

# Responsive Management



## **AN ANALYSIS OF THE GEORGIA DEPARTMENT OF NATURAL RESOURCES' OUTREACH EFFORTS TO INCREASE FISHING LICENSE SALES USING THE *WATER WORKS WONDERS* CAMPAIGN MATERIALS**

**Analysis of Data Conducted for the  
Georgia Department of Natural Resources  
by Responsive Management**

**March 2003**

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## **Acknowledgements**

Responsive Management would like to thank Chris Martin and Dennis Schmitt of the Georgia Wildlife Resources Division for their input, support, and guidance on this project.

## **EXECUTIVE SUMMARY**

This study, conducted for the Georgia Department of Natural Resources (GDNR), examined the impact of four different visual stimuli on fishing license sales in the 2002 licensing year in the State of Georgia. Subjects for this experiment were selected from license data in the years 1999, 2000, and 2001. These individuals were then stratified into two groups. One group of approximately 160,000 individuals received one of four types of post cards intended to motivate license sales. Hereinafter, this group is referred to as the “test” group. The other group of 160,000 received no post card and were considered the “control” group.

The cards were identical in written message: “Take me fishing. And I’ll know you have time for me. Take me fishing. Let’s just get in the boat and go. Take me fishing. So we’ll always have something in common.”

Each card, however, shows a different visual vignette. Card 1 shows in the foreground a young, smiling Caucasian boy wearing a hat. In the background two individuals appear to be unloading a boat. Card 2 shows a Caucasian woman in a canoe in the foreground and a Caucasian man in the canoe in the background. Both are holding fishing rods, but only the man is actively fishing. The woman appears to be in her 30s or 40s. The man appears to be slightly older with gray hair. Card 3 shows a Caucasian blond boy in the foreground and a dog and a man standing on a boat or pier in the background. Card 4 shows a young Caucasian girl smiling and resting her chin on her hands in the front of a canoe. There is a man actively fishing in the back of the canoe.

Cards 1 and 4 are the only cards showing active fishing. Cards 1, 2, and 3 show colors that are primarily blues, and figures in the foreground are illuminated in glowing oranges, whereas card 4 shows a very red background (the canoe). Women are not fishing in any of the cards; however, the woman in card 2 is holding a fishing rod. The terrain in three of the cards does not look like typical Georgia scenery (only the blond boy card looks like typical Georgia scenery).

The naming for the cards and the groups that received those cards will be referred to in the following way for the rest of this report. The cards are shown on the following pages.

- No Card = Control
- Card 1 = Boy with Hat
- Card 2 = Couple in Boat
- Card 3 = Blond Boy
- Card 4 = Smiling Girl

The time period for monitoring sales began 2 days (one weekend) after the initial mailing of the cards on April 27, 2002.

- The subgroup that received the couple in boat card outperformed all other groups, particularly the control group, in sales, as shown in the tabulations below. Note that the difference among groups/subgroups is small. The differences may have been larger with more mailings, as research on direct marketing strongly suggests that multiple mailings are much more effective than just one mailing. Also, the results below are among the total population of each group/subgroup. When the groups/subgroups are segmented (i.e., when the groups/subgroups are further divided into, for instance, age categories), the boy with hat card performed the best among males 15 to 30 years old.

#### **Purchasing Behavior of Groups in Study**

<b>License Status in 2002</b>	<b>Control Group</b>	<b>Boy with Hat Subgroup</b>	<b>Couple in Boat Subgroup</b>	<b>Blond Boy Subgroup</b>	<b>Smiling Girl Subgroup</b>	<b>Total</b>
<b>Did not purchase a license in 2002</b>	87.402%	86.705%	86.336%	86.942%	86.833%	87.053%
<b>Purchased a license in 2002</b>	12.598%	13.295%	13.664%	13.058%	13.167%	12.947%

- To reinforce the finding above, an analysis of residuals was performed, which showed that those in the control group were significantly less likely to purchase a license, and those receiving the couple in boat card were significantly more likely to purchase a license, relative to all respondents.
- The results of a logistic regression showed that the couple in boat card is the most influential stimulus for prompting anglers to purchase a license, but when the influence of that card is set aside, the boy with hat card is the second most influential card for stimulating sales. The smiling girl was the third most effective card, and the blond boy was the least effective card. The influence of these cards on sales is, although significant, quite small.

- The couple in boat card is popular with most ages and with males and females, with the following exceptions. Younger females who received the blond boy card were more likely to purchase a license, younger males were more influenced by the boy with hat card. Females aged 31-40 were more apt to purchase a license if they were sent the smiling girl card. Males aged 41-49 were more likely to purchase a license if they were sent the boy with hat card.
  
- An analysis of residuals showed that younger (15-30 years old) males who received a boy with hat card were significantly more likely to purchase a license, as were males aged 31-40 years who received a couple in boat card. Females who were 41-49 years old were significantly more likely to purchase a license if they received a couple in boat card.
  
- A logistic regression showed that the following are the ten factors that are most important to predicting purchasing behavior, listed in order of importance. Note that the specific card received has less effect than gender and age factors.
  - Male
  - 31 to 40 Years Old Males
  - 41 to 49 Years Old
  - 15 to 30 Years Old Males
  - 15 to 30 Years Old
  - Couple in Boat
  - Boy with Hat
  - Smiling Girl
  - Blond Boy
  - Couple in Boat Card Type: 31 to 40 Years Old Males

In conclusion, while this study found differences in the effectiveness of the various cards, those differences were small. One possible reason that the differences were small may have been because there was only one mailing, whereas multiple mailings are generally considered more effective. Furthermore, it may be that both the control group and test groups already had a relatively high propensity to purchase a license (i.e., they were not truly “lapsed” anglers, but

were, rather, sporadic anglers), so the application of a slight stimulus (the single post card) will not produce a marked increase in license sales over the amount of sales that would have occurred. In this regard, further study on smaller groups, with a stronger definition of “lapsed,” may provide more conclusive results. Using the results of this preliminary study, highly targeted messages to highly targeted subgroups may produce greater license sales. Additionally, further investigation on the specific messages that the specific visual images are sending is highly recommended.

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## **INTRODUCTION AND METHODOLOGY**

This study, conducted for the Georgia Department of Natural Resources (GDNR), examined the impact of four different visual stimuli on fishing license sales in the 2002 licensing year in the State of Georgia. Subjects for this experiment were selected from license data in the years 1999, 2000, and 2001. These individuals were then stratified into two groups. One group of approximately 160,000 individuals received one of four types of post cards intended to motivate license sales. Hereinafter, this group is referred to as the “test” group. The other group of 160,000 received no post card and were considered the “control” group.

