

## Abstract

This study examined counties in South Carolina that have the potential to have an increase in the sport of fishing. This potential increase was measured by examining 2008 fishing license data for individual counties, a Beta value that represents license change per county and specific demographics, proximity to boat ramps and recreational waters, and the number of schools per county with aquatic fishing programs. It was found that Greenville, Spartanburg, Allendale, Marlboro and Aiken counties would be appropriate locations for family fishing clinics.

## I. Introduction

The goal of this project is to find the counties in South Carolina that would benefit from SCDNR Family Fishing Clinics. Family Fishing Clinics are free programs offered by DNR that strive to increase fishing participation among individuals of all ages. At the current point in time, Family Fishing clinic locations are determined by where the instructors are and which areas make it easier to plan such an event. The goal of this project is to determine areas in the state that would benefit from these programs. This is being done by looking at which counties have a lower percentage of license holders, counties that are within certain distances of boat ramps and recreation waters, such as ponds at state parks, and counties that have schools that promote fishing through the use of school programs and fishing teams. Various sources have stated that these factors are important in promoting fishing participation in SC and the United States.

## II. Literature Review

Several factors affected where anglers in South Carolina fish. The factors that played an important role in this study were distance, educational programs and access.

Distance was mentioned in almost all of the papers read. It was noted that anglers as a group were willing to travel ten miles. Of the anglers questioned during various surveys, roughly seventy five percent of them were willing to travel up to twenty five miles, while fifty percent of anglers were willing to travel up to fifty miles.

Educational programs were of extreme interest and one paper stated that ninety percent of youth in SC have fished and that sixty percent of those youth had participated in an aquatic education course. Reports also stated that thirty percent of high school students said they would be interested in fishing programs at school. These data are what propelled me to look at high school fishing teams and schools with aquatic education programs.

One of the biggest factors that affect fishing is access to places to fish from. The report on fishing access in the US stated that anglers preferred public boat ramps and access points versus private land. I looked at features such as DNR managed boat ramps and DNR recreational waters. These are public access areas where anglers can fish and access the water.

## III. Methodology

After data had been collected, the first thing to do was to create a geodatabase that included the outline of SC and SC counties. I refer to this as my base map. All other layers were put on top of this base layer. Next shapefiles, such as boat ramps, recreation waters, navigable lakes etc., were added to the layer. I will explain how I dealt with the following data; shapefiles of boat ramps and recreational waters, shapefile of SC schools and list of SC schools with fishing programs, an excel sheet of Beta Coefficients for each county, and an excel spread sheet of SC DNR license data.

### Boat Ramps and Recreational Waters:

For this project boat ramps and recreational waters are the same as far as the project is concerned. They are both areas that promote fishing and allow for participation in the sport. The shapefile including the boat ramps included saltwater boat ramps also. This project is focusing on freshwater so these boat ramps needed to be excluded. The best way of doing this was by adding a layer that included navigable freshwater lakes and navigable freshwater streams. I then selected by location all of the boat ramps that were within 1 mile of these features, exported the data and created a new shapefile. This gave me data that only pertained to freshwater boat ramps. I then merged this shapefile with the recreational waters shapefile. This created one file that included all of the features that promote fishing. According to several of the reports I read anglers are finicky about traveling long distances. There was a definite change in willingness to travel at the 10 mile marker. In order to visualize this I created a buffer around the boat ramps and recreational waters at 10 miles. This allows me to identify areas that are extremely close to or far away from these features.

### School Data:

According to several reports, fishing programs in schools can increase interest in the sport by sixty percent. I received a list of schools courtesy of the SC DNR that either had fishing teams, or had participated in SC DNR fishing programs. I transferred this list to an excel file and then made sure that all of the entries in the excel file matched up with the school names in the attribute table for the layer of SC schools. I then joined the table and the layer selected only the schools with these programs. This makes it easy to visually determine areas where schools are promoting fishing.

### License Data:

I received an excel file from SC DNR that had fishing license data from 2008. I created a separate file that contained only county names and percent of that counties population with a fishing license. I then joined this with the layer containing SC counties. I classified the data using seven classifications based on natural breaks. By doing this counties with a lower percentage of license holders are visible.

### Beta Coefficient:

The Beta Coefficient was found in the Responsive Management Report specific to SC. The “Beta” is the change in fishing license purchases combined with demographics. The only thing missing from this coefficient was water area and anglers under the age of eighteen. The Beta values were put into an excel spread sheet and handled exactly like the License Data. Two classes were used with the break at zero. This allowed counties with a negative Beta value to be compared with counties that have a positive Beta value.

