SportsEconomics Perspectives, Issue 3

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Battling Attrition: A Study in Improving Member Retention at Health Club Facilities

Attrition and membership turnover is endemic to the fitness industry. The preponderance of evidence showing the positive effects of exercise, coupled with the increasing rates of obesity in the United States have driven record numbers of Americans to join health clubs, particularly around the New Year. According to the International Health and Racquet Club Association, more than one million Americans, driven by holiday indulgences and resolutions, are expected to sign up for memberships to health clubs in the month of January alone. Yet, despite the peak in memberships and club attendance in the early parts of the year, these clubs will face attrition rates of 30 percent each year. Health clubs' perpetual focus on selling memberships without paying attention to attrition is like bailing water out of sinking ship without looking for the source of the leak.

One of the largest studies undertaken on the topic of retention, was conducted in the UK and found that the attrition rates varied from 11 to 62 percent.[1] Simply put, after 12 months the best clubs lost one member out of every ten and the worst were losing more than six out of ten members per year. The average length of membership per club was 74 weeks, and was as low as 40 weeks, meaning that the average member stays less than a year and a half before terminating their membership. While many of these members may be converting to another membership with another club, some of these members will not rejoin a facility and fall out of the system. Additionally, some clubs can earn as much as 40 percent of revenues from ancillary services like fitness classes, massages, and joint-partnership restaurants – therefore the right mix of amenities may serve to increase revenues in multiple streams. It is imperative to the revenues of the facilities, and to the industry in general, to increase the membership retention rate. To add context, if clubs with the lowest retention rates achieved the retention of the best club surveyed, they would more than double their income in 12 months.[2]

Understanding the underlying factors that drive attrition can serve to increase membership retention rates, which will provide the revenues associated with higher membership, but can also serve to help clubs identify ways to tailor their ancillary services and club amenities to increase the overall profitability of the franchise. Using a national health club franchise as the subject, this study sought to identify and evaluate the psychographic and demographic profile of members who leave the Club in order to provide a more comprehensive picture of key drivers for membership attrition, and to develop potential remedies to increase retention. Like other fitness clubs in the industry, this franchise was facing annual attrition rates of about 40%, and understood that even a small reduction in attrition would significantly add to its bottom line.

[1] Winning the Retention Battle, Fitness Industry Association Report (FIA), Main Findings Part 3, 2001.
[2] Holding on: attracting new members is only half of a club's battle. Neil Gibbons, Leisure & Hospitality Business (Nov 15, 2001): pS7.

Methodology

A survey instrument was developed based on information from secondary research, information provided by the franchise, and findings gathered from in-depth interviews of members who recently terminated. Although the Club had an exit interview, the questions only involved one question about why the members terminated. Additionally, the information the Club collected on the members was often out of date or incorrect. Another challenge was that the membership prices and amenities varied dramatically by Club facility/location, therefore member expectations and satisfaction varied within the franchise.

However, it is often the case that data collected through such mechanisms by fitness clubs concerning reasons why members leave is affected by responder bias. This is due to the fact that the former member has neither reason nor incentive for disclosing this information and the resulting response rates and the quality of information collected is generally poor. An additional element of this study was also to determine what mechanisms could be employed to better collect member information that could be used to proactively mitigate attrition.

Primary research was conducted to assess the reasons for member satisfaction and dissatisfaction. In-depth interviews and a survey were developed and administered to a stratified sample of members. From this a demographic and psychographic composite of members was generated by club location, and analyzed to determine what relationships existed between member satisfaction of Club attributes and the composite characteristics, which attributes members valued most, and how the Club was performing on those attributes. Quantitative techniques were employed, including factor and cluster analyses, to create actionable customer segments for the Club to address.

A directly proportional stratified sampling method was used to capture feedback from individuals, via in-depth interviews and surveys, who were most familiar with the recent conditions of the club. The Club provided the contact information for members who had terminated their membership within the past year. Of the 4,222 members for which information was provided, only 2,200 (52%) provided email addresses, 1,300 of which were valid, meaning that the club only had relevant contact information for 31% of this member sample.

As previously mentioned, the survey was developed utilizing secondary research, information provided by the franchise, and findings gathered from in-depth interviews of recently terminated members. The survey was based on the areas of importance to members as well as potential reasons for termination. The survey data were then utilized to categorize the respondents by membership types and club usage, reasons for termination to classify and compare the sample set, club usage (at current Club and at previous facilities which member formerly utilized) to compare to aspects such as reasons for termination and overall attitude, club satisfaction and importance attributes to develop an overall attitude of respondents. Finally, the importance of various attributes of the fitness club experience were compared to demographic, satisfaction, and termination results in an attempt to identify customer segments for which preventative action can be taken to prevent attrition. Descriptive analysis and clustering were also employed in the analysis.

Findings

While the FIA study found four major motivating factors why members quit or chose to stay at fitness clubs, two of the factors, physical and environmental factors and social environment were not significant in our study findings. Similar to the FIA study, the research findings are best explored in the context of an average membership lifespan or trajectory which include the factors and process involved with selecting a joining the Club, and evaluating the influences on retention once a member has entered the Club's system.

The findings show that most members were generally satisfied with their Club experience. In fact, overall the Club achieved higher satisfaction ratings on more important attributes, except for costs. Termination appears to be driven by life-changing events, insufficient usage and/or cost of membership for the majority of members, with a small subset being generally dissatisfied with the Club experience. Furthermore, usage and cost dissatisfaction appear to be closely related. Of those who terminated, 55% had been a member for a year or less.

The study also validated the perceptions of member demographics, with a higher population of members in their 20s and 30s terminating their memberships.[3] The members aged 29 or less are often not a focus of Clubs since this is the most mobile age group, given the fact that their high attrition is often caused by factors that the clubs cannot address. However, given the fact that 25- to 34-year-olds are often represent 25 to 40 percent of a club's member population, this is an important segment to evaluate.

Of those who terminated, almost 80% had been a member for less than a year and a half. Those who had been a member for more than 18 months tended to have a life-changing event, such as moving or change in job status, which influenced their termination decision, as opposed to dissatisfaction with the Club or its amenities. Approximately half of the members were leaving to join another club.

With regard to frequency of attendance, nearly 60% listed attending the Club three times a week or more. These usage rates were more frequent than that in the FIA study, which found that members who visit a facility 12 or more times a month are nearly half as likely to quit within 68 weeks. Interestingly, when indicating the time of their most recent visit to the facility, 45% had not attended in 3 weeks or more, the highest percentage of which (14%) listed 10 weeks since attending.