The cards were identical in written message: “Take me fishing. And I’ll know you have time for me. Take me fishing. Let’s just get in the boat and go. Take me fishing. So we’ll always have something in common.”

Each card, however, shows a different visual vignette. Card 1 shows in the foreground a young, smiling Caucasian boy wearing a hat. In the background two individuals appear to be unloading a boat. Card 2 shows a Caucasian woman in a canoe in the foreground and a Caucasian man in the canoe in the background. Both are holding fishing rods, but only the man is actively fishing. The woman appears to be in her 30s or 40s. The man appears to be slightly older with gray hair. Card 3 shows a Caucasian blond boy in the foreground and a dog and a man standing on a boat or pier in the background. Card 4 shows a young Caucasian girl smiling and resting her chin on her hands in the front of a canoe. There is a man actively fishing in the back of the canoe.

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- Card 3 = Blond Boy
- Card 4 = Smiling Girl

Figure 1. Card 1: Boy with Hat



Take me fishing.  
And I'll know you have  
time for me.

Take me fishing.  
Let's just get in  
the boat and go.

**Take me fishing.**  
So we'll always have  
something in common.

*Water works wonders.*  
FOR FISHING, BOATING, AND  
THE ENVIRONMENT

Figure 2. Card 2: Couple in Boat



Take me fishing.  
And I'll know you have  
time for me.

Take me fishing.  
Let's just get in  
the boat and go.

**Take me fishing.**  
So we'll always have  
something in common.

*Water works wonders.*  
FOR FISHING, BOATING, AND  
THE ENVIRONMENT

Figure 3. Card 3: Blond Boy



Take me fishing.  
And I'll know you have  
time for me.

Take me fishing.  
Let's just get in  
the boat and go.

**Take me fishing.**  
So we'll always have  
something in common.

*Water works wonders.*  
FOR FISHING, BOATING, AND  
THE ENVIRONMENT

Figure 4. Card 4: Smiling Girl



Take me fishing.  
And I'll know you have  
time for me.

Take me fishing.  
Let's just get in  
the boat and go.

**Take me fishing.**  
So we'll always have  
something in common.

*Water works wonders.*  
FOR FISHING, BOATING, AND  
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The time period for monitoring sales began 2 days (one weekend) after the initial mailing of the cards on April 27, 2002. Any sales made between May 29, 2002, and July 31, 2002, were initially considered purchases that could have been influenced by the stimulus of different card types. Licenses that were purchased prior to the mailing were eliminated from the test group. Although initially it had been thought that those purchases made past the end of the test period should be eliminated, it was decided to keep those data as a measure of experimental impact on those with the least motivation to buy. It is possible that those who held out purchasing for the longest period of time are the audience most impacted by this outreach experiment.

Inspection of the data showed that 12,658 cards were undeliverable by the U.S. Postal Service, and those data were eliminated from the study. Some of the test subjects were later determined to be regular, or "faithful," license purchasers, and those individuals (who purchased every year) were eliminated from the analysis because it seemed unlikely that their purchasing behavior would be improved by the experiment. These eliminations removed 2,398 subjects from the test group and 2,297 subjects from the control group.

Individuals who were found to be duplicated within the test subgroups (i.e., they received more than one card) were eliminated from the test group. Likewise, individuals who were duplicated in the control group had their second entry eliminated. Finally, individuals who were in both the test group and the control group were eliminated from the control group and kept in the test group. This process eliminated approximately 6,000 more subjects. The total remaining subjects in the study are reported below in Table 1.

**Table 1. Respondent Breakdown**

<b>Group</b>	<b>Count</b>
Control group	122,039
Test groups	
Boy with hat subgroup	31,005
Couple in boat subgroup	30,555
Blond boy subgroup	29,952
Smiling girl subgroup	29,786
Total test group	121,298
<b>Total</b>	<b>243,337</b>

## RESULTS

The first stage of the analysis examined the impact of card type on purchasing behavior. The second stage of the analysis examined the impact of various demographic factors that may have interacted with the impact of certain cards.

Table 2 that follows shows that the subgroup that received the couple in boat card outperformed all other groups, particularly the control group, in sales. This small difference in sales grows in importance when considered in light of the expense of mailing a post card and the return on that investment in license sales. Additionally, it may be that the difference among various cards and in particular between the groups that received cards and the control group would be greater with additional mailings. The literature on direct marketing by mail indicates that a single mailing is typically not sufficient for an effective marketing campaign. For instance, Hodgson writes, "A teaser campaign, to be effective, must consist of a series of follow-ups, released in rapid succession" (1980). Lewis writes, "[M]ailers are coming to realize that repetitive impressions of the same offer can bring response from target individuals who don't respond to the first nudge. This has been known in the catalog business for years..." (1992). Hodgson also cites another direct mail expert: "Ed Mayer maintains...that most mailers don't mail often enough. In many lines of business that employ salesmen, it is found most sales are completed after the fifth call. And yet scores of people tried direct mail once, didn't get dramatic results and quit" (1980).

Many other books, as well as Websites for marketing firms, had similar themes regarding the need for follow-up mailings. Indeed, the follow-up contacts have been quantified, with direct mail experts indicating that a follow-up mailing will elicit responses from 40% to 50%, and as high as 70%, of the number of original respondents (Stone, 1997; Benson, 1989; Hodgson, 1980).

**Table 2. Purchasing Behavior of Groups in Study**

License Status in 2002	Control Group	Boy with Hat Subgroup	Couple in Boat Subgroup	Blond Boy Subgroup	Smiling Girl Subgroup	Total
Did not purchase a license in 2002	87.402%	86.705%	86.336%	86.942%	86.833%	87.053%
Purchased a license in 2002	12.598%	13.295%	13.664%	13.058%	13.167%	12.947%

Below is an analysis of residuals showing that those in the control group were significantly less likely to purchase a license, and those receiving the couple in boat card were significantly more likely to purchase a license, relative to all respondents. In Table 3 below, standardized residuals data marked with a single asterisk indicate that the findings are likely to happen by chance only 5 times in 100. Two asterisks indicate that a finding is likely to happen by chance only 1 time in 100. Three asterisks indicate that a finding is likely to happen by chance only 1 time in 1,000. A positive sign on a significant residual indicates that the year has more purchases than one would expect. A negative sign on a significant residual indicates that the year has fewer purchases than one would expect.

