Journal of Environmental and Resource Economics at Colby

Volume 2
Issue 1 *Spring 2015*

Article 9

2015

The Economics of the Audubon Society's Sanctuary Program for Golf Courses

Dan Hyszczak
Colby College, dhyszczak@gmail.com

The Economics of the Audubon Society's Sanctuary Program for Golf Courses

Cover Page Footnote

Thank you to Sahan for his help in transitioning this from just an idea of a subject matter to a fully focused idea. Thank you also to Golf Digest and Audubon International for their data collection.

1. Introduction

In 1754, the Royal and Ancient Society of St. Andrews was founded in Scotland. Though the game has changed greatly, with longer courses, and more clubs in the bag made now of metal, the game's traditions date back centuries. In the United States in 2011, golf was a $69 billion industry with over 26 million people playing a round. There are over 16,000 public (open to all, pay each round), municipal (owned by city/town), and private (exclusive with yearly membership dues) golf courses in the country which take up over four million acres in the United States alone. (Smittz, 2012). The big business of the golf industry and its large land use make golf a valuable area to research in environmental economics.

Golf courses exist in the environment, whether blending in with the natural area or as part of an extensive construction process to bring a golf course or resort to an area. The environmental impact of golf courses has become a growing issue as courses try to maximize revenue while also staying in line with environmental regulations and keeping the sport sustainable for years to come. Golf courses use, among other practices, large amounts of water to manage and improve the quality of all the grass on the course. Courses are faced with the dilemma of making the course appear as nice as possible, but also recognizing the potentially negative effects they are creating for the environment that they use for revenue at the same time (Golf Digest, 2008). The dilemma presents a seemingly negative incentive for courses to follow environmental restrictions, when larger revenues can be made by improving course quality to the detriment of the environment.

In 1991, Audubon International founded their Cooperative Sanctuary Program for Golf Courses (ACSP). The program states its goals as, "assisting golf courses in their efforts to blend environmentally responsible maintenance practices into day-to-day golf course operations" (Audubon, 2014). The ACSP combines golf course superintendents, golf industry experts, university researchers, and professionals from environmental organizations. The program provides guidelines for and assistance in following those regulations in environmental planning, wildlife and habitat management, chemical use reduction and safety, water conservation, and water quality management.

Courses that comply with those requirements receive a distinction as a "Certified Sanctuary" with gold, silver, bronze, and classic levels of achievement. The ACSP lists the benefits of membership as improved image and reputation, customer satisfaction, financial performance, worker safety, improved efficiency, and improved environmental quality. This paper will examine the claims of financial performance by examining the top public courses in the country and

comparing the prices of those who meet the ACSP's standards and those that do not. The paper also examines other determinants of public golf course pricing in the United States and look and see if the perception that courses need to dodge environmental restrictions in order to make more revenue.

2. Literature Review

There has been much research into the perceptions of golf and its impact on the environment, the effect of golf on the environment as well as the determinants of golf course pricing in the United States. In 2008, *Golf Digest* magazine conducted a series of phone interviews with golfers and non-golfers as part of their larger "Golf and The Environment" issue. The study found that golfers (selected randomly from pool of magazine subscribers) were more likely to be male, older, and have a higher median household income than non-golfers (chosen from random digit-dialing). The survey asked golfers and non-golfers their opinions on various environmental issues, pertaining directly to golf and about the environment in general. When asked if "Golf is an environmentally friendly/compatible sport" 91% of golfers responded "Yes" while only 66% of non-golfers agreed. Both groups had closer opinions on whether golf should be more environmentally friendly than it is now, with 72% of golfers and 74% of non-golfers agreeing with that expression (Golf Digest, 2008). The survey as a whole presents golfers and non-golfers as agreeing on many issues, but showing that non-golfers see the environmental impact of golf as a more serious issue and that there are aspects of golf that need to be changed for the better. Golfers may see complying to environmental regulations meaning sacrificing the course quality they have become familiar with and may be more loss averse than non-golfers who simply are just thinking of the environmental effects.

