Social Marketing and Boating Safety: 
A Project to Increase 
Personal Floatation Device Use

Observation Results

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Marine Program

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Lee County Observation Introduction

Lee County has 49,095 registered recreational boaters, ranking third in the state of Florida. Lee County also ranks ninth in boating fatalities in the state, with one fatality reported in 2008. Many studies across the United States have found that personal floatation devices can save the lives of drowning victims. [1,2,3,4] To establish a baseline percentage of personal floatation device (PFD) wear rates in Lee County, USF researchers used firsthand observations. They also assessed boat and boater characteristics, along with other variables such as weather and water conditions, to determine how these independent variables affect PFD use.

The observational study summarized in this report is part of the formative research phase for the Lee County Social Marketing and Boating Safety project. Formative research results will serve as the foundation for the strategic marketing action plan that guides program development, implementation, and evaluation. The observational studies, conducted at various boating access facilities, report the behavior of a large sample of Lee County boaters. They were observed with binoculars or the naked eye from highlands, bridges, and navigable waterways. The primary data collected included characteristics of boats, boaters, and their PFD wear rates. These data provide a baseline for program evaluation. Follow-up interviews and surveys will examine why specific audience groups do or do not wear PFDs.

The following objectives will guide formative research activities:

1. Understand how participants perceive personal floatation devices
2. Understand the emotional meaning wearing a personal floatation device holds for participants
3. Understand the factors that motivate participants to wear personal floatation devices
4. Understand the factors that deter participants from wearing personal floatation devices

5. Identify issues that compete with wearing a personal floatation device

6. Identify policy issues related to personal floatation device use

7. Understand how key informants perceive personal floatation devices and related issues (e.g., segments to target)

8. Understand how to promote personal floatation devices to identified segments

9. Identify trusted spokespersons to promote personal floatation device use

10. Identify the places where participants are most receptive to hearing about the need to wear personal floatation devices

11. Understand how to reposition personal floatation devices
Methods

To determine the voluntary wear rates of personal floatation devices (PFDs) in Lee County, the research team, in collaboration with community partners, observed boaters at four locations. Boaters included both residents and visitors to the area. The study documented rental boats in order to distinguish the behavior of visitors from that of residents. Commercial boats, as denoted on the hull, were not included in the sample. Using the voluntary wear rate and the overall wear rate from the Minnesota Twin Cities Life Jacket Wear Rate observational study in 2007, we calculated a necessary sample size estimate of 1,706 observations. Sample size information is in Table 1.

Table 1. Sample size necessary for a 95% CI given margin of error and point estimates

<table>
<thead>
<tr>
<th>Margin of error</th>
<th>N for voluntary wear rate of 9.1%</th>
<th>N for overall wear rate of 17.9%</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>3838</td>
<td>1762</td>
</tr>
<tr>
<td>15%</td>
<td>1706</td>
<td>783</td>
</tr>
<tr>
<td>20%</td>
<td>969</td>
<td>441</td>
</tr>
</tbody>
</table>

The next step was the selection of observation sites. Taking into account boat traffic patterns and the need for strategic viewing points, the following sites were chosen: Matlacha Pass, Matanzas Pass, Caloosahatchee River, and New Pass. To be consistent with previous PFD studies in Florida and the U.S., the research team observed boaters on a weekday (Wednesday) and on Saturdays and Sundays until the sample size was reached. The observation time was from 8 A.M. to 12 P.M., with weather conditions recorded at 8 A.M. and again at 10 A.M. The site form is in Appendix A.

The team consulted researchers from the Wear It Florida campaign about the results of previous PFD studies in Pinellas and Miami-Dade counties. To enhance their data’s statewide usefulness, the team used similar boater characteristics for this study. Two versions of the
observation form were pilot-tested over two days using five trained observers. A final form was drafted for review and used for additional observer orientation. The selected observation form is in Appendix B, and the other piloted form is in Appendix C.

To expedite data collection in high traffic areas, the observation form allowed for up to four boat observations on each sheet. The form included the site, boat type, length of boat, PFD use of boaters, age of boaters, gender of boaters, and whether the PFD was inflatable. An observation guide, produced in collaboration with community partners, helped increase the reliability of data collection. The complete observation guide is in Appendix D.

All 21 observers were trained, prior to the actual data collection, at Matlacha Pass. The training consisted of a detailed review of the observation guide, a review of the observation sheet, a review of the equipment provided at each site, the schedule and directions to each site, and an overview of the study. The training also included a practice session using the observation form and binoculars. Each team of two observers practiced making observations and recording them. (A team approach to these tasks was proven successful in previous observational studies.) At the end of the training session, each site coordinator received an equipment box and the necessary paperwork/forms. The schedule of observers is in Table 2.