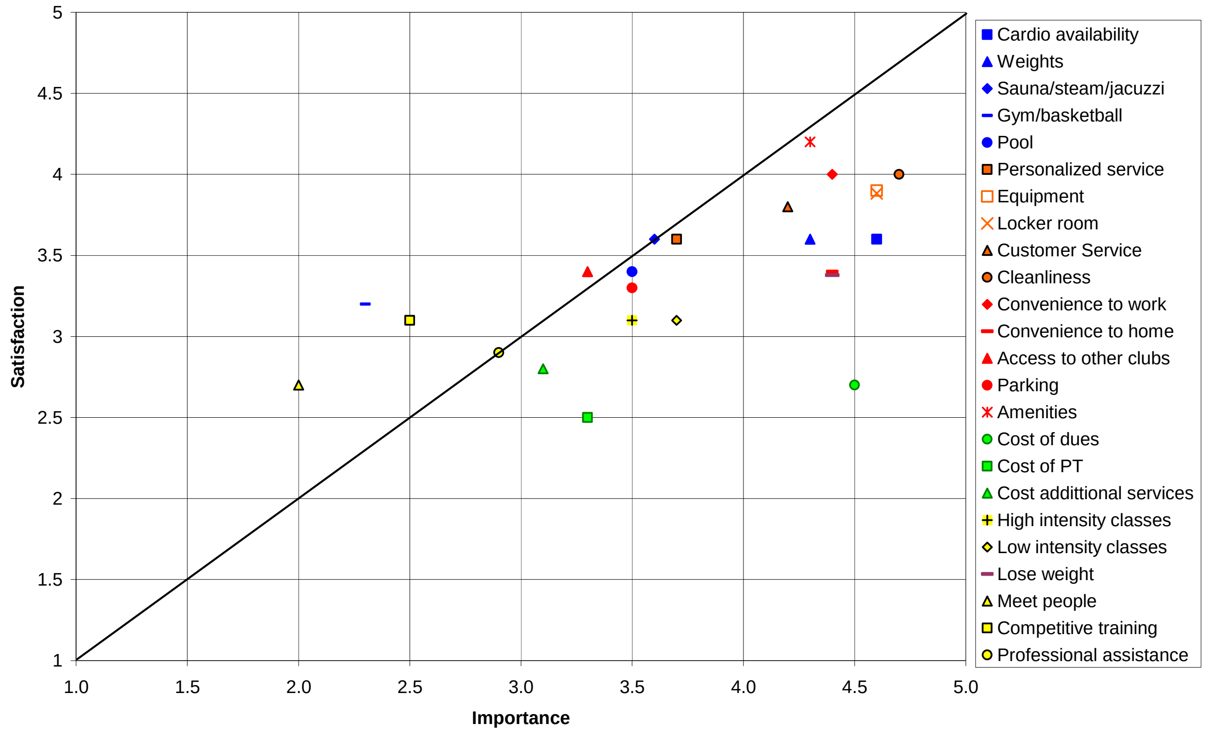
Just three attributes were found to influence the decision to terminate: cost of membership, moving, and usage. Just 16% said that cost of membership was not influential and 40% said their facility usage did not influence their termination. Interestingly, cost was relatively more important to women than men, while the importance of usage did not vary by gender. Half of members were not satisfied with the cost of membership dues, especially for those with low usage.

Members were generally satisfied with their Club experience, with costs as the predominant factor that could actively be addressed for members. Not surprisingly, the quality of the facilities ranked highest in important attributes for clubs. The more expensive the club, the less tolerant its members were of a failure to maintain an expected level of building standards and range of facilities. Therefore, as a higher priced franchise, the club

[3] The FIA report found that the age group most likely to cancel its membership is the 16- to 24-year-old bracket. However, our sample population were all aged 20 or older.

performed better on more important attributes. Figure 1 (below) shows an upward sloping trend line, indicating that in general the more important an attribute, the higher members' satisfaction with that attribute.

Figure 1: Attribute Scoring Plot



Factor groupings were created based on responses to the reasons for termination, satisfaction, and importance from the survey. This process allowed the aspects to be consolidated and simplified into groups such as costs, life changes, and convenience and then compared with other responses. Findings of significance include:

- Respondents in their 20s were more likely to terminate due to moving than other age groups.
- The more frequent the visits the less likely convenience was a reason for termination.
- Dissatisfaction with cost was equally likely to occur in upper income brackets as in lower income brackets.

Although members in higher age brackets or family or corporate plans have higher retention, maximizing member usage (increasing average visits to one or more times per week) in the first month after joining will increase retention across all segments.

Clusters were created based on the reasons for termination, club satisfaction and importance of club attributes. Once the clusters were created, descriptive techniques were utilized to create a demographic and psychographic picture of each segment. When cluster membership was compared against demographic variables, very few were found to be significant and none were differentiable among the clusters. One cluster was dissatisfied with many aspects of the club, and their responses indicated that this subset may have been placated by additional customer service intervention. When grouping by "satisfaction", three of the five clusters' had average or below satisfaction, largely affected by cost and usage.

The survey also tested new program ideas for the level of impact that they would have had on improving the former members' experience, three of which were found to be very important in potentially affecting attrition. The most effective program would have improved the experience for 73% of the population, with 17% indicating they would not have terminated their experience if the program was employed during the time in which they were a member.

Overall the Club was performing well on the attributes the members valued most. However, the Club rates were inflated due to the breadth of amenities offered, several of which were found to have no impact on member satisfaction, and therefore membership costs, which factored highly in attrition, could be reduced simply by eliminating the amenities members did not value and passing those savings via lowered rates. The analysis also showed that member's overall value and perceived happiness with the amenities and services offered were directly related to their perceptions of the membership costs. Our recommendations to address these issues included suggesting programs to drive usage, improved communication programs to better convey the Club membership value and to improve brand perception, and evaluating alternative membership plans. Moreover, usage factored high in importance, satisfaction, and reasons for termination, and it appears that early intervention for low users could increase attrition. However, to this into practice the club would need to improve its mechanisms for data collection and auditing on a more consistent basis.

With a better understanding of its core target segments, the facility could modify its customer service, sales, and marketing strategies to achieve higher membership and member satisfaction, and to differentiate itself from the myriad of competitive fitness alternatives in the area.

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An Examination of the “Flutie Factor” in Intercollegiate Athletics

On November 23, 1984, Boston College Quarterback Doug Flutie threw a 48-yard touchdown pass as time expired to lead BC to an upset victory against the University of Miami. With that one pass, Flutie secured the Heisman Trophy and brought national attention to Boston College. Over the next two years, admissions applications to Boston College rose 30 percent, generating sub stantial additional tuition revenue for the institution. This relationship between athletic performance and admissions applications has since been labeled the “Flutie Factor”, a term used in reference to numerous similar situations in intercollegiate athletics over the past two decades in which applications for admission were augmented by the increased exposure and interest generated by a successful athlete. Georgetown University realized a 45 percent increase in applicants for admission in the mid-1980’s over a three year period in the wake of three men’s basketball Final Four appearances led by star player Patrick Ewing. Gonzaga University saw an increase of nearly 60 percent in admission applicants from 1997 to 2000 after three years of unprecedented men’s basketball success, including a berth in the Elite Eight of the NCAA men’s basketball tournament. Finally, applications for admission to the University of Texas increased 13 percent the year after football star Ricky Williams set the NCAA Division I-A career rushing record and won the Heisman Trophy (1998).

Many researchers have examined the relationship between various measures of success in intercollegiate athletics and applications for admission to universities. None of these, however, could truly be considered an investigation of the so-called “Flutie Factor”, as all previous works focus on team performance factors, rather than individual athletic performances, as is inherent in the term “Flutie Factor.”

Methods

Universities with student-athletes ranking among the top five finishers, or vote recipients in college football’s Heisman Trophy award balloting between the years 1988 and 2003 were utilized as subjects in the study. The Heisman Trophy, among the most prestigious awards in all of sports, was used to define elite individual athletic performance, or “star athletes”, in college football for the context of this investigation. Based on previous literature, team performance was identified as an important potentially confounding variable in examining the impact of elite athletes’ performance on admissions applications. For example, when applications to Boston College rose dramatically in the 1980’s, was this due to the “Flutie Factor”, meaning the elite individual performance of Doug Flutie, or rather due to the performance of the entire team? In order to isolate the effect of elite individual performance from overall team performance or success, as well as to control for any time trends in higher education applicants, a pretest-posttest control group research design was utilized. Each subject school with a Heisman Trophy top five finisher from 1988-2002 was assigned to the “experimental” group while the football program finishing immediately above and below the school in that year’s final Associated Press rankings was identified and assigned to the control group. This sampling process resulted in a usable sample size of 128 subjects, 68 of which were in the experimental group and 60 of which were in the control group.