In 2006, Salgot and Tapias published an article titled, "Golf Courses: Environmental Impacts" in Hospitality and Tourism Research's special issue on golf tourism. The study examined the relationship between golf courses, ecosystems, and the environment. The study looked at how many courses are located in natural areas, where wildlife exists and if there is an influence on the course and vice versa. The study also determined the need to define the relationships between the course and its surrounding areas. The article concluded that, "Integrated management of all the environmental characteristics of a golf course is paramount for reducing to a minimum any negative environmental impacts and improving positive ones" (Salgot and Tapias, 2006).

In 2009, James G. Mulligan of the University of Delaware published an article in the Journal of Sports Economics titled, "The Pricing of a Round of Golf: The

Inefficiency of Membership Fees Revisited". The article examines whether private golf courses represent inefficient pricing as implied by "club theory" and literature on variable usage. The article uses an empirical approach and finds that, "willingness to make this long-term commitment (membership) to the club, despite the possibility of higher per round costs implies there are benefits from restricting the number of members" (Mulligan 2009). The article shows that people are willing to pay more for a round of golf at a private club that allows them the lack of congestion found at public courses. The initiation fees and membership dues of private courses are often very high, depending on the location and exclusivity of the club, but offer their members a less congested atmosphere compared to public courses that serve the masses of people looking to play.

In 2001, Petrick and Backman of Texas A&M University published an article in Tourism Analysis titled, "An Examination of Golf Traveler's satisfaction, perceived value, loyalty, and intentions to revisit". The study sought to gain an understanding of the relationship between a golfer's experience and their intention to return and pay again at a later date another time. The study examined subjects who stayed at a coastal resort in the southeastern USA during the fall season and presented them with surveys to determine their preferences (Petrick and Backman, 2001). The study found that ultimately satisfaction was the number one determinant of a person's willingness to return to the resort, meaning simply that guests who enjoyed the course and resort more were more likely to return more times than those who did not enjoy the course and resort.

In The Atlantic Economic Journal in 1999, Stephen Shmanske published "The Economics of Golf Course Condition and Beauty". The paper reports on the statistical relationships between golf course condition and beauty and the relationship to revenue. The paper surveys 900 golfers at 46 public access golf courses and created a regression for revenue based on their preferences. The study asked participants to rate the golf course they played on a 1-5 scale for beauty. The study found that there was a statistically significant relationship between condition and beauty on revenue of a golf course, but not between beauty and maintenance expenditures. The study highlights the decisions courses make when trying to improve their course. There is a positive correlation between how beautiful a course is and the amount of revenue a course receives. But, contrasting with general perceptions, there is not a positive correlation between beauty and maintenance expenditures. Courses that are beautiful are the ones that are making more money, but courses are beautiful are also not the ones spending the most on maintenance. The study presents the idea that if golf course maintenance practices are expensive and not friendly to the environment, there will be a negative relationship between environmental-unfriendliness and revenue.

This study will build upon the previous literature by taking into account the fact that golf courses effect the environment in potentially negative ways and that golfers may not be willing to embrace courses at lower quality for the sake of improving the environment. This study will build on the Shmanske study by adding an environmental component (whether a course is in the ACSP) to an equation examining the relationship between price of a round at a golf course and other characteristics of golf courses.