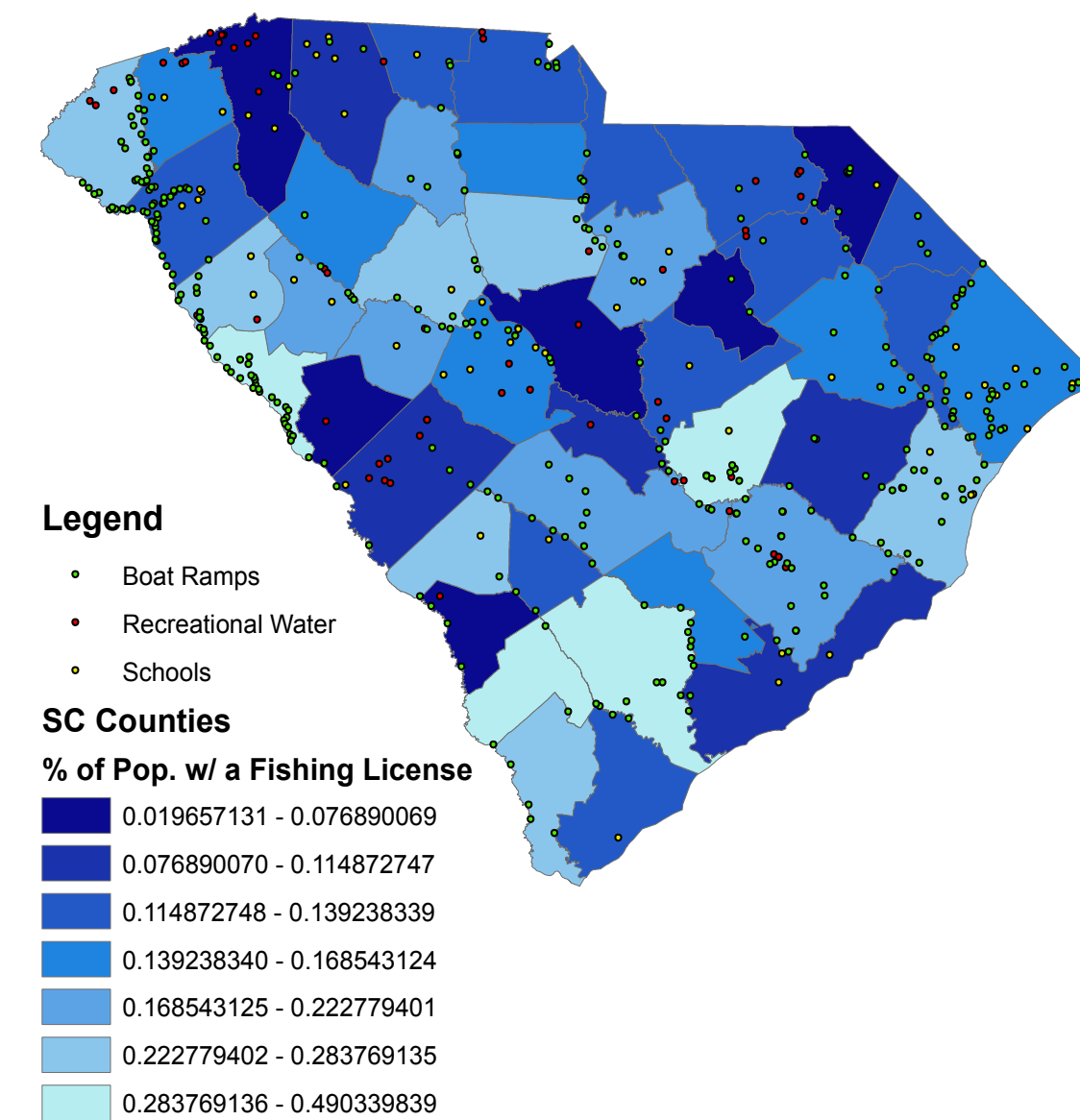
By treating the data as three separate parts I was able to complete the task more efficiently. At the completion, all three parts were combined giving results.