Upon compilation of subjects in both the experimental and control groups, the number of undergraduate applicants for admission to each subject institution was identified for both the year in which the subject institution had a top five Heisman Trophy finisher and the subsequent year. Applicant data was compiled as reported in The College Board College Handbook. A 2x2 mixed-factor analysis of variance (ANOVA) design was used to examine differences in undergraduate admissions applicants between schools with top five Heisman finishers and the control group from the year in which the elite individual athletic performance took place to the subsequent year.

Results

Table 1 provides descriptive data for both the experimental and control groups of subjects over time. The experimental group of subjects observed a mean increase in applications of 6.6 percent, growing from 12,865 during the academic year in which they had a player finish in the top five for the Heisman Trophy to 13,713 the subsequent year. The control group realized a 3.3 percent increase in applicants from one year to the next , growing by more than 500 applicants to 12,731. Thus, schools with a top five finisher in Heisman Trophy balloting had nearly twice the increase in undergraduate applicants for admission in the subsequent academic year than did institutions with a similar level of team success in football.

Table 1: Number of Applicants for Undergraduate Admission

		Baseline Year		Subsequent Year		
Group	N	Mean	SD	Mean	SD	% Change
Experimental	68	12,865.31	6,167.30	13,712.97	6,857.61	+6.59%
Control	60	12,320.63	5,577.94	12,731.42	5,730.04	+3.33%
Total	128	12,609.99	5,881.73	13,252.87	6,348.62	+5.10%

As stated previously, a 2x2 mixed factor ANOVA was utilized to determine if statistically significant differences existed in undergraduate admissions applicants between the experimental and control groups from one year to the next. A significant effect for time was observed. This finding was not surprising, given that enrollment in American colleges and universities increased by nearly 17 percent from 1988 to 2000, according to the National Center for Education Statistics. As such, it was expected that subjects' undergraduate applicants for admission would increase, regardless of whether subjects were members of the control or experimental groups. In answering the research question of whether differences existed between the control Heisman Trophy finalist group and the control group in undergraduate admissions applicants across time, a significant group x time effect was found. This result shows that schools with a football student-athlete finishing among the top five vote-getters for the Heisman Trophy realize an increased number of applicants for undergraduate admission the following year than do schools with similar team success in football without such an elite individual athletic performance in football.

Discussion

The results of this study have clear implications for universities with regard to admissions. Assuming the increased applicants to a university in the wake of a top five Heisman Trophy finisher are of comparable academic quality to other applicants, the university finds itself in a very positive dilemma. One option is to admit more applicants of comparable quality, likely leading to increased enrollment and, thus, revenue for the institution. The second option is to increase the rigor in its admission process, admitting the same number of students as previous, albeit with stronger credentials assuming the quality of applicants is somewhat normally distributed. A third option would involve some sort of hybrid approach of the previous two options by admitting a somewhat higher number of the increased applicant pool while also slightly increasing admissions standards, thereby enhancing both university revenues and the quality of the student body. Do these findings alone justify the expenditure of millions of dollars on sports programs by universities across the country? Likely not; however, these results provide evidence that athletics, or star athletes in particular, can have a profound advertising effect for the university, as is implied in use of the term "Flutie Factor" over the past two decades.

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Variable Ticket Pricing in Major League Baseball

Although a few sports teams continually sell-out their games prior to the season, most teams sell a large portion of their tickets during the season. For a myriad of reasons, including backlash from loyal fans, these teams have historically been reluctant to set different prices for the same seat throughout the season. However, due to the success some teams have garnered in implementing variable pricing, numerous sports organizations have recently implemented such tactics in an effort to maximize revenues. For instance, in Major League Baseball some teams are adjusting ticket prices depending on factors such as quality of the opponent, day of the week, month of the year, and for special events and holidays. This has also been proven as an effective technique in academia; a recent article by Rascher, McEvoy, Nagel, and Brown demonstrates that variable pricing would have yielded approximately $590,000 per year in additional ticket revenue for each Major League team in 1996, all else equal.[4] Accounting for capacity constraints, this would have garnered an increase of nearly 3 percent above what occurred when prices were not varied. For the 1996 season, the largest revenue gain would have been for the Cleveland Indians, who would have generated an extra $1.4 million in revenue. The San Francisco Giants would have experienced the largest percentage revenue gain, resulting in a revenue gain of nearly 7 percent had they implemented optimal variable pricing.

Variable ticket pricing (VTP), which has recently been a much-discussed topic in the business of sport, is a technique in which the price of a ticket is based on the expected demand for that event. For example, the Colorado Rockies (MLB) had four different price levels for the same seat in the outfield pavilion section of Coors Field, which ranged in price from $11 to $21.[5] The different price levels were based primarily on the time of the year (summer vs. spring or fall), day of the week (weekends vs. weekdays), holidays (Memorial Day, Independence Day, etc.), the quality of the Rockies' opponent, or their opponents' star players (e.g., Barry Bonds). Similarly, several National Hockey League (NHL) teams and intercollegiate athletics programs utilize VTP strategies.

Some MLB teams have implemented VTP based on the belief that their 81 home games are unique products that should each be priced according to their own characteristics that make them more or less attractive to the potential consumer. MLB attendance studies support this notion. For example, in a study including more than 50 independent variables in explaining MLB game attendance, McDonald and Rascher (2000) found variables such as day of the week, home and visiting teams' winning percentages, and weather among many others to be statistically significant predictors of game attendance.[6] Given the varying appeal of these games, it seems logical to price these games differently, especially given the rising player salary costs causing teams to constantly hunt for additional revenue sources.

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[4] See Rascher, D., C. McEvoy, M. Nagel, and M. Brown (forthcoming), "Variable Ticket Pricing in Major League Baseball", *Journal of Sport Management*.

[5] These prices were for 2004. The high price ($21) was for what the Rockies labeled as "Marquee" games, and the $11 price was for what were considered "Value" games.

[6] See McDonald, M. and D. Rascher (2000), "Does Bat Day Make Sense: The Effect of Promotions on Attendance in Major League Baseball" in Journal of Sport Management, 14(1).

Many industries have previously embraced the variable pricing concept as a method to increase revenue and to provide more efficient service to consumers. Airlines vary flight prices based on travel dates, time of day, peak holidays and days when travel demand is higher. Fares are also increased if booked close to the date of travel, as lower prices are used to encourage early booking. Hotels also price based on expected demand, charging higher prices for weekend, peak-season or event bookings for events such as the Super Bowl. Other industries, like transportation, utilize variable pricing to alter tolls and public transportation rates during peak travel and commute times. The arts also use variable pricing, offering discounts for matinees and lower demand times.

Many sports franchises are moving forward with VTP, despite the lack of research empirically validating the merits to the industry. This SportsEconomics Perspectives article summarizes the methodologies and findings of Rascher, McEvoy, Nagel, and Brown in their assessment of optimal VTP. Using individual game data from the 1996 MLB season, actual ticket prices and quantities are compared to revenue-maximizing prices to estimate the potential yield from initiating a VTP policy.

As discussed earlier, the demand for baseball games changes from game to game. For a given price, Table 1 (columns 2 and 3) shows that there is a large variance in attendance across games, with an average of 23 percent deviation from the mean. One model disregards the impact of ticket prices and attendance changes on concessions and merchandise sales (and prices). The second model accounts for stadium capacity, where for a sellout there is likely a much higher demand than the number of tickets sold. The third model accounts for the impact of capacity constraints and the effect of changes in ticket prices on concessions and merchandise sales. Table 1 shows the findings for the first model.