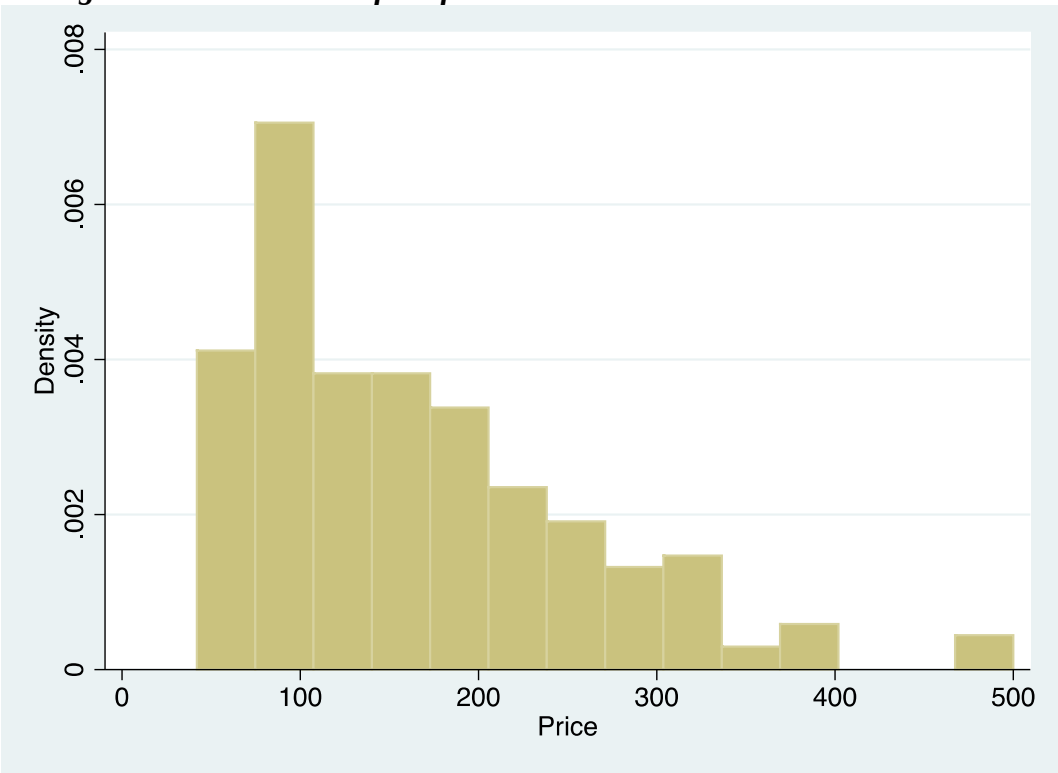
3. Data

The data for this research comes from collecting a group of golf courses and various characteristics of those courses. The group of courses is comprised of 208 courses coming from three different groups. The first group is courses that are on *Golf Digest*'s Top 100 Courses in the country that are available for the public to play, which makes up 13 of the courses in the sample. The next group comes from *Golf Digest'*s Top 100 public courses, which includes the 13 from the first group as well as 87 other courses. The last 108 courses come from looking at *Golf Digest*'s "Best in State" lists and compiling the best courses from each state not mentioned in the earlier groups that are also available for the public to play. Public golf courses were selected and private golf courses were excluded to extract pricing data for each course and determine a value people are willing to pay for a round of golf there. Private courses are often exclusive only to members or guests of members and do not have a "per-round" price available.

The 208 golf courses have varying prices, with a mean price of $162 for a round at one of the courses. The prices range from $500 per round from Shadow Creek and Wynn Golf Course, both located in Las Vegas, NV as part of a resort, to Sugarloaf Golf Course in Maine which only costs $42 per round. The data is skewed right with courses like the two in Las Vegas, and Pebble Beach in California which is $490 affecting the data. There are a high percentage of courses that fall in the $100 range, with the majority of courses falling between $100 and $200, as show in figure 1.

The mean prices of a round are higher for courses that are "resort" courses, meaning there is a hotel on the property that is owned by the same group that owns the course. Many of these resorts offer "stay and play" packages which makes playing a round much cheaper if you are a guest of the hotel, but also much more expensive if you are not a guest

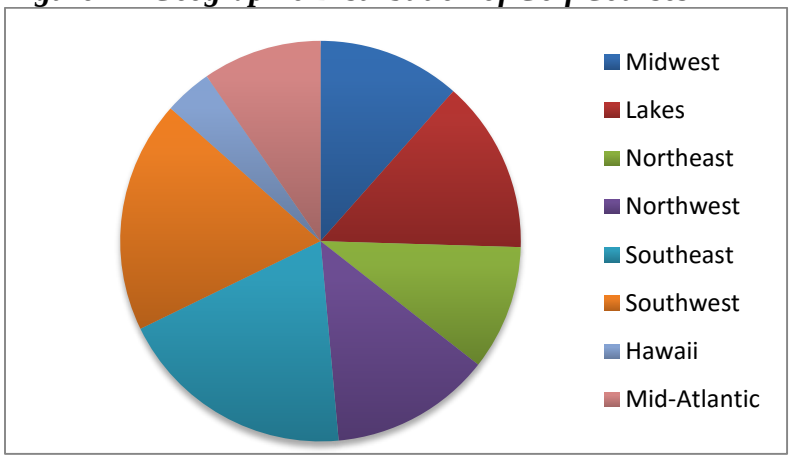
Figure 1 - Distribution of Golf Course Prices



The 208 courses have a lot of geographic diversity in their location. The most represented regions are, not surprisingly, the Southeast and Southwest, which have 40 and 39 courses in the sample. The Midwest and Lakes region have 24 and 29 respectively, while the Northeast has 21, the Northwest 27, 20 from the Mid-Atlantic, and lastly 8 from Hawaii, as shown in figure 2. The diversity of the courses helps to compare the pricing in various regions. The most represented states in the study are California, Hawaii, Florida, Oregon, Arizona, and Wisconsin, with almost every state represented by at least one course.