**Table 3. Analysis of Residuals of Purchasing Behavior of Groups in Study**

License status in 2002	Control Group	Boy with Hat Subgroup	Couple in Boat Subgroup	Blond Boy Subgroup	Smiling Girl Subgroup
Did not purchase a license in 2002	1.31	-0.66	-1.34	-0.21	-0.41
Purchased a license in 2002	-3.39***	1.70	3.48***	0.53	1.06

This finding, however, does not show how much of an impact each card contributes to sales. Below in Table 4 are the results of a logistic regression. Logistic regressions are used to predict an outcome (license sales) from predictive variables (card type). The steps on the left of the table indicate which elements were added to the equation first, second, third, and fourth. In each step, one item has been bolded to show the new variable that has been added at that step. This analysis showed that the couple in boat card is the most influential stimulus for prompting anglers to purchase a license, but when the influence of that card is set aside, the boy with hat card is the second most influential card for stimulating sales. The smiling girl was the third most effective card, and the blond boy was the least effective card. The influence of these cards on sales is, although significant, quite small. A cost/benefit analysis would need to be conducted to determine if the financial outlay will pay for itself in additional license sales revenue.

**Table 4. Logistic Regression of Purchasing Behavior of Groups in Study**

		Beta (Slope of Relationship between Card Type and Purchase Behavior)	Significance
Step 1	<b>Couple in boat</b>	0.07136	0.00
	Constant	-1.91485	0.00
Step 2	<b>Boy with hat</b>	0.04659	0.01
	Couple in boat	0.07825	0.00
	Constant	-1.92174	0.00
Step 3	Boy with hat	0.05365	0.00
	Couple in boat	0.08532	0.00
	<b>Smiling girl</b>	0.04256	0.02
	Constant	-1.92881	0.00
Step 4	Boy with hat	0.06186	0.00
	Couple in boat	0.09352	0.00
	<b>Blond boy</b>	0.04114	0.03
	Smiling girl	0.05077	0.01
	Constant	-1.93702	0.00

The next stage of analysis, shown in Table 5, required fine-tuning the impact of different demographic factors that may differentially impact attraction toward certain types of cards. In this analysis, the impact of gender, age, and card type were examined to determine if there is a differential benefit in license sales that is dependent upon demographic factors. For this analysis, the respondent pool was divided into quartiles by age (i.e., each age category contains roughly a quarter of the respondents—note that the age ranges in the categories are not equal; rather, the numbers of respondents in the age categories are roughly equal).

The top performing card type for each demographic category (e.g., males between the ages of 15 and 30 who purchased a license) were shaded for visual inspection prior to the analysis of residuals and the logistic regression. The shaded areas show that the couple in boat card is popular with most ages and with males and females, with the following exceptions. Younger females who received the blond boy card were more likely to purchase a license (significance test to follow), younger males were more influenced by the boy with hat card. Females aged 31-40 were more apt to purchase a license if they were sent the smiling girl card. Males aged 41-49 were more likely to purchase a license if they were sent the boy with hat card.

**Table 5. Interactions of Demographic Factors and Card Type on Purchasing Behavior**

Age in Quartiles	Gender	License Status in 2002	Group Type					Total
			Control	Boy with Hat	Couple in Boat	Blond Boy	Smiling Girl	
15 to 30 years old	Female	Did not purchase a license in 2002	91.70%	91.23%	91.34%	91.21%	91.29%	91.49%
		Purchased a license in 2002	8.30%	8.77%	8.66%	8.79%	8.71%	8.51%
	Male	Did not purchase a license in 2002	86.11%	84.68%	84.98%	85.51%	85.62%	85.66%
		Purchased a license in 2002	13.89%	15.32%	15.02%	14.49%	14.38%	14.34%
31 to 40 years old	Female	Did not purchase a license in 2002	90.22%	89.98%	90.26%	90.26%	88.87%	90.04%
		Purchased a license in 2002	9.78%	10.02%	9.74%	9.74%	11.13%	9.96%
	Male	Did not purchase a license in 2002	85.15%	84.55%	83.09%	84.81%	84.57%	84.70%
		Purchased a license in 2002	14.85%	15.45%	16.91%	15.19%	15.43%	15.30%
41 to 49 years old	Female	Did not purchase a license in 2002	89.94%	89.18%	88.06%	88.55%	90.47%	89.51%
		Purchased a license in 2002	10.06%	10.82%	11.94%	11.45%	9.53%	10.49%
	Male	Did not purchase a license in 2002	86.04%	84.67%	85.81%	85.58%	85.24%	85.67%
		Purchased a license in 2002	13.96%	15.33%	14.19%	14.42%	14.76%	14.33%
50 years old and older	Female	Did not purchase a license in 2002	90.62%	90.77%	89.78%	90.53%	90.46%	90.50%
		Purchased a license in 2002	9.38%	9.23%	10.22%	9.47%	9.54%	9.50%
	Male	Did not purchase a license in 2002	87.22%	87.25%	86.01%	86.97%	86.32%	86.92%
		Purchased a license in 2002	12.78%	12.75%	13.99%	13.03%	13.68%	13.08%

Table 6 shows the same data presented as an analysis of residuals to show which subgroups were significantly different from the general trend. The cells that are shaded indicate significant relationships between card types and purchasing behavior. Younger (15-30 years old) males who received a boy with hat card were significantly more likely to purchase a license, as were males aged 31-40 years who received a couple in boat card. Females who were 41-49 years old were significantly more likely to purchase a license if they received a couple in boat card.

**Table 6. Analysis of Residuals of the Interactions of Demographic Factors and Card Type on Purchasing Behavior**

Age in Quartiles	Gender	License Status in 2002	Group Type				
			Control	Boy with Hat	Couple in Boat	Blond Boy	Smiling Girl
15 to 30 years old	Female	Did not purchase a license in 2002	0.20	-0.12	-0.07	-0.13	-0.09
		Purchased a license in 2002	-0.66	0.40	0.23	0.43	0.30
	Male	Did not purchase a license in 2002	0.74	-0.80	-0.55	-0.13	-0.03
		Purchased a license in 2002	-1.81	<b>1.96*</b>	1.35	0.31	0.08
31 to 40 years old	Female	Did not purchase a license in 2002	0.19	-0.03	0.12	0.11	-0.58
		Purchased a license in 2002	-0.56	0.08	-0.35	-0.33	1.75
	Male	Did not purchase a license in 2002	0.74	-0.12	-1.34	0.09	-0.10
		Purchased a license in 2002	-1.75	0.29	<b>3.15**</b>	-0.22	0.25
41 to 49 years old	Female	Did not purchase a license in 2002	0.42	-0.16	-0.69	-0.46	0.46
		Purchased a license in 2002	-1.22	0.48	<b>2.01*</b>	1.35	-1.35
	Male	Did not purchase a license in 2002	0.55	-0.77	0.10	-0.07	-0.32
		Purchased a license in 2002	-1.34	1.89	-0.25	0.18	0.79
50 years old and older	Female	Did not purchase a license in 2002	0.12	0.14	-0.36	0.01	-0.02
		Purchased a license in 2002	-0.37	-0.42	1.12	-0.04	0.06
	Male	Did not purchase a license in 2002	0.45	0.26	-0.72	0.03	-0.47
		Purchased a license in 2002	-1.17	-0.67	1.85	-0.09	1.21