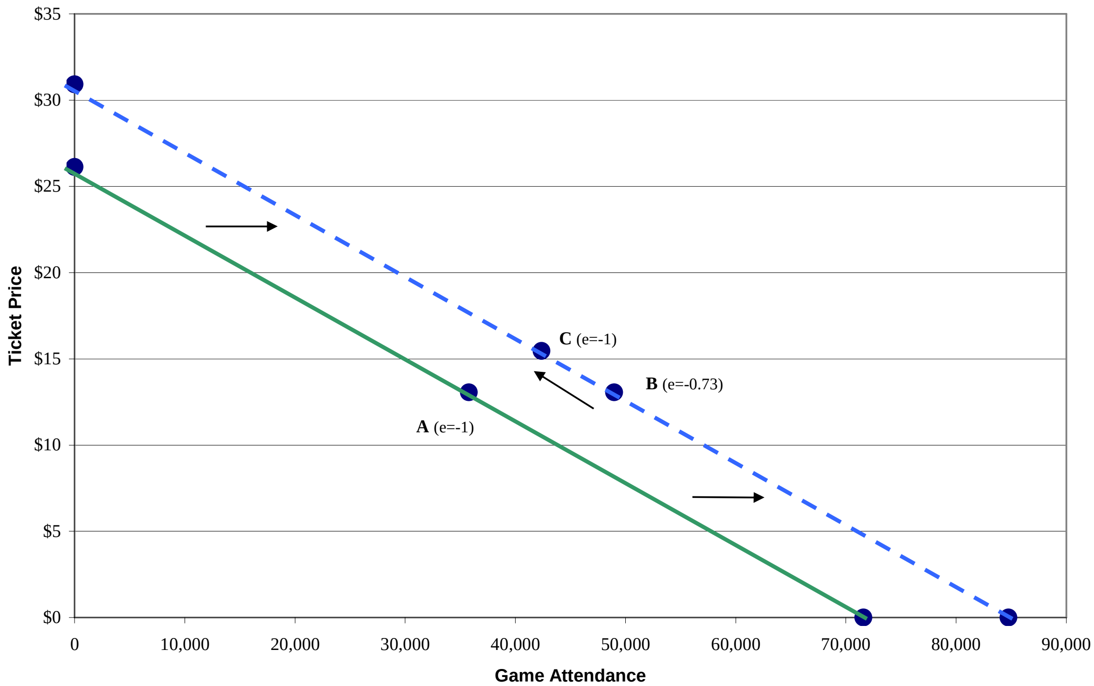
Table 1. Summary of Effects of Variable Ticket Pricing

	Avg. Attendance (1)	Avg. Absolute Change (2)	Avg. Deviation from Mean (3)	Avg. Ticket Price (4)	Avg. Absolute Change in Price (5)	Avg. Actual Ticket Revenue (6)	Avg. Var. Pricing Ticket Revenue (7)	Avg. Change in Ticket Revenue (8)	Total Actual Ticket Revenue (9)	Total Var. Pricing Ticket Revenue (10)	Total Change in Ticket Revenue (11)	% Change in Revenue (12)
Atlanta	35,793	5,832	16.3%	$13.06	8.1%	$467,458	$471,825	$4,367	$37,864,102	$38,217,807	$353,706	0.9%
Baltimore	45,475	1,930	4.2%	$13.14	2.1%	$597,539	$597,909	$371	$48,400,634	$48,430,660	$30,026	0.1%
Boston	28,687	3,847	13.4%	$15.43	6.7%	$442,643	$445,436	$2,794	$35,854,064	$36,080,352	$226,288	0.6%
California	22,476	4,899	21.8%	$8.44	10.9%	$189,697	$193,539	$3,842	$15,365,441	$15,676,653	$311,212	2.0%
Chicago (AL)	21,115	4,530	21.5%	$14.11	10.7%	$297,927	$303,781	$5,854	$24,132,054	$24,606,230	$474,176	2.0%
Chicago (NL)	28,606	6,854	24.0%	$13.12	12.0%	$375,309	$382,932	$7,622	$30,400,069	$31,017,468	$617,399	2.0%
Cincinnati	24,097	4,492	18.6%	$7.95	9.3%	$191,568	$194,618	$3,049	$15,517,036	$15,764,032	$246,996	1.6%
Cleveland	41,983	512	1.2%	$14.52	0.6%	$609,592	$609,629	$37	$49,376,968	$49,379,960	$2,992	0.0%
Colorado	48,037	80	0.2%	$10.61	0.1%	$509,675	$509,679	$4	$41,283,673	$41,284,030	$357	0.0%
Detroit	14,464	5,018	34.7%	$10.60	17.3%	$153,322	$162,531	$9,209	$12,419,066	$13,165,021	$745,954	6.0%
Florida	21,839	4,541	20.8%	$10.37	10.4%	$226,469	$230,737	$4,268	$18,343,988	$18,689,707	$345,720	1.9%
Houston	24,394	7,362	30.2%	$10.65	15.1%	$259,793	$268,433	$8,640	$21,043,206	$21,743,062	$699,856	3.3%
Kansas City	17,949	4,013	22.4%	$9.74	11.2%	$174,828	$178,510	$3,682	$14,161,039	$14,459,292	$298,253	2.1%
Los Angeles	39,364	7,038	17.9%	$9.94	8.9%	$391,274	$395,669	$4,394	$31,693,231	$32,049,165	$355,934	1.1%
Milwaukee	16,847	5,594	33.2%	$9.37	16.6%	$157,853	$165,387	$7,535	$12,786,054	$13,396,356	$610,302	4.8%
Minnesota	17,930	4,899	27.3%	$10.16	13.7%	$182,170	$188,905	$6,735	$14,755,746	$15,301,288	$545,542	3.7%
Montreal	19,982	7,149	35.8%	$9.07	17.9%	$181,240	$190,229	$8,989	$14,680,457	$15,408,584	$728,127	5.0%
New York (AL)	28,371	8,999	31.7%	$14.58	15.9%	$413,655	$428,965	$15,310	$33,506,040	$34,746,176	$1,240,136	3.7%
New York (NL)	20,260	4,610	22.8%	$11.83	11.4%	$239,676	$245,833	$6,157	$19,413,778	$19,912,512	$498,734	2.6%
Oakland	14,339	5,183	36.1%	$11.34	18.1%	$162,607	$171,942	$9,335	$13,171,166	$13,927,263	$756,097	5.7%
Philadelphia	23,077	4,679	20.3%	$11.01	10.1%	$254,072	$258,556	$4,483	$20,579,872	$20,943,035	$363,163	1.8%
Pittsburgh	17,039	5,914	34.7%	$10.09	17.4%	$171,919	$179,698	$7,779	$13,925,450	$14,555,555	$630,106	4.5%
San Diego	27,258	10,474	38.4%	$9.88	19.2%	$269,311	$284,010	$14,698	$21,814,230	$23,004,773	$1,190,543	5.5%
San Francisco	17,548	6,898	39.3%	$10.61	19.7%	$186,182	$198,697	$12,515	$15,080,772	$16,094,448	$1,013,676	6.7%
Seattle	33,593	9,398	28.0%	$11.59	14.0%	$389,349	$400,760	$11,411	$31,537,236	$32,461,526	$924,289	2.9%
St. Louis	32,912	6,038	18.3%	$9.91	9.2%	$326,153	$330,616	$4,463	$26,418,415	$26,779,886	$361,472	1.4%
Texas	36,111	6,664	18.5%	$11.96	9.2%	$431,888	$437,077	$5,189	$34,982,929	$35,403,253	$420,324	1.2%
Toronto	31,600	2,718	8.6%	$13.93	4.3%	$440,190	$441,845	$1,655	$35,655,410	$35,789,472	$134,063	0.4%
Average	**26,827**	**5,363**	**22.9%**	**$11.32**	**11.4%**	**$310,477**	**$316,705**	**$6,228**	**$25,148,647**	**$25,653,127**	**$504,480**	**2.6%**

Note: The total change in ticket revenue accounting for VTP across MLB is $14.1 million.