Other characteristics of golf courses that were included in the study besides price, location, and resort status, were whether the course regularly or one time in the past has hosted PGA, LPGA, USGA or other professional golf tournaments, which there are 36 in the sample. Another was the age of the course, which averaged at 27 but included courses that were built after 2010 and courses that were built before 1900.

Figure 2 – Geographic Distribution of Golf Courses



Lastly, the data include whether the course meets the ACSP standards for an environmentally friendly golf course. Like resort and whether the course has hosted a professional golf tournament, this was distinction was observed by either a 1 for if it was in the program, or a 0 if it was not. In total, 49 of the 208 golf courses in the sample were part of the ACSP. The ratio was similar in each region to the country as a whole, with 4 Midwest, 3 Lakes, 4 Northeast, 11 Northwest, 9 Southeast, 12 Southwest, 1 Hawaii, and 5 Mid-Atlantic. The Northwest has the highest percentage of top courses that are in the ACSP, with 40.7% of top courses being in the ACSP. The lowest percentages were Hawaii (12.5%) and Lakes (10.3%) of their top courses in the ACSP.

4. Data Analysis

The data analysis comes from running a series of regression to examine the relationship between price and environmental friendliness of golf courses, shown by their participation in the ACSP. The results of each regression are shown in Table 1. The first regression comparing price and the binary variable for environmental friendliness, called Audubon. The first regression established statistical significance at the 1% level for a positive relationship between price and environmental friendliness, with courses in the ACSP having a $60.43 premium compared to courses not in the program. The regression had a very low r-squared value, so more testing was needed with the inclusion of more variables.

The second regression added to the first by taking into account whether each course was in the *Golf Digest*'s Top 100 overall or Top 100 public courses in the country. The regression again returned results with significance at the 1% level for Audubon, Top 100, and Top 100 public, each having a positive effect on price. The

coefficient for Audubon decreased to 45.69, but still showed a strong positive correlation with price.

Table 1 – Regression Results

VARIABLES	(1) price	(2) price	(3) price	(4) price
Audubon	60.43***	45.69***	37.94***	31.94***
	(14.59)	(11.19)	(10.70)	(9.927)
Top100public		82.74***	73.55***	67.38***
		(9.938)	(9.481)	(8.934)
Top100overall		110.3***	92.95***	108.0***
		(18.22)	(17.32)	(15.94)
age			0.225	0.276
			(0.183)	(0.175)
hostedprogolf			40.19***	34.48***
			(12.37)	(11.48)
Resort			43.07***	36.85***
			(9.239)	(8.648)
midwest				7.713
				(18.04)
lakes				-4.767
				(17.36)
o.northeast				-
northwest				17.88
				(17.75)
southeast				22.29
				(16.30)
southwest				75.69***
				(16.25)
hawaii				90.21***
				(24.99)
midatlantic				38.22**
				(18.12)
Constant	148.6***	103.7***	71.85***	50.25***
	(7.080)	(6.925)	(9.446)	(15.95)
Observations	208	208	208	208
R-squared	0.077	0.470	0.544	0.642

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The third regression added the other characteristics of each golf course to regression 2: resort, hosted professional golf, and age. The results were consistent with the first two regressions, with Audubon, and both Top 100 variables remaining significant at the 1% level, while resort and hosted professional golf were added to the list of statistically significant variables. Age received a very low coefficient and had statistically insignificant correlation to price.

The final regression included regional effects with the first three regressions, with each course taking a variable of 1 for their region and 0 for all other regions. The results remained consistent, with Audubon, both top 100s, hosted professional golf, and resort all remaining significant at the 1% level. Added to the group of statistically significant variables were Southwest and Hawaii at the 1% level and Mid-Atlantic at the 5% level for a positive correlation on price. All other regions and age were found to have statistically insignificant effects on price, whether positive or negative. Figure 3 captures the results of all four regressions and establishes ultimately a $31.94 premium for golf courses in the ACSP in the fourth regression with all of the other characteristics of golf courses included in the regression.