This overview did not measure the size of the impact of the factors, nor did it show the size of the impact of particular interactions among groups. The next analysis shown in Table 7, a logistic regression, looks at the same data again in more detail and measures the impact of the card types as they interact with demographic data. The following test results show the importance of the interactions between age, gender, card type, and purchasing behavior. In particular the results show that the factors in bold in Table 7 are important to predicting purchasing behavior. The factors in bold are in order of importance in the table (e.g., “male” is

the most important, followed by “31 to 40 years old males,” “41 to 49 years old,” and “15 to 30 years old males,” and so on).

**Table 7. Logistic Regression of the Interactions of Demographic Factors and Card Type on Purchasing Behavior**

Data Examined Through Orthogonal Contrasts (Comparison Groups Are Females for Gender, Control Group for Card Type, and 50 and Over for Age)			
Listing of the Factors Most Important to License Sales in Order of Importance			
Step of Analysis	Factors Entered at Each Step (New Factors at Each Step Have Been Bolded)	Beta (Slope) of Relationship (Positive Slopes, in Bold, Mean Positive Relationship; Negative Slopes, Not Bolded, Mean Negative Relationship)	Significance (Significant Factors Have Been Bolded)
Step 1	<b>Male</b>	<b>0.4481</b>	<b>0.00</b>
Step 2	Male	<b>0.4176</b>	<b>0.00</b>
Step 2	<b>31 to 40 Years Old Males</b>	<b>0.1113</b>	<b>0.00</b>
Step 3	Male	<b>0.4131</b>	<b>0.00</b>
Step 3	31 to 40 Years Old Males	<b>0.1327</b>	<b>0.00</b>
Step 3	<b>41 to 49 Years Old</b>	<b>0.0693</b>	<b>0.00</b>
Step 4	Male	<b>0.3699</b>	<b>0.00</b>
Step 4	31 to 40 Years Old Males	<b>0.1869</b>	<b>0.00</b>
Step 4	41 to 49 Years Old	<b>0.1130</b>	<b>0.00</b>
Step 4	<b>15 to 30 Years Old Males</b>	<b>0.1104</b>	<b>0.00</b>
Step 5	Male	<b>0.3417</b>	<b>0.00</b>
Step 5	31 to 40 Years Old Males	<b>0.1800</b>	<b>0.00</b>
Step 5	15 to 30 Years Old Males	<b>0.2457</b>	<b>0.00</b>
Step 5	41 to 49 Years Old	<b>0.0991</b>	<b>0.00</b>
Step 5	<b>15 to 30 Years Old</b>	-0.1423	<b>0.00</b>
Step 6	Male	<b>0.3416</b>	<b>0.00</b>
Step 6	31 to 40 Years Old Males	<b>0.1801</b>	<b>0.00</b>
Step 6	15 to 30 Years Old Males	<b>0.2458</b>	<b>0.00</b>
Step 6	41 to 49 Years Old	<b>0.0995</b>	<b>0.00</b>
Step 6	15 to 30 Years Old	-0.1419	<b>0.00</b>
Step 6	<b>Couple in Boat</b>	<b>0.0718</b>	<b>0.00</b>
Step 7	Male	<b>0.3414</b>	<b>0.00</b>
Step 7	31 to 40 Years Old Males	<b>0.1803</b>	<b>0.00</b>
Step 7	15 to 30 Years Old Males	<b>0.2461</b>	<b>0.00</b>
Step 7	41 to 49 Years Old	<b>0.0995</b>	<b>0.00</b>
Step 7	15 to 30 Years Old	-0.1418	<b>0.00</b>
Step 7	Couple in Boat	<b>0.0786</b>	<b>0.00</b>
Step 7	<b>Boy with Hat</b>	<b>0.0461</b>	<b>0.01</b>
Step 8	Male	<b>0.3414</b>	<b>0.00</b>
Step 8	31 to 40 Years Old Males	<b>0.1805</b>	<b>0.00</b>
Step 8	15 to 30 Years Old Males	<b>0.2462</b>	<b>0.00</b>
Step 8	41 to 49 Years Old	<b>0.0996</b>	<b>0.00</b>
Step 8	Couple in Boat	<b>0.0861</b>	<b>0.00</b>
Step 8	15 to 30 Years Old	-0.1416	<b>0.00</b>
Step 8	Boy with Hat	<b>0.0535</b>	<b>0.00</b>