The methodology involved analyzing how demand for each game deviated from the average demand for each team. For example, as shown in Figure 1, point 'A' is on the average demand curve for the Atlanta Braves. It represents the actual average ticket price ($13.06) and average attendance (35,793). The slope of the demand curve is based on the assumption that the price elasticity equals -1.0, which implies revenue maximization. Therefore, slope can be determined from price, quantity, and elasticity.

Figure 1. Optimal Variable Pricing Adjustment
(Atlanta: solid line is average demand; dashed line is demand for one game)



Point 'B' is the actual price ($13.06) and attendance (48,961) for the Braves home opener, and shows the actual demand (attendance) for that game given the price. Rather than the price elasticity of -1.0 set for point 'A', the elasticity changed to –0.73 for point 'B'. Thus, the price charged ($13.06) was sub-optimal. Adjusting the elasticity back to –1.0 raises price to $15.46 and lowers attendance to 42,371 (point 'C').[7] This new price and quantity were used to calculate game revenue, which was then compared to the actual revenue from that game. These measurements were taken for each game of the season for each team in order to be able to see how adjusted ticket prices affect revenue.

The example in Figure 1 used linear demand. If a slightly curved demand function is used, the gains from variable pricing would be higher because the loss in number of attendees is compensated by higher pricing due to the curvature of the demand function. The subsequent analysis accounted for the possibility that the capacity of

[7] Rather than setting elasticity at -1.0, the analysis could have begun with any elasticity as long as the resulting elasticity at point 'C' is the same as that at point 'A' (see Figure 1). Therefore, this does not require revenue maximization or profit maximization, only consistency in terms of the objectives of the franchise throughout the season.

a stadium prevented the true demand from being revealed. In other words, sellouts typically imply that there was excess demand beyond the capacity of the stadium. The standard result would be to eliminate excess demand by increasing prices until the stadium reaches capacity and there is no one left who is interested in attending the game at the higher price. The model used information from uncensored observations (those without a capacity constraint as shown by not having sold out) to estimate what would have happened without the constraint.

The final analysis included the focus of the third model, that the prices of complementary goods (tickets and concessions) affect the demand, and hence optimal price, for each other. This analysis created a single demand for the joint product of tickets and concessions, with concessions price exogenously determined. According to Financial World, these non-ticket revenues made up 35% of ticket plus non-ticket revenues for MLB teams during 1996. This effectively means that for every dollar a patron spends at the stadium, thirty-five cents were spent on concessions, merchandise and parking. Given this new joint demand function, optimal prices were set for each game as in the two previous analyses. Given that the concessions price was fixed and positive, the new optimal ticket price would be on the inelastic portion of demand.[8]

These three analyses determined the optimal variable ticket price for nearly every game for the 1996 MLB season.[9] Using estimates from the first model test, had the Atlanta Braves, for example, raised ticket prices for the opening game, actual attendance would have been 42,371 with actual ticket revenues increasing by 2.5 percent ($15,817) for that game. Continuing with the Braves example, Table 2 shows the results for every odd home game.[10] The findings show that there are fewer games that have excess demand (although they have a higher average excess demand) than there are games that have lower demand than average. In fact, 30 out of 81 Braves home games had demand exceed the average, and the average optimal price increase is estimated to be 11.0 percent while the average decreased price is estimated to be -6.5 percent. Also, as expected, the high demand games generally are for an entire series. Thus, one VTP strategy for the Braves would be to variable price for some high demand series and simply lower prices on the other games in general.

[8] The censored regression forecasts of attendance were used in this analysis. This analysis accounted for the combined product of tickets and concessions, so as a group the demand elasticity was -1.
[9] The 1996 season was used because during that year no MLB team utilized variable ticket pricing.
[10] The odd games are shown in an effort to save space.

Table 2. Summary of Atlanta Braves Game-by-Game Variable Pricing Outcomes

Game Number	Attendance	Difference from Avg.	Percentage Chg. from Avg.	Variable Pricing Attendance	Avg. Ticket Price for Season	Variable Pricing Ticket Price	Percentage Price Change	Actual Revenue	Variable Pricing Revenue	Revenue Increase	Percentage Revenue Increase
1	48,961	13,168	36.8%	42,377	$13.06	$15.46	18.4%	$639,431	$655,247	$15,817	2.5%
3	30,271	-5,522	-15.4%	33,032	$13.06	$12.05	-7.7%	$395,339	$398,121	$2,782	0.7%
5	34,649	-1,144	-3.2%	35,221	$13.06	$12.85	-1.6%	$452,516	$452,635	$119	0.0%
7	26,635	-9,158	-25.6%	31,214	$13.06	$11.39	-12.8%	$347,853	$355,504	$7,651	2.2%
9	25,300	-10,493	-29.3%	30,547	$13.06	$11.15	-14.7%	$330,418	$340,462	$10,044	3.0%
11	31,893	-3,900	-10.9%	33,843	$13.06	$12.35	-5.4%	$416,523	$417,910	$1,388	0.3%
13	33,080	-2,713	-7.6%	34,437	$13.06	$12.57	-3.8%	$432,025	$432,696	$671	0.2%
15	37,697	1,904	5.3%	36,745	$13.06	$13.41	2.7%	$492,323	$492,653	$331	0.1%
17	35,471	-322	-0.9%	35,632	$13.06	$13.00	-0.4%	$463,251	$463,261	$9	0.0%
19	29,976	-5,817	-16.3%	32,885	$13.06	$12.00	-8.1%	$391,487	$394,573	$3,087	0.8%
21	28,583	-7,210	-20.1%	32,188	$13.06	$11.74	-10.1%	$373,294	$378,036	$4,742	1.3%
23	30,917	-4,876	-13.6%	33,355	$13.06	$12.17	-6.8%	$403,776	$405,945	$2,169	0.5%
25	49,553	13,760	38.4%	42,673	$13.06	$15.57	19.2%	$647,162	$664,433	$17,271	2.7%
27	29,984	-5,809	-16.2%	32,889	$13.06	$12.00	-8.1%	$391,591	$394,669	$3,078	0.8%
29	33,186	-2,607	-7.3%	34,490	$13.06	$12.58	-3.6%	$433,409	$434,029	$620	0.1%
31	32,199	-3,594	-10.0%	33,996	$13.06	$12.40	-5.0%	$420,519	$421,697	$1,178	0.3%
33	39,463	3,670	10.3%	37,628	$13.06	$13.73	5.1%	$515,387	$516,615	$1,229	0.2%
35	49,726	13,933	38.9%	42,760	$13.06	$15.60	19.5%	$649,422	$667,129	$17,708	2.7%
37	32,934	-2,859	-8.0%	34,364	$13.06	$12.54	-4.0%	$430,118	$430,864	$746	0.2%
39	34,823	-970	-2.7%	35,308	$13.06	$12.88	-1.4%	$454,788	$454,874	$86	0.0%
41	49,365	13,572	37.9%	42,579	$13.06	$15.54	19.0%	$644,707	$661,509	$16,802	2.6%
43	31,971	-3,822	-10.7%	33,882	$13.06	$12.36	-5.3%	$417,541	$418,874	$1,333	0.3%
45	33,186	-2,607	-7.3%	34,490	$13.06	$12.58	-3.6%	$433,409	$434,029	$620	0.1%
47	49,060	13,267	37.1%	42,427	$13.06	$15.48	18.5%	$640,724	$656,779	$16,055	2.5%
49	41,619	5,826	16.3%	38,706	$13.06	$14.12	8.1%	$543,544	$546,640	$3,096	0.6%
51	33,208	-2,585	-7.2%	34,501	$13.06	$12.59	-3.6%	$433,696	$434,306	$610	0.1%
53	36,953	1,160	3.2%	36,373	$13.06	$13.27	1.6%	$482,606	$482,729	$123	0.0%
55	32,708	-3,085	-8.6%	34,251	$13.06	$12.50	-4.3%	$427,166	$428,035	$868	0.2%
57	32,036	-3,757	-10.5%	33,915	$13.06	$12.37	-5.2%	$418,390	$419,678	$1,288	0.3%
59	32,401	-3,392	-9.5%	34,097	$13.06	$12.44	-4.7%	$423,157	$424,207	$1,050	0.2%
61	46,064	10,271	28.7%	40,929	$13.06	$14.93	14.3%	$601,596	$611,219	$9,623	1.6%
63	39,210	3,417	9.5%	37,502	$13.06	$13.68	4.8%	$512,083	$513,148	$1,065	0.2%
65	31,587	-4,206	-11.8%	33,690	$13.06	$12.29	-5.9%	$412,526	$414,140	$1,614	0.4%
67	29,213	-6,580	-18.4%	32,503	$13.06	$11.86	-9.2%	$381,522	$385,471	$3,950	1.0%
69	38,210	2,417	6.8%	37,002	$13.06	$13.50	3.4%	$499,023	$499,555	$533	0.1%
71	35,176	-617	-1.7%	35,485	$13.06	$12.95	-0.9%	$459,399	$459,433	$35	0.0%
73	47,130	11,337	31.7%	41,462	$13.06	$15.13	15.8%	$615,518	$627,242	$11,724	1.9%
75	32,109	-3,684	-10.3%	33,951	$13.06	$12.39	-5.1%	$419,344	$420,582	$1,238	0.3%
77	37,193	1,400	3.9%	36,493	$13.06	$13.32	2.0%	$485,741	$485,919	$179	0.0%
79	49,265	13,472	37.6%	42,529	$13.06	$15.52	18.8%	$643,401	$659,956	$16,555	2.6%
81	49,083	13,290	37.1%	42,438	$13.06	$15.48	18.6%	$641,024	$657,135	$16,111	2.5%
Avg. [1]	**35,793**	**5,832**	**16.3%**	**35,793**	**$13.06**	**$13.06**	**8.1%**	**$467,458**	**$471,825**	**$4,367**	**0.9%**