5. Conclusions

The regression provided statistically significant, but ultimately surprising results for the relationship between environmental friendliness of golf courses and price. In all four regressions, there was a strong positive correlation between being in the ACSP and price. The last regression which included characteristics of the golf course and regional effects even concluded there was a $31 increase in price per round if a course was a member of the ACSP.

The quality of each course varies, as well as people's preferences for each course. The prior research mentioned in the story showed that there was a positive correlation between both the beauty of a course and a person's enjoyment of the course to the revenue of the course. Though revenue is not fully studied in this paper, price is a good measure of people's willingness to pay for a course since all of these courses are well known on at least a regional if not national level. Each course stands above as the best public golf courses in the country and therefore quality, though varying, is held almost constant amongst all courses.

The amount of revenue a course receives is only partially explored in this study, as the amount of rounds played at each course was not available information for the

data. Courses with high prices may not see the same traffic as those with lower prices and may not generate higher revenue. Further research, if information is available, could examine the effect of environmental friendliness on revenue of a golf course.

Taking revenue a step further, also not included in this study is any sort of maintenance cost. It is unknown whether courses in the ACSP or those who are not spend more money on their course maintenance. The Shmanske study found those courses that spent more on maintenance did not see higher revenues, but did not include whether the course was environmentally friendly in those expenditures.

The premium for environmentally friendly golf courses can be interpreted in a few ways. First, it can be interpreted that the courses cost more per-round because the maintenance up-keep of those courses are higher, so prices need to be higher to make up for those increased costs. Another interpretation could be that those courses are deemed better by golfers, and golfers are willing to pay more for those courses. They could be willing to pay more because they enjoy their environmental friendliness, or simply the environmental friendliness leads them to have a more enjoyable round because the appearance of the course is nicer, rather than having a warm-glow reaction the lack of negative environmental effects of the course. Further research could look at people's preferences for golf courses in an area that are both of high quality and differ in their level of environmental friendliness. The information from those surveys could show whether people care about the environmental friendliness of a course and whether that represents the price premium, or whether course quality is the ultimate deciding factor in price.

The results remain consistent through all of the regressions that there is a price premium for environmentally friendly golf courses in the ACSP. The cause of the price premium is unknown, but a definitive takeaway from the results is that courses can charge high prices, be successful, and be environmentally friendly all at the same time. This research can hopefully encourage future golf course developers and current owners of golf courses to implement the principles of the Audubon Certified Sanctuary Program for Golf Courses and hopefully lead to a sustainable and environmentally friendly sport to continue into the future for many more years.

6. References

"Audubon International - Audubon Cooperative Sanctuary Program for Golf." *Audubon International - Audubon Cooperative Sanctuary Program for Golf*. N.p., n.d. Web. 17 Apr. 2015.

Backman, S. J., and J. F. Petrick. "An Examination of Golf Travelers' Satisfaction, Perceived Value, Loyalty, and Intentions to Revisit. - CAB Direct." *An Examination of Golf Travelers' Satisfaction, Perceived Value, Loyalty, and Intentions to Revisit. - CAB Direct*. N.p., n.d. Web. 17 Apr. 2015.

Golf Digest. "Golf and the Environment." *Golf Digest* (2008): n. pag. Web.

Mulligan, James. "The Pricing of A Round of Golf." *The Journal of Sports Economics*. N.p., n.d. Web. 17 Apr. 2015.

Salgot, Miquel, and Josefina C. Tapias. "Golf Courses: Environmental Impacts." *Tourism and Hospitality Research*. N.p., n.d. Web. 17 Apr. 2015.

Schmitz, Troy. *Economic Impacts and Environmental Aspects of the Arizona Golf Course Industry** (n.d.): n. pag. Web.

Shmanske, Stephen. "The Economics of Golf Course Condition and Beauty." *Atlantic Economic Journal* (1999): n. pag. Print.

"2015-16 Ranking: America's 100 Greatest Golf Courses." *Golf Digest*. N.p., n.d. Web. 17 Apr. 2015.