Data Examined Through Orthogonal Contrasts (Comparison Groups Are Females for Gender, Control Group for Card Type, and 50 and Over for Age)			
Listing of the Factors Most Important to License Sales in Order of Importance			
Step of Analysis	Factors Entered at Each Step (New Factors at Each Step Have Been Bolded)	Beta (Slope) of Relationship (Positive Slopes, in Bold, Mean Positive Relationship; Negative Slopes, Not Bolded, Mean Negative Relationship)	Significance (Significant Factors Have Been Bolded)
Step 8	<b>Smiling Girl</b>	<b>0.0451</b>	<b>0.02</b>
Step 9	Male	<b>0.3412</b>	<b>0.00</b>
Step 9	31 to 40 Years Old Males	<b>0.1806</b>	<b>0.00</b>
Step 9	15 to 30 Years Old Males	<b>0.2463</b>	<b>0.00</b>
Step 9	41 to 49 Years Old	<b>0.0996</b>	<b>0.00</b>
Step 9	Couple in Boat	<b>0.0938</b>	<b>0.00</b>
Step 9	15 to 30 Years Old	-0.1414	<b>0.00</b>
Step 9	Boy with Hat	<b>0.0612</b>	<b>0.00</b>
Step 9	Smiling Girl	<b>0.0528</b>	<b>0.01</b>
Step 9	<b>Blond Boy</b>	<b>0.0385</b>	<b>0.05</b>
Step 10	Male	<b>0.3413</b>	<b>0.00</b>
Step 10	31 to 40 Years Old Males	<b>0.1692</b>	<b>0.00</b>
Step 10	15 to 30 Years Old Males	<b>0.2462</b>	<b>0.00</b>
Step 10	41 to 49 Years Old	<b>0.0995</b>	<b>0.00</b>
Step 10	15 to 30 Years Old	-0.1415	<b>0.00</b>
Step 10	Couple in Boat	<b>0.0748</b>	<b>0.00</b>
Step 10	Boy with Hat	<b>0.0612</b>	<b>0.00</b>
Step 10	Smiling Girl	<b>0.0527</b>	<b>0.01</b>
Step 10	Blond Boy	<b>0.0385</b>	<b>0.05</b>
Step 10	<b>Couple in Boat: 31 to 40 Years Old Males</b>	<b>0.0843</b>	<b>0.05</b>
Step 11	Male	<b>0.3573</b>	<b>0.00</b>
Step 11	15 to 30 Years Old Males	<b>0.2302</b>	<b>0.00</b>
Step 11	41 to 49 Years Old	<b>0.1074</b>	<b>0.00</b>
Step 11	15 to 30 Years Old	-0.1215	<b>0.00</b>
Step 11	Couple in Boat	<b>0.0747</b>	<b>0.00</b>
Step 11	31 to 40 Years Old Males	<b>0.1218</b>	<b>0.00</b>
Step 11	Boy with Hat	<b>0.0612</b>	<b>0.00</b>
Step 11	Smiling Girl	<b>0.0528</b>	<b>0.01</b>
Step 11	Blond Boy	<b>0.0385</b>	<b>0.05</b>
Step 11	Couple in Boat: 31 to 40 Years Old Males	<b>0.0844</b>	<b>0.05</b>
Step 11	<b>31 to 40 Years Old</b>	<b>0.0513</b>	0.11
Step 12	Male	<b>0.3624</b>	<b>0.00</b>
Step 12	41 to 49 Years Old	<b>0.1153</b>	<b>0.00</b>
Step 12	15 to 30 Years Old Males	<b>0.2251</b>	<b>0.00</b>
Step 12	Couple in Boat	<b>0.0924</b>	<b>0.00</b>
Step 12	15 to 30 Years Old	-0.1175	<b>0.00</b>
Step 12	31 to 40 Years Old Males	<b>0.1191</b>	<b>0.00</b>
Step 12	Boy with Hat	<b>0.0612</b>	<b>0.00</b>
Step 12	Smiling Girl	<b>0.0528</b>	<b>0.01</b>
Step 12	Blond Boy	<b>0.0385</b>	<b>0.05</b>

Data Examined Through Orthogonal Contrasts (Comparison Groups Are Females for Gender, Control Group for Card Type, and 50 and Over for Age)			
Listing of the Factors Most Important to License Sales in Order of Importance			
Step of Analysis	Factors Entered at Each Step (New Factors at Each Step Have Been Bolded)	Beta (Slope) of Relationship (Positive Slopes, in Bold, Mean Positive Relationship; Negative Slopes, Not Bolded, Mean Negative Relationship)	Significance (Significant Factors Have Been Bolded)
Step 12	31 to 40 Years Old	<b>0.0551</b>	0.08
Step 12	<b>Couple in Boat: 41 to 49 Years Old Males</b>	-0.0817	0.10
Step 12	Couple in Boat: 31 to 40 Years Old Males	<b>0.0666</b>	0.13
Step 13	Male	<b>0.3627</b>	<b>0.00</b>
Step 13	41 to 49 Years Old	<b>0.1156</b>	<b>0.00</b>
Step 13	15 to 30 Years Old Males	<b>0.2162</b>	<b>0.00</b>
Step 13	Couple in Boat	<b>0.0936</b>	<b>0.00</b>
Step 13	15 to 30 Years Old	-0.1174	<b>0.00</b>
Step 13	31 to 40 Years Old Males	<b>0.1193</b>	<b>0.00</b>
Step 13	Smiling Girl	<b>0.0527</b>	<b>0.01</b>
Step 13	Boy with Hat	<b>0.0471</b>	<b>0.03</b>
Step 13	Blond Boy	<b>0.0384</b>	<b>0.05</b>
Step 13	31 to 40 Years Old	<b>0.0552</b>	0.08
Step 13	Couple in Boat: 41 to 49 Years Old Males	-0.0851	0.08
Step 13	<b>Boy with Hat: 15 to 30 Years Old Males</b>	<b>0.0677</b>	0.13
Step 13	Couple in Boat: 31 to 40 Years Old Males	<b>0.0633</b>	0.15
Step 14	Male	<b>0.3569</b>	<b>0.00</b>
Step 14	15 to 30 Years Old Males	<b>0.2197</b>	<b>0.00</b>
Step 14	41 to 49 Years Old	<b>0.1069</b>	<b>0.00</b>
Step 14	Couple in Boat	<b>0.0923</b>	<b>0.00</b>
Step 14	31 to 40 Years Old Males	<b>0.1252</b>	<b>0.00</b>
Step 14	15 to 30 Years Old	-0.1218	<b>0.00</b>
Step 14	Smiling Girl	<b>0.0527</b>	<b>0.01</b>
Step 14	Blond Boy	<b>0.0385</b>	<b>0.05</b>
Step 14	Boy with Hat: 15 to 30 Years Old Males	<b>0.0852</b>	0.06
Step 14	<b>Boy with Hat: 41 to 49 Years Old Males</b>	<b>0.0774</b>	0.10
Step 14	31 to 40 Years Old	<b>0.0508</b>	0.11
Step 14	Couple in Boat: 41 to 49 Years Old Males	-0.0761	0.13
Step 14	Couple in Boat: 31 to 40 Years Old Males	<b>0.0620</b>	0.16
Step 14	Boy with Hat	<b>0.0294</b>	0.22
Step 15	Male	<b>0.3562</b>	<b>0.00</b>
Step 15	15 to 30 Years Old Males	<b>0.2191</b>	<b>0.00</b>
Step 15	41 to 49 Years Old	<b>0.1057</b>	<b>0.00</b>
Step 15	Couple in Boat	<b>0.0913</b>	<b>0.00</b>