[1]The averages in the last row are averages of the absolute value of each number.

The bottom row of Table 2 shows the average results for the entire Braves season. The results for each team are shown in Table 1. Columns 8 and 12 show the result from Table 2 for the Braves. Over the course of the full season, the Braves could have increased their ticket revenues by $353,706 (0.9 percent), or approximately $4,367 per game.

All else equal, VTP would have yielded an average of approximately $504,000 per year in additional revenue for each MLB team and more than $14 million for the entire league, an increase of 2.6 percent above what occurs when prices are not varied (see Table 1).[11] For the 1996 season, the largest revenue gain would have been for the New York Yankees, which would have generated an extra $1.2 million in ticket revenue (+3.7 percent). The largest percentage revenue gain would have been for the San Francisco Giants, which would have experienced a. 6.7 percent increase in revenue, or $1.0 million, had they optimized prices. Conversely, the Colorado Rockies, for which average attendance fell within plus or minus eighty patrons per game, would have had the smallest impact from VTP. In fact, teams with the lowest average attendance benefit the most from variable pricing, since those teams tend to have the highest variation in attendance allowing them to gain from dynamic pricing. The reason that the Rockies would apparently gain the least from VTP is that it had many sellouts in 1996.

The amount of variation in ticket prices is just over 11%, on average. That such a large price swing only yields a revenue swing four times smaller is simply based on the large change in attendance that occurs when prices are varied. This occurs with all downward sloping demand curves, and is not unique to baseball.

As shown in Table 3, ten teams had adjustments to their attendance based on the censored regression. The results are similar to that for Table 1 except column 13 shows the gain for those ten teams, versus Table 1, if they account for the capacity constraint when adjusting their prices for their VTP strategy. Overall, adjusting for demand beyond stadium capacity raises the increased revenue from VTP policies from $14.1 million to $16.5 million for the league as a whole.

Table 3. Summary of Effects of Variable Ticket Pricing
(with capacity adjustment, no non-ticket revenue adjustment)