## V. Discussion and Conclusion

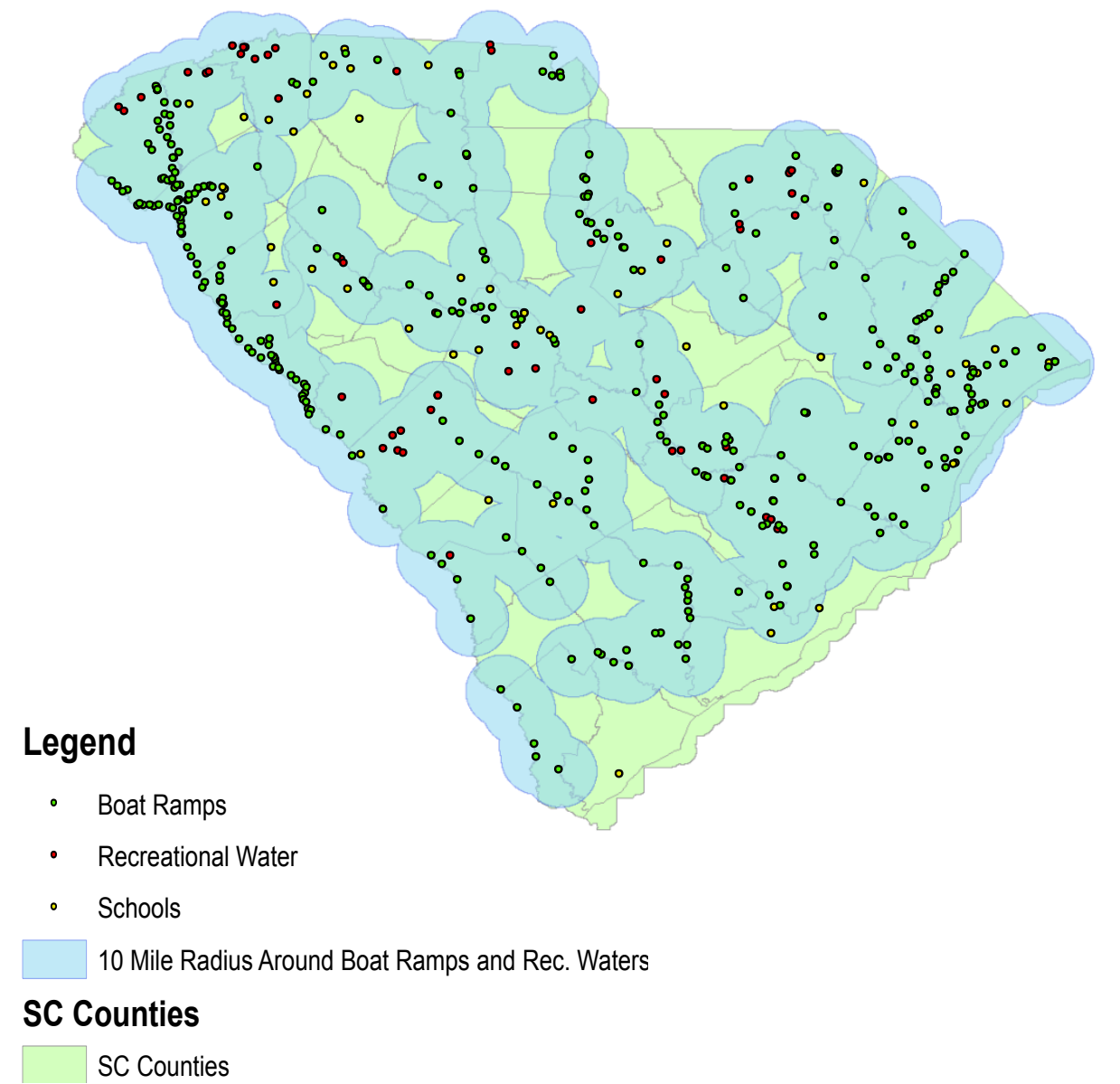
The six counties with less than seven percent of that counties population owning a fishing license were Greenville, Edgefield, Richland, Lee, Marlboro, and Allendale. All of the counties except for Greenville have a negative Beta value making them an area where there is less likely to be an increase in fishing license sales. Greenville county has the lowest percentage of license holders in the entire state. However, Greenville Co. has eight recreational waters, two boat ramps, and three schools with fishing programs. These features are mainly restricted to the upper end of the county. Fishing clinics in the upper half of the county would be extremely beneficial in my opinion. There were five counties that fell within the second lowest percentile between eight and twelve percent. These counties were Charleston, Spartanburg, Calhoun, Aiken, and Williamsburg. I am going to exclude Charleston from this discussion because of its proximity to saltwater and the fact that many fisherman in this area may not own a freshwater license. Of the remaining four, Calhoun (negative Beta value) and Williamsburg Counties have the least potential with only four boat ramps and one recreational water between the two. Spartanburg has great potential for an increase in fishing participation. There are five schools with programs and three boat ramps in the county. Aiken also looks promising with seven recreational waters, three boat ramps and one school with a fishing program. I suggest that SC DNR try to have fishing clinics in Greenville, Spartanburg, and Aiken Counties because these areas have necessary factors that promote fishing and Beta values that suggest an increase in license sales.