<b>Data Examined Through Orthogonal Contrasts (Comparison Groups Are Females for Gender, Control Group for Card Type, and 50 and Over for Age)</b>			
<b>Listing of the Factors Most Important to License Sales in Order of Importance</b>			
<b>Step of Analysis</b>	<b>Factors Entered at Each Step (New Factors at Each Step Have Been Bolded)</b>	<b>Beta (Slope) of Relationship (Positive Slopes, in Bold, Mean Positive Relationship; Negative Slopes, Not Bolded, Mean Negative Relationship)</b>	<b>Significance (Significant Factors Have Been Bolded)</b>
Step 15	15 to 30 Years Old	-0.1224	<b>0.00</b>
Step 15	31 to 40 Years Old Males	<b>0.1214</b>	<b>0.00</b>
Step 15	Smiling Girl	<b>0.0527</b>	<b>0.01</b>
Step 15	Blond Boy	<b>0.0385</b>	<b>0.05</b>
Step 15	Boy with Hat: 15 to 30 Years Old Males	<b>0.0961</b>	<b>0.05</b>
Step 15	Boy with Hat: 41 to 49 Years Old Males	<b>0.0881</b>	0.08
Step 15	31 to 40 Years Old	<b>0.0502</b>	0.12
Step 15	Couple in Boat: 41 to 49 Years Old Males	-0.0753	0.13
Step 15	Couple in Boat: 31 to 40 Years Old Males	<b>0.0661</b>	0.14
Step 15	<b>Boy with Hat: 31 to 40 Years Old Males</b>	<b>0.0317</b>	0.52
Step 15	Boy with Hat	<b>0.0183</b>	0.53
Step 16	Male	<b>0.3562</b>	<b>0.00</b>
Step 16	15 to 30 Years Old Males	<b>0.2216</b>	<b>0.00</b>
Step 16	41 to 49 Years Old	<b>0.1056</b>	<b>0.00</b>
Step 16	Couple in Boat	<b>0.0909</b>	<b>0.00</b>
Step 16	15 to 30 Years Old	-0.1225	<b>0.00</b>
Step 16	31 to 40 Years Old Males	<b>0.1213</b>	<b>0.00</b>
Step 16	Smiling Girl	<b>0.0564</b>	<b>0.01</b>
Step 16	Blond Boy	<b>0.0385</b>	<b>0.05</b>
Step 16	Boy with Hat: 15 to 30 Years Old Males	<b>0.0936</b>	0.06
Step 16	Boy with Hat: 41 to 49 Years Old Males	<b>0.0882</b>	0.08
Step 16	31 to 40 Years Old	<b>0.0502</b>	0.12
Step 16	Couple in Boat: 31 to 40 Years Old Males	<b>0.0671</b>	0.13
Step 16	Couple in Boat: 41 to 49 Years Old Males	-0.0744	0.13
Step 16	Boy with Hat: 31 to 40 Years Old Males	<b>0.0318</b>	0.51
Step 16	Boy with Hat	<b>0.0188</b>	0.52
Step 16	<b>Smiling Girl: 15 to 30 Years Old Males</b>	-0.0182	0.69
Step 17	Male	<b>0.3562</b>	<b>0.00</b>
Step 17	15 to 30 Years Old Males	<b>0.2194</b>	<b>0.00</b>
Step 17	41 to 49 Years Old	<b>0.1057</b>	<b>0.00</b>
Step 17	Couple in Boat	<b>0.0913</b>	<b>0.00</b>
Step 17	15 to 30 Years Old	-0.1224	<b>0.00</b>
Step 17	31 to 40 Years Old Males	<b>0.1214</b>	<b>0.00</b>

Data Examined Through Orthogonal Contrasts (Comparison Groups Are Females for Gender, Control Group for Card Type, and 50 and Over for Age)			
Listing of the Factors Most Important to License Sales in Order of Importance			
Step of Analysis	Factors Entered at Each Step (New Factors at Each Step Have Been Bolded)	Beta (Slope) of Relationship (Positive Slopes, in Bold, Mean Positive Relationship; Negative Slopes, Not Bolded, Mean Negative Relationship)	Significance (Significant Factors Have Been Bolded)
Step 17	Smiling Girl	<b>0.0559</b>	<b>0.01</b>
Step 17	Boy with Hat: 15 to 30 Years Old Males	<b>0.0958</b>	<b>0.05</b>
Step 17	Boy with Hat: 41 to 49 Years Old Males	<b>0.0881</b>	0.08
Step 17	Blond Boy	<b>0.0357</b>	0.10
Step 17	31 to 40 Years Old	<b>0.0502</b>	0.12
Step 17	Couple in Boat: 41 to 49 Years Old Males	-0.0752	0.13
Step 17	Couple in Boat: 31 to 40 Years Old Males	<b>0.0662</b>	0.14
Step 17	Boy with Hat: 31 to 40 Years Old Males	<b>0.0317</b>	0.52
Step 17	Boy with Hat	<b>0.0184</b>	0.53
Step 17	Smiling Girl: 15 to 30 Years Old Males	-0.0159	0.73
Step 17	<b>Blond Boy: 15 to 30 Years Old Males</b>	<b>0.0136</b>	0.77
Step 18	Male	<b>0.3562</b>	<b>0.00</b>
Step 18	15 to 30 Years Old Males	<b>0.2198</b>	<b>0.00</b>
Step 18	41 to 49 Years Old	<b>0.1057</b>	<b>0.00</b>
Step 18	Couple in Boat	<b>0.0916</b>	<b>0.00</b>
Step 18	15 to 30 Years Old	-0.1224	<b>0.00</b>
Step 18	31 to 40 Years Old Males	<b>0.1235</b>	<b>0.00</b>
Step 18	Smiling Girl	<b>0.0593</b>	<b>0.02</b>
Step 18	Boy with Hat: 15 to 30 Years Old Males	<b>0.0953</b>	<b>0.05</b>
Step 18	Boy with Hat: 41 to 49 Years Old Males	<b>0.0881</b>	0.08
Step 18	Blond Boy	<b>0.0356</b>	0.10
Step 18	31 to 40 Years Old	<b>0.0503</b>	0.12
Step 18	Couple in Boat: 41 to 49 Years Old Males	-0.0751	0.13
Step 18	Couple in Boat: 31 to 40 Years Old Males	<b>0.0643</b>	0.15
Step 18	Boy with Hat	<b>0.0190</b>	0.52
Step 18	Boy with Hat: 31 to 40 Years Old Males	<b>0.0296</b>	0.55
Step 18	Smiling Girl: 15 to 30 Years Old Males	-0.0192	0.69
Step 18	Blond Boy: 15 to 30 Years Old Males	<b>0.0137</b>	0.77
Step 18	<b>Smiling Girl: 31 to 40 Years Old Males</b>	-0.0124	0.79
Step 19	Male	<b>0.3562</b>	<b>0.00</b>