	Avg. Attendance (1)	Avg. Absolute Change (2)	Avg. Deviation from Mean (3)	Avg. Ticket Price (4)	Avg. Absolute Chg. in Price (5)	Avg. Actual Ticket Revenue (6)	Avg. Var. Pricing Ticket Revenue (7)	Avg. Chg. in Ticket Revenue (8)	Total Actual Ticket Revenue (9)	Total Var. Pricing Ticket Revenue (10)	Total Chg. in Ticket Revenue (11)	% Change in Revenue (12)	Chg. in Revenue vs. VTP w/o capacity adj. (13)
Atlanta	35,793	5,878	16.4%	$13.06	8.2%	$467,458	$472,549	$5,091	$37,864,102	$38,276,489	$412,387	1.1%	$58,682
Baltimore	45,475	2,098	4.6%	$13.14	2.3%	$597,539	$600,204	$2,665	$48,400,634	$48,616,492	$215,859	0.4%	$185,832
Boston	28,687	3,952	13.8%	$15.43	6.9%	$442,643	$447,216	$4,574	$35,854,064	$36,224,534	$370,470	1.0%	$144,182
California	22,476	4,899	21.8%	$8.44	10.9%	$189,697	$193,539	$3,842	$15,365,441	$15,676,653	$311,212	2.0%	$0
Chicago (AL)	21,115	4,530	21.5%	$14.11	10.7%	$297,927	$303,781	$5,854	$24,132,054	$24,606,230	$474,176	2.0%	$0
Chicago (NL)	28,606	7,044	24.6%	$13.12	12.3%	$375,309	$385,912	$10,603	$30,400,069	$31,258,882	$858,813	2.8%	$241,414
Cincinnati	24,097	4,549	18.9%	$7.95	9.4%	$191,568	$195,364	$3,796	$15,517,036	$15,824,475	$307,439	2.0%	$60,442
Cleveland	41,983	1,716	4.1%	$14.52	2.0%	$609,592	$627,443	$17,851	$49,376,968	$50,822,889	$1,445,921	2.9%	$1,442,929
Colorado	48,037	144	0.3%	$10.61	0.1%	$509,675	$510,365	$690	$41,283,673	$41,339,542	$55,869	0.1%	$55,512
Detroit	14,464	5,018	34.7%	$10.60	17.3%	$153,322	$162,531	$9,209	$12,419,066	$13,165,021	$745,954	6.0%	$0
Florida	21,839	4,541	20.8%	$10.37	10.4%	$226,469	$230,737	$4,268	$18,343,988	$18,689,707	$345,720	1.9%	$0
Houston	24,394	7,362	30.2%	$10.65	15.1%	$259,793	$268,433	$8,640	$21,043,206	$21,743,062	$699,856	3.3%	$0
Kansas City	17,949	4,013	22.4%	$9.74	11.2%	$174,828	$178,510	$3,682	$14,161,039	$14,459,292	$298,253	2.1%	$0
Los Angeles	39,364	7,038	17.9%	$9.94	8.9%	$391,274	$395,669	$4,394	$31,693,231	$32,049,165	$355,934	1.1%	$0
Milwaukee	16,847	5,594	33.2%	$9.37	16.6%	$157,853	$165,387	$7,535	$12,786,054	$13,396,356	$610,302	4.8%	$0
Minnesota	17,930	4,899	27.3%	$10.16	13.7%	$182,170	$188,905	$6,735	$14,755,746	$15,301,288	$545,542	3.7%	$0
Montreal	19,982	7,155	35.8%	$9.07	17.9%	$181,240	$190,326	$9,086	$14,680,457	$15,416,441	$735,984	5.0%	$7,857
New York (AL)	28,371	8,999	31.7%	$14.58	15.9%	$413,655	$428,965	$15,310	$33,506,040	$34,746,176	$1,240,136	3.7%	$0
New York (NL)	20,260	4,610	22.8%	$11.83	11.4%	$239,676	$245,833	$6,157	$19,413,778	$19,912,512	$498,734	2.6%	$0
Oakland	14,339	5,183	36.1%	$11.34	18.1%	$162,607	$171,942	$9,335	$13,171,166	$13,927,263	$756,097	5.7%	$0
Philadelphia	23,077	4,679	20.3%	$11.01	10.1%	$254,072	$258,556	$4,483	$20,579,872	$20,943,035	$363,163	1.8%	$0
Pittsburgh	17,039	5,914	34.7%	$10.09	17.4%	$171,919	$179,698	$7,779	$13,925,450	$14,555,555	$630,106	4.5%	$0
San Diego	27,258	10,532	38.6%	$9.88	19.3%	$269,311	$284,842	$15,531	$21,814,230	$23,072,216	$1,257,986	5.8%	$67,444
San Francisco	17,548	6,898	39.3%	$10.61	19.7%	$186,182	$198,697	$12,515	$15,080,772	$16,094,448	$1,013,676	6.7%	$0
Seattle	33,593	9,398	28.0%	$11.59	14.0%	$389,349	$400,760	$11,411	$31,537,236	$32,461,526	$924,289	2.9%	$0
St. Louis	32,912	6,110	18.6%	$9.91	9.3%	$326,153	$331,541	$5,388	$26,418,415	$26,854,854	$436,439	1.7%	$74,968
Texas	36,111	6,664	18.5%	$11.96	9.2%	$431,888	$437,077	$5,189	$34,982,929	$35,403,253	$420,324	1.2%	$0
Toronto	31,600	2,718	8.6%	$13.93	4.3%	$440,190	$441,845	$1,655	$35,655,410	$35,789,472	$134,063	0.4%	$0
Average	**26,827**	**5,433**	**23.0%**	**$11.32**	**11.5%**	**$310,477**	**$317,737**	**$7,260**	**$25,148,647**	**$25,736,672**	**$588,025**	**2.8%**	**$83,545**

Note: The total change in ticket revenue accounting for VTP and capacity issues across MLB is $16.5 million.

The final analysis addressed the third model by accounting for auxiliary, non-ticket revenues such as concessions, merchandise, and parking. Table 4 shows the results of allowing the team to vary ticket prices while accounting

[11] As described above, a censored regression was carried out in order to forecast the true demand above the capacity constraint.

for non-ticket prices in order to maximize its revenue objectives. Columns 9, 10, and 11 in Table 4 illustrate that the average team would have gained $911,000 in ticket and non-ticket revenue by adopting a VTP policy in the 1996 season while accounting for non-ticket prices. The league overall would have gained $25.5 million, with the Cleveland Indians earning the most ($2.2 million), from the policy change.

Table 4. Summary of Effects of Variable Ticket Pricing (with capacity adjustment and non-ticket revenue adjustment)

	Avg. Attendance (1)	Avg. Absolute Change (2)	Avg. Deviation from Mean (3)	Avg. Ticket Price (4)	Avg. Absolute Chg. in Price (5)	Avg. Actual Ticket Revenue (6)	Avg. Var. Pricing Ticket Revenue (7)	Avg. Chg. in Ticket Revenue (8)	Total Actual Ticket Revenue (9)	Total Var. Pricing Ticket Revenue (10)	Total Chg. in Ticket Revenue (11)	% Change in Revenue (12)	Total Actual Ticket Revenue (13)	Total Variable Pricing Ticket Revenue (14)	% Change in Total Ticket Revenue (15)
Atlanta	35,793	5,878	16.4%	$13.07	$7.18	$467,458	$475,184	$732,451	$58,689,358	$59,328,558	$639,200	1.1%	$37,864,102	$38,489,896	1.7%
Baltimore	45,475	2,098	4.6%	$13.16	$7.23	$597,539	$601,064	$930,316	$75,020,982	$75,355,563	$334,581	0.4%	$48,400,634	$48,686,180	0.6%
Boston	28,687	3,952	13.8%	$15.46	$8.49	$442,643	$449,290	$693,186	$55,573,799	$56,148,028	$574,229	1.0%	$35,854,064	$36,392,476	1.5%
California	22,476	4,899	21.8%	$8.44	$4.64	$189,697	$195,652	$299,985	$23,816,434	$24,298,812	$482,378	2.0%	$15,365,441	$15,847,819	3.1%
Chicago (AL)	21,115	4,530	21.5%	$14.11	$7.76	$297,927	$307,000	$470,860	$37,404,684	$38,139,656	$734,972	2.0%	$24,132,054	$24,867,027	3.0%
Chicago (NL)	28,606	7,044	24.6%	$13.16	$7.22	$375,309	$391,059	$598,164	$47,120,107	$48,451,267	$1,331,160	2.8%	$30,400,069	$31,675,750	4.2%
Cincinnati	24,097	4,549	18.9%	$7.96	$4.37	$191,568	$197,327	$302,814	$24,051,406	$24,527,936	$476,530	2.0%	$15,517,036	$15,983,459	3.0%
Cleveland	41,983	1,716	4.1%	$14.73	$7.99	$609,592	$632,454	$972,537	$76,534,300	$78,775,478	$2,241,177	2.9%	$49,376,968	$51,228,769	3.8%
Colorado	48,037	144	0.3%	$10.62	$5.84	$509,675	$510,557	$791,065	$63,989,693	$64,076,289	$86,597	0.1%	$41,283,673	$41,355,136	0.2%
Detroit	14,464	5,018	34.7%	$10.60	$5.83	$153,322	$167,596	$251,923	$19,249,553	$20,405,782	$1,156,229	6.0%	$12,419,066	$13,575,296	9.3%
Florida	21,839	4,541	20.8%	$10.37	$5.70	$226,469	$233,085	$357,643	$28,433,181	$28,969,046	$535,865	1.9%	$18,343,988	$18,879,853	2.9%
Houston	24,394	7,362	30.2%	$10.65	$5.86	$259,793	$273,185	$416,071	$32,616,970	$33,701,747	$1,084,777	3.3%	$21,043,206	$22,127,983	5.2%
Kansas City	17,949	4,013	22.4%	$9.74	$5.36	$174,828	$180,535	$276,690	$21,949,610	$22,411,903	$462,293	2.1%	$14,161,039	$14,623,331	3.3%
Los Angeles	39,364	7,038	17.9%	$9.94	$5.47	$391,274	$398,086	$613,286	$49,124,509	$49,676,206	$551,697	1.1%	$31,693,231	$32,244,929	1.7%
Milwaukee	16,847	5,594	33.2%	$9.37	$5.15	$157,853	$169,531	$256,350	$19,818,383	$20,764,351	$945,968	4.8%	$12,786,054	$13,732,021	7.4%
Minnesota	17,930	4,899	27.3%	$10.16	$5.59	$182,170	$192,609	$292,802	$22,871,407	$23,716,997	$845,590	3.7%	$14,755,746	$15,601,336	5.7%
Montreal	19,982	7,155	35.8%	$9.07	$4.99	$181,240	$195,308	$295,006	$22,754,708	$23,895,483	$1,140,776	5.0%	$14,680,457	$15,819,930	7.8%
New York (AL)	28,371	8,999	31.7%	$14.58	$8.02	$413,655	$437,386	$664,896	$51,934,362	$53,856,573	$1,922,211	3.7%	$33,506,040	$35,428,250	5.7%
New York (NL)	20,260	4,610	22.8%	$11.83	$6.51	$239,676	$249,220	$381,042	$30,091,356	$30,864,393	$773,037	2.6%	$19,413,778	$20,186,815	4.0%
Oakland	14,339	5,183	36.1%	$11.34	$6.24	$162,607	$177,076	$266,509	$20,415,308	$21,587,258	$1,171,950	5.7%	$13,171,166	$14,343,116	8.9%
Philadelphia	23,077	4,679	20.3%	$11.01	$6.06	$254,072	$261,022	$400,762	$31,898,801	$32,461,705	$562,903	1.8%	$20,579,872	$21,142,775	2.7%
Pittsburgh	17,039	5,914	34.7%	$10.09	$5.55	$171,919	$183,977	$278,532	$21,584,447	$22,561,111	$976,664	4.5%	$13,925,450	$14,902,112	7.0%
San Diego	27,258	10,532	38.6%	$9.89	$5.43	$269,311	$293,227	$441,505	$33,812,057	$35,761,936	$1,949,879	5.8%	$21,814,230	$23,751,402	8.9%
San Francisco	17,548	6,898	39.3%	$10.61	$5.84	$186,182	$205,580	$307,980	$23,375,197	$24,946,394	$1,571,197	6.7%	$15,080,772	$16,651,969	10.4%
Seattle	33,593	9,398	28.0%	$11.59	$6.37	$389,349	$407,036	$621,177	$48,882,717	$50,315,365	$1,432,648	2.9%	$31,537,236	$32,969,885	4.5%
St. Louis	32,912	6,110	18.6%	$9.92	$5.45	$326,153	$334,308	$513,889	$40,948,543	$41,625,024	$676,481	1.7%	$26,418,415	$27,078,914	2.5%
Texas	36,111	6,664	18.5%	$11.96	$6.58	$431,888	$439,931	$677,470	$54,223,540	$54,875,042	$651,502	1.2%	$34,982,929	$35,634,431	1.9%
Toronto	31,600	2,718	8.6%	$13.93	$7.66	$440,190	$442,756	$684,860	$55,265,885	$55,473,682	$207,797	0.4%	$35,655,410	$35,863,207	0.6%
Average	**26,827**	**5,433**	**23.0%**	**$11.33**	**$6.23**	**$310,477**	**$321,466**	**$492,492**	**$38,980,403**	**$39,891,842**	**$911,439**	**2.8%**	**$25,148,647**	**$26,038,717**	**4.3%**