## IV. Results

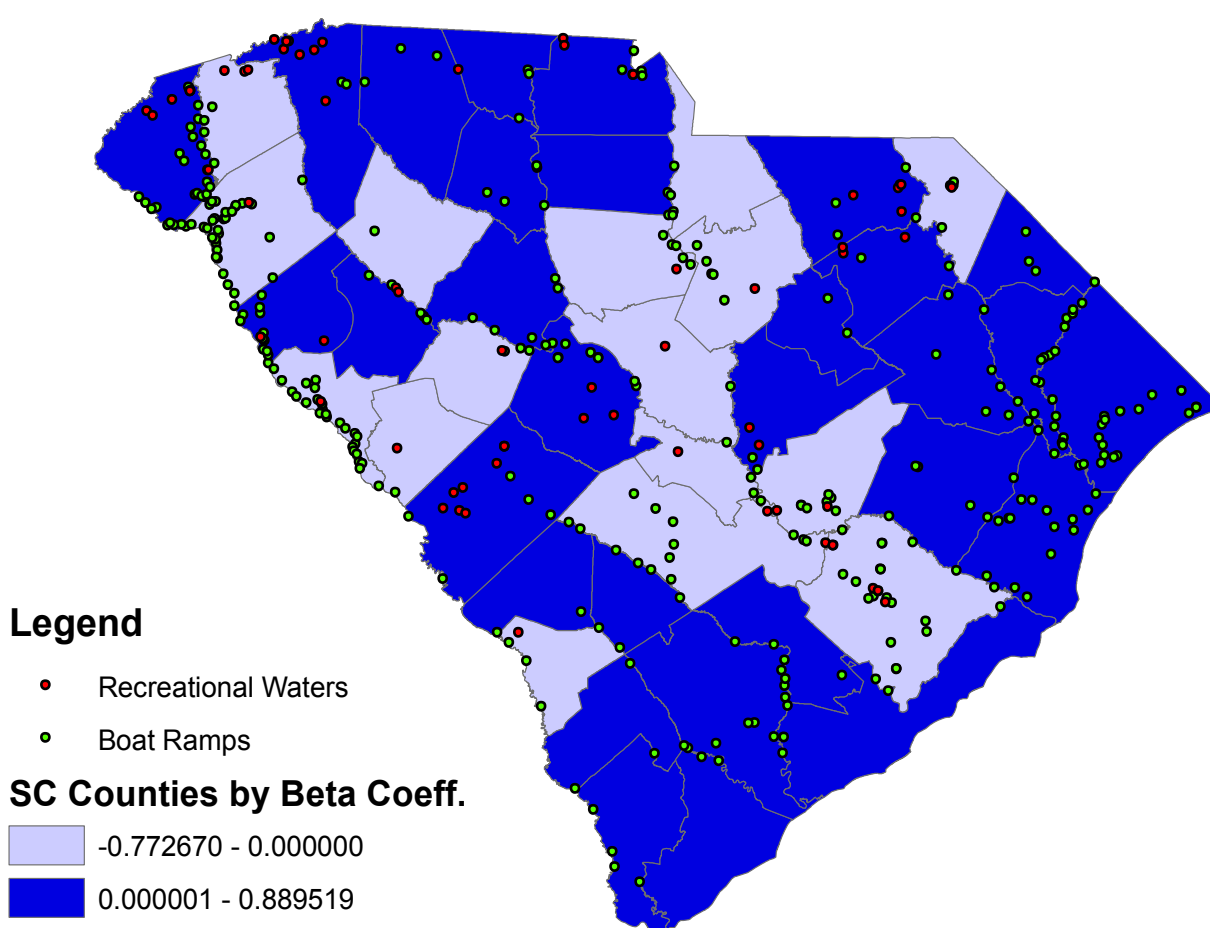
### Chloropleth Map of 2008 Fishing License Data by County



### Proximity to Boat Ramps and Recreational Waters



### Chloropleth Map of Beta Coefficient



Data Sources for Figures: 1) County boundaries created using the DLG County Boundary shapefile. <http://www.dnr.sc.gov/GIS/descdlg.html> 2) Boat Ramps layer created using the Boat Ramps point shapefile. <https://www.dnr.sc.gov/lands/boatramp/> 3) Schools layer created using the school shapefile. [http://www.census.gov/geo/cob/bdy/co/c00shp/c045\\_d00\\_shp.zip](http://www.census.gov/geo/cob/bdy/co/c00shp/c045_d00_shp.zip) 4) The recreational waters layer was created using the recwater shape file. <http://www.scdhec.gov/gis/GIS.aspx>

## V.I. Future Research

Future research should include other features that promote the growth of fishing such as tackle shops per county, boat shops, and other stores that make a profit by selling goods to fisherman. This would not only show where anglers fish but also where they spend their money.

## VIII. Acknowledgements

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## VII. References

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