<b>Data Examined Through Orthogonal Contrasts (Comparison Groups Are Females for Gender, Control Group for Card Type, and 50 and Over for Age)</b>			
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Step 19	15 to 30 Years Old Males	<b>0.2204</b>	<b>0.00</b>
Step 19	41 to 49 Years Old	<b>0.1057</b>	<b>0.00</b>
Step 19	Couple in Boat	<b>0.0921</b>	<b>0.00</b>
Step 19	15 to 30 Years Old	-0.1224	<b>0.00</b>
Step 19	31 to 40 Years Old Males	<b>0.1261</b>	<b>0.00</b>
Step 19	Smiling Girl	<b>0.0600</b>	<b>0.02</b>
Step 19	Boy with Hat: 15 to 30 Years Old Males	<b>0.0947</b>	0.06
Step 19	Boy with Hat: 41 to 49 Years Old Males	<b>0.0882</b>	0.08
Step 19	31 to 40 Years Old	<b>0.0503</b>	0.12
Step 19	Blond Boy	<b>0.0392</b>	0.12
Step 19	Couple in Boat: 41 to 49 Years Old Males	-0.0748	0.13
Step 19	Couple in Boat: 31 to 40 Years Old Males	<b>0.0619</b>	0.18
Step 19	Boy with Hat	<b>0.0196</b>	0.51
Step 19	Boy with Hat: 31 to 40 Years Old Males	<b>0.0270</b>	0.59
Step 19	Smiling Girl: 15 to 30 Years Old Males	-0.0198	0.68
Step 19	Smiling Girl: 31 to 40 Years Old Males	-0.0150	0.76
Step 19	<b>Blond Boy: 31 to 40 Years Old Males</b>	-0.0129	0.79
Step 19	Blond Boy: 15 to 30 Years Old Males	<b>0.0102</b>	0.83
Step 20	Male	<b>0.3596</b>	<b>0.00</b>
Step 20	15 to 30 Years Old Males	<b>0.2169</b>	<b>0.00</b>
Step 20	Couple in Boat	<b>0.0918</b>	<b>0.00</b>
Step 20	15 to 30 Years Old	-0.1198	<b>0.00</b>
Step 20	41 to 49 Years Old	<b>0.1109</b>	<b>0.00</b>
Step 20	31 to 40 Years Old Males	<b>0.1225</b>	<b>0.00</b>
Step 20	Smiling Girl	<b>0.0600</b>	<b>0.02</b>
Step 20	Boy with Hat: 15 to 30 Years Old Males	<b>0.0952</b>	0.06
Step 20	Boy with Hat: 41 to 49 Years Old Males	<b>0.0898</b>	0.08
Step 20	Blond Boy	<b>0.0392</b>	0.12
Step 20	31 to 40 Years Old	<b>0.0528</b>	0.13
Step 20	Couple in Boat: 41 to 49 Years Old Males	-0.0733	0.15
Step 20	Couple in Boat: 31 to 40 Years Old Males	<b>0.0622</b>	0.18

<b>Data Examined Through Orthogonal Contrasts (Comparison Groups Are Females for Gender, Control Group for Card Type, and 50 and Over for Age)</b>			
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Step 20	Boy with Hat	<b>0.0192</b>	0.52
Step 20	Boy with Hat: 31 to 40 Years Old Males	<b>0.0275</b>	0.59
Step 20	Smiling Girl: 15 to 30 Years Old Males	-0.0199	0.68
Step 20	Smiling Girl: 31 to 40 Years Old Males	-0.0151	0.76
Step 20	Blond Boy: 31 to 40 Years Old Males	-0.0130	0.79
Step 20	Blond Boy: 15 to 30 Years Old Males	<b>0.0101</b>	0.83
Step 20	<b>41 to 49 Years Old Males</b>	-0.0073	0.86
Step 21	Male	<b>0.3596</b>	<b>0.00</b>
Step 21	15 to 30 Years Old Males	<b>0.2166</b>	<b>0.00</b>
Step 21	Couple in Boat	<b>0.0915</b>	<b>0.00</b>
Step 21	15 to 30 Years Old	-0.1199	<b>0.00</b>
Step 21	41 to 49 Years Old	<b>0.1109</b>	<b>0.00</b>
Step 21	31 to 40 Years Old Males	<b>0.1222</b>	<b>0.00</b>
Step 21	Smiling Girl	<b>0.0577</b>	<b>0.05</b>
Step 21	Boy with Hat: 15 to 30 Years Old Males	<b>0.0955</b>	0.06
Step 21	Boy with Hat: 41 to 49 Years Old Males	<b>0.0912</b>	0.08
Step 21	Blond Boy	<b>0.0392</b>	0.12
Step 21	31 to 40 Years Old	<b>0.0528</b>	0.13
Step 21	Couple in Boat: 41 to 49 Years Old Males	-0.0721	0.16
Step 21	Couple in Boat: 31 to 40 Years Old Males	<b>0.0625</b>	0.18
Step 21	Boy with Hat	<b>0.0188</b>	0.53
Step 21	Boy with Hat: 31 to 40 Years Old Males	<b>0.0279</b>	0.58
Step 21	Smiling Girl: 15 to 30 Years Old Males	-0.0176	0.73
Step 21	Blond Boy: 31 to 40 Years Old Males	-0.0130	0.79
Step 21	Smiling Girl: 31 to 40 Years Old Males	-0.0127	0.80
Step 21	Blond Boy: 15 to 30 Years Old Males	<b>0.0101</b>	0.83
Step 21	41 to 49 Years Old Males	-0.0086	0.84
Step 21	<b>Smiling Girl: 41 to 49 Years Old Males</b>	<b>0.0078</b>	0.88
Step 22	Male	<b>0.3596</b>	<b>0.00</b>
Step 22	15 to 30 Years Old Males	<b>0.2167</b>	<b>0.00</b>