Note: The total change in ticket + non-ticket revenue accounting for VTP, capacity issues, and non-ticket revenue across MLB is $25.5 million.

This analysis has shown that Major League Baseball could have increased ticket revenues by approximately 2.8%, or $16.5 million, and total stadium revenues by about $25.5 million for the 1996 season if teams utilized VTP. Total revenues in MLB are estimated to have grown from $1.8 billion in 1996 to approximately $4.3 billion in 2003, or 250%. Similar changes in the effect of VTP strategies as discovered in this study would yield nearly $40 million in ticket revenue and over $60 million in ticket plus non-ticket revenue for MLB. Therefore, it behooves team owners and the league office to consider and implement VTP strategies, especially since teams and the league are constantly searching for ways to increase revenues.

The results of this study support the utilization of VTP as a mechanism to alter prices from average seasonal levels. Currently, most MLB teams have focused their VTP strategies on the revenue potential of increased prices from highly demanded games. However, considering that there were more games with diminished demand than excess demand, the data suggests that teams should also focus on attracting fans to less desirable contests by lowering prices.

An added benefit of lowering ticket prices for less desirable games is that it could also serve to improve the relationships between teams and local municipalities. MLB teams have often been chastised for seeking subsidies for new revenue generating facilities that are financially inaccessible to many taxpayers. Marketing less desirable games with lower ticket prices as "value" games, as the Chicago Cubs, Colorado Rockies, New York Mets, Tampa Bay Devil Rays, and Toronto Blue Jays did in 2004, allows teams to reach market segments perhaps otherwise unreachable due to pricing/income issues, in addition to presenting local governments with a more favorable reaction to their public policy decisions supporting the local franchise.

An initial VTP recommendation is that for every 10% increase in attendance (or specifically, expected attendance) above the average, teams should raise ticket prices by 5% to receive a gain of 1.2% in ticket revenue. The practical use of variable pricing, however, would entail creating at most five different prices for each seat in a stadium throughout the season, rather than setting a different price for each game. High demand games or series should be priced accordingly, but teams should not forget the potential benefits of lowering price for less desired games. The present findings reinforce previous research identifying factors such as day of the week or rivalry game as affecting demand for MLB tickets.

The hypothesis that the few teams that are administering variable ticket pricing are doing so properly is consistent with the findings. In fact, the present analysis shows that optimal variable ticket pricing is managed by small changes in ticket prices. The Giants expected to gain an additional $1 million from variable ticket pricing in 2002, which affected less than half (39 games) of their home games (all weekend dates).[12] In 2002, the Atlanta Braves instituted a VTP strategy for 21 home games, increasing prices on select games by $3, or about 14 percent, which is more aggressive than the 9 percent increase on 22 home games found when testing against the 1996 data.[13] The St. Louis Cardinals raised prices in 2002 for summer games by $2, or 8 percent, which is slightly lower than the 9 percent increase shown using the 1996 data.

In the near future, the negative fan reaction to changing ticket price will likely be alleviated if not eliminated as fan confusion regarding multiple price points for games is overcome as patrons realize that tickets can be priced like other industries. Ticket offices are also now better equipped to handle menu costs issues than they were in the 1990s, with technological advances such as bar coded and print-at-home tickets increasing the ease of implementing VTP policies.

Although VTP seems like a good idea for most teams to employ, properly implementing a VTP policy requires team management to be able to accurately forecast the relative attendance of future games. An interesting behavioral issue is whether the implementation of VTP in earlier games affects the demand for subsequent games. Additionally, teams should also weigh the benefits of the programs with the menu costs and staff training

[12] The present analysis shows a gain of about $1 million for the 1996 season if optimal pricing were used by the Giants.

needed for the conversion to VTP to determine in what season the ticket revenues will benefit from the change to VTP.

One factor unaccounted for in this study is the marketing strategies utilized by organizations in conjunction with VTP price levels. The projected revenue increases identified in this study could potentially be increased substantially by incorporating VTP pricing into teams' marketing plans to target different demographic segments of consumers. Lowering prices on certain games can also allow games to become more affordable to consumers which normally may not have been able to afford the cost of attendance.

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[13] The prices were altered for games on Fridays from May through August and Saturdays throughout the whole season.