000; Boyd & Krehbiel, 2003, 2006), new stadiums (e.g., Clapp & Hakes, 2005; Zygmont & Leadley, 2005), star players (e.g., Rivers & DeSchriver, 2002; Donihue, Findlay, & Newberry, 2007), and team success (e.g., Baade & Tiehan, 1990; Donihue, Findlay, & Newberry, 2007). These analyses have contributed to our understanding of the factors impacting sport event attendance; however, they have focused predominantly on attendance at the major league level.

Unlike their major league counterparts, minor league franchises often lose star players during the season (through advancement to the majors or trades to other teams) and must rely on more creative means such as promotional giveaways, special events, pricing discounts, etc. to draw spectators to their games. Initial research by Siegfried and Eisenberg (1980), using data from 27 different minor league teams over a five-year period, focused solely on the impact of promotions on minor league attendance -- generating findings such as “an additional price promotion can be expected to yield at least 975 more fans per season, while an additional merchandise promotion is predicted to generate 1,568 extra fans over a season” (p.66). More recent empirical analyses of the impact of promotions on minor league attendance have explored the impact of additional factors such as special events, temporal (i.e., time-related) factors, and weather conditions; using data from the Eastern (Gifis & Sommers, 2006), NY-Penn Baseball (Paul et al., 2007), South Atlantic (Paul, Toma, & Weinbach, 2009), and Carolina (Cebula, Toma, & Carmichael, 2009) Leagues. Though these investigations have contributed to our understanding of the variety of factors impacting minor league attendance, they all have focused on the main effects of the factors involved; and have thus ignored potential second-order interaction effects.

Despite the importance of attracting fans to games at the minor league level, the body of literature examining the factors impacting minor league baseball attendance remains relatively undeveloped. The present study contributes to this area by exploring how promotional giveaways, in-game discounts, special events, and ticket price (factors that are generally under a team’s control -- i.e., controllable factors), and weather conditions and temporal factors (factors that are relatively out of a team’s control -- i.e., uncontrollable factors) affect attendance in Minor League Baseball. Additionally, by exploring second-order interactions, we examine the extent to which these controllable promotional factors can potentially mitigate the negative impacts associated with the uncontrollable weather and timing factors. In other words, we explore whether promotional factors can provide fans with a sufficient incentive to attend a minor league baseball game despite the disincentives resulting from poor weather conditions and suboptimal timing.

Employing multiple regression analysis with ordinary least square, we examined a pooled dataset of teams participating in the International League, a Triple-A level league, during the 2010 season (n = 772 games). Individual game home attendance figures were drawn via game box scores from each team’s official website. These raw attendance statistics were operationalized as a percentage of the stadium capacity where each game was played; which served as the dependent variable in our analysis. A total of eleven independent variables were included in the model -- five were classified as uncontrollable (i.e., temperature at the game’s opening pitch; a quadratic of temperature at the game’s opening pitch; and a rain, weekend, and opening day/final home page binary dummy variable); while the remaining six were considered controllable (i.e., in-game discounts; low- and high-valued promotional giveaways; special events; postgame fireworks; and ticket price). The independent variables explained 42.3% of the model’s variance (R2 = 0.423) and the overall model was significant (p < 0.001).

Estimates from the uncontrollable factors appeared to be consistent with what would generally be predicted. First, the coefficient on the rain dummy was negative, suggesting that rain predicts a 7.7% decrease in attendance to an International League baseball game. The coefficients on the opening day/final home game and weekend dummy...
variables were both positive, indicating that an 18.4% increase in attendance is predicted by the game being either the first or final home game of the season, while a 6.6% increase is associated with a weekend contest (i.e., Friday, Saturday, and Sunday). Additionally, for each degree increase (i.e., 1°F) a 2.7% increase in attendance is predicted. All uncontrollable variables were significant at the 1% level or better (p < 0.01).

Conversely, the estimates for the controllable factors were also consistent with expectations (with only one exception). Two of these controllable predictor variables were negative: as expected, (1) each dollar increase in the average price of a ticket predicted an 8.8% decrease in attendance; but contrary to expectations, (2) an in-game discount predicted a 6.7% decrease in attendance. The four other controllable predictor variables were positive: (1) low- and high-valued promotional giveaways were associated with a 9.7% and 9.5% respective increase; (2) special events (i.e., concerts, family nights, etc.) predicted a 4.9% increase; and (3) fireworks suggested a 19.6% increase in attendance. All controllable variables were significant at the 1% level or better (p < 0.01).

In addition to examining these first-order effects, we also investigated the extent to which the particular controllable factors (i.e., promotions and other special events) can mitigate the negative impact of the uncontrollable factors examined (i.e., weather conditions and temporal factors). The interaction terms increased the R-square value of the model from 0.423 to 0.492. In particular, we find that both low- and high-priced promotional giveaways, when placed on a weekday, predicted a 13.2% and 12.7% increase in attendance respectively. This suggests that promotional giveaways create an additional incentive to attend a game during the work week (i.e., when the opportunity costs for leisure time are high); however, the same controllable factors did not have the same incentive effect for weekend games. Counter to expectation, a postgame fireworks display did not offer a sufficient incentive to attend when there was rain during the game (i.e., this interaction term predicted a 14.3% decrease in attendance).

The present study offers new findings which address important issues for both sport researchers and practitioners. In light of these findings, developing more refined attendance demand models and having a greater awareness of spectators’ intention to attend a game should help team marketers and management optimize their promotion and operations schedules and, as a result, maximize gate revenues. Additionally, having a more complete understanding of the impacts caused by both controllable and uncontrollable factors would benefit efforts to modify changes in promotional structures; and thus, maximize fan incentives to attend a minor league baseball contest.