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Step 22	Couple in Boat	<b>0.0916</b>	<b>0.00</b>
Step 22	15 to 30 Years Old	-0.1199	<b>0.00</b>
Step 22	41 to 49 Years Old	<b>0.1109</b>	<b>0.00</b>
Step 22	31 to 40 Years Old Males	<b>0.1223</b>	<b>0.00</b>
Step 22	Smiling Girl	<b>0.0578</b>	<b>0.05</b>
Step 22	Boy with Hat: 15 to 30 Years Old Males	<b>0.0954</b>	0.06
Step 22	Boy with Hat: 41 to 49 Years Old Males	<b>0.0908</b>	0.09
Step 22	31 to 40 Years Old	<b>0.0528</b>	0.13
Step 22	Couple in Boat: 41 to 49 Years Old Males	-0.0724	0.17
Step 22	Couple in Boat: 31 to 40 Years Old Males	<b>0.0624</b>	0.18
Step 22	Blond Boy	<b>0.0398</b>	0.19
Step 22	Boy with Hat	<b>0.0189</b>	0.53
Step 22	Boy with Hat: 31 to 40 Years Old Males	<b>0.0278</b>	0.58
Step 22	Smiling Girl: 15 to 30 Years Old Males	-0.0177	0.73
Step 22	Blond Boy: 31 to 40 Years Old Males	-0.0135	0.79
Step 22	Smiling Girl: 31 to 40 Years Old Males	-0.0128	0.80
Step 22	Blond Boy: 15 to 30 Years Old Males	<b>0.0095</b>	0.85
Step 22	41 to 49 Years Old Males	-0.0083	0.85
Step 22	Smiling Girl: 41 to 49 Years Old Males	<b>0.0075</b>	0.89
Step 22	<b>Blond Boy: 41 to 49 Years Old Males</b>	-0.0018	0.97
Step 23	Male	<b>0.3596</b>	<b>0.00</b>
Step 23	15 to 30 Years Old Males	<b>0.2170</b>	<b>0.00</b>
Step 23	15 to 30 Years Old	-0.1199	<b>0.00</b>
Step 23	41 to 49 Years Old	<b>0.1109</b>	<b>0.00</b>
Step 23	Couple in Boat	<b>0.0921</b>	<b>0.00</b>
Step 23	31 to 40 Years Old Males	<b>0.1224</b>	<b>0.00</b>
Step 23	Smiling Girl	<b>0.0579</b>	0.06
Step 23	Boy with Hat: 15 to 30 Years Old Males	<b>0.0951</b>	0.06
Step 23	Boy with Hat: 41 to 49 Years Old Males	<b>0.0907</b>	0.09
Step 23	31 to 40 Years Old	<b>0.0528</b>	0.13
Step 23	Couple in Boat: 41 to 49 Years Old Males	-0.0729	0.19

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Step 23	Blond Boy	<b>0.0399</b>	0.19
Step 23	Couple in Boat: 31 to 40 Years Old Males	<b>0.0619</b>	0.21
Step 23	Boy with Hat	<b>0.0190</b>	0.53
Step 23	Boy with Hat: 31 to 40 Years Old Males	<b>0.0277</b>	0.59
Step 23	Smiling Girl: 15 to 30 Years Old Males	-0.0180	0.73
Step 23	Blond Boy: 31 to 40 Years Old Males	-0.0136	0.79
Step 23	Smiling Girl: 31 to 40 Years Old Males	-0.0129	0.80
Step 23	41 to 49 Years Old Males	-0.0082	0.86
Step 23	Blond Boy: 15 to 30 Years Old Males	<b>0.0093</b>	0.86
Step 23	Smiling Girl: 41 to 49 Years Old Males	<b>0.0074</b>	0.89
Step 23	Blond Boy: 41 to 49 Years Old Males	-0.0019	0.97
Step 23	<b>Couple in Boat: 15 to 30 Years Old Males</b>	-0.0013	0.98

The results of this study indicate that the primary factors, that is, the factors accounting for the most variation in fishing license sales, were the ones added to the equation in the earlier steps. When reading the table it is best to read the data in two ways. The first way to read the data is from top to bottom. This shows that the factors in bold are the ones that have been newly added into the equation at each step of the testing process. When reading the data from top to bottom one can see that the beta value shows the direction of the relationship. Positive betas indicate the presence of a given factor boosted sales, while negative betas indicate that the presence of a given factor were detrimental to sales. One may also read this to mean that certain factors, like being 15 to 30 years old (see step 5), are negatively associated with sales, also mean that *not* being in that age category is positively correlated with sales. In the fourth column, significant data are bolded to indicate when the presence of a factor has a statistically significant impact on sales.

The second way to read this table is to look at the last stage (step 23) of the analysis to see the “full model” with the complete set of variables found to be related to license sales in the logistic regression. On step 23, the results indicate that (in order of significance) being male and being a 15- to 30-year-old male were significantly positively related to license sales. The next factor is being 15 to 30 years old, which is significantly negatively related to purchasing a fishing license. The most likely reason for this latter finding is that being a 15- to 30-year-old male, which already had been entered into the equation, had already been accounted for. It might be better to say, then, that being 15 to 30 years old in itself is not as important as the gender of the 15- to 30-year-old. The gender of those in the 15- to 30-year-old category is a better predictor of whether they will purchase a license than just the age category by itself. Another more abstract way to view this information is that once gender has been accounted for in this particular age group, the age group itself (statistically “stripped” of gender) is negatively related to sales.

The next factor in the equation is the 41- to 49-year-old age group, which is significantly positively related to license sales, followed by 31- to 40-year-old males, which is also positively significantly related to license sales. The card type with the most significant impact on license sales, regardless of demographic factors, is the couple in boat card. That card has the most universal appeal and has the greatest impact on sales to the general, untargeted population. The impact of the smiling girl card neared significance to the untargeted population.

Two interesting findings that near significance should be explored for targeted marketing. The boy with hat card was nearly significantly positively related to fishing license sales when (1) presented to males in the 15- to 30-year-old age group and when (2) presented to males in the 41- to 49-year-old age group. None of the other factors in the final equation contribute significant variation to fishing license sales.

One interesting result of connecting the current findings to the census data *at the county level* was that the percent of sales success among those who received the couple in boat card was significantly related to demographic factors, but was not significantly related to county of residence, even when a particular county may have had a greater percent of residents with the particular demographic factor that was shown to be significantly positively related to license sales. The likely explanation for this is that those within the study comprise a specialized group who came to be in the study because they had purchased a license at some point. Therefore,

demographic factors among those who had purchased a license made a difference in sales; however, demographic factors in general (among those in the entire state) are less connected to sales. Another interesting finding was the significant negative relationship of sales among all respondents to the percent of African-American residents in a county.

In conclusion, while this study found differences in the effectiveness of the various cards, those differences were small. One possible reason that the differences were small may have been because there was only one mailing, whereas multiple mailings are generally considered more effective. Furthermore, it may be that both the control group and test groups already had a relatively high propensity to purchase a license (i.e., they were not truly “lapsed” anglers, but were, rather, sporadic anglers), so the application of a slight stimulus (the single post card) will not produce a marked increase in license sales over the amount of sales that would have occurred. In this regard, further study on smaller groups, with a stronger definition of “lapsed,” may provide more conclusive results. Using the results of this preliminary study, highly targeted messages to highly targeted subgroups may produce greater license sales. Additionally, further investigation on the specific messages that the specific visual images are sending is highly recommended.

## **SOURCES**

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