**Table 2. Schedule of observers**

<table>
<thead>
<tr>
<th></th>
<th>Wed, March 11</th>
<th>Sat, March 14</th>
<th>Sun, March 15</th>
<th>Wed, March 18</th>
<th>Sat, March 21</th>
<th>Sun, March 22</th>
<th>Wed, March 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matlacha Pass</td>
<td></td>
<td>Wendy Scott</td>
<td>Wendy Scott</td>
<td>Bill Linda</td>
<td>Dan F</td>
<td>Dan E</td>
<td></td>
</tr>
<tr>
<td>Caloosahatchee</td>
<td>Brad Paul</td>
<td>Brad Mary</td>
<td>Brad Mary</td>
<td>Brad Paul</td>
<td>Brad Jason</td>
<td>Brad Paul</td>
<td>Brad Paul</td>
</tr>
<tr>
<td>Matanzas Pass</td>
<td>Mary Moya</td>
<td>Moya Leah</td>
<td>Moya Leah</td>
<td>Mary Leah</td>
<td>Mary Moya</td>
<td>Mary Moya</td>
<td>Mary Moya</td>
</tr>
</tbody>
</table>
Observers worked from either a bridge or a raised land mass at all sites except the Caloosahatchee River site, where observations were made from a boat. At the end of each day, the data was put in an envelope and labeled with the date, location, and observers’ names. USF researchers or the Lee County coordinators collected the forms and delivered them to USF for data management. Research assistants from the university numbered each observation and noted the site prior to sending the forms to an outside agency for scanning and data entry.

Due to the large number of boaters in Lee County during the month of March, data collection ended on March 21. Excluding the operator, observers could record up to nine boaters per boat on the observation form. To avoid double counting, boats were observed traveling in one direction only.

**Data Analysis**

A professional data entry firm entered boat level data into an Excel file, and scanned site level data into an Excel file. Two investigators collaborated on the data analysis: Dr. Moya Alfonso and Zachary Thompson, a biostatistician. Dr. Alfonso was responsible for boat level observation, while Mr. Thompson, given his expertise in analyzing nested data, was responsible for the passenger level analysis. Dr. Alfonso used SPSS v.17, and Mr. Thompson used SAS. They calculated basic descriptives for each dataset. Cases were recoded as missing when, for example, gender or age was marked as “unknown.” Bivariate tests of statistical significance include Chi-squared tests of independence and Pearson r correlation coefficients. Bivariate correlations with the outcome variable (i.e., pfd use) and potential predictors were calculated.
The logistic regression models included only those predictors that were statistically significant at the $p = .05$ level.

**Results**

**Sample Characteristics**

The analysis included 2,315 boats. Their operators, plus 4,744 passengers, were observed. Please note that the number of passengers actually observed may have exceeded the 4,744 recorded since the observation form stopped at nine passengers per boat. Most operators were male (75%, $N=1720$) and over the age of 18 (94%, $N=2166$). Most boats had at least one passenger on board (85%, $N=2315$). Most boats had adult passengers on board (85%, $N=2315$); a smaller proportion carried younger passengers (15%, $N=2315$). There was an average of two passengers on board ($SD=2.78$).

**PFD Usage**

Only 3.2% ($N=74$) of operators observed were wearing personal floatation devices (PFDs). Female operators (4%, $N=563$) were statistically significantly ($p < .05$) more likely to wear PFDs than male operators (3%, $N=1712$). Operators under the age of 18 (68%, $N=132$) were statistically significantly ($p<.05$) more likely than those over the age of 18 (32%, $N=2148$) to wear PFDs. Less than 1% ($N=2315$) of operators wore inflatable PFDs. Only 5% of passengers wore PFDs ($N=4744$). Less than 1% ($N=4197$) of adult passengers wore PFDs. However, 39% ($N=515$) of those under 18 wore PFDs.

We calculated PFD use for each boat. The denominator was the number of people on the boat and the numerator was the number wearing a personal flotation device. In the vast majority of the boats, about 92%, the wear rate was zero.
Effects of Weather Conditions

Water conditions, weather conditions, and visibility did not have a statistically significant impact on operator PFD use at Time One (8:00 A.M. to 10:00 A.M.) or Time Two (10:00 A.M. to 12:00 P.M.). This could be due to limited variations in water and weather conditions and visibility. Calm, sunny weather prevailed on the days most observations were made.

Effects of Boat Type

Boat type was a statistically significant indicator of operator PFD use (p < .05). Operators in a canoe or kayak were much more likely than operators in all other boat types to wear PFDs.

Table 3 summarizes PFD wear rates as either zero or positive for each of the six major categories. For example, of the 1,494 open motorboats, 138 had rates of one percent or more compared to 1,356 open motorboats in which no one wore a PFD. A Pearson's chi-square test without Yates' continuity correction was conducted on this 6 x 2 contingency table with a result of X-square = 13.3353, df = 5, p-value = 0.0204. However, since there is a small number (2) in the positive cell for the sailboats, one cannot completely trust the p-value.

Table 3. Zero/positive rates by boat type.

<table>
<thead>
<tr>
<th></th>
<th>Skiff/Utility</th>
<th>Open Motorboat</th>
<th>Cabin Motorboat</th>
<th>Pontoon Boat</th>
<th>Canoe/Kayak/Rowboat</th>
<th>Sailboat</th>
<th>Row Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero Rate</td>
<td>131</td>
<td>1356</td>
<td>315</td>
<td>183</td>
<td>51</td>
<td>83</td>
<td>2119</td>
</tr>
<tr>
<td>Positive Rate</td>
<td>6</td>
<td>138</td>
<td>18</td>
<td>13</td>
<td>6</td>
<td>2</td>
<td>183</td>
</tr>
<tr>
<td>total n</td>
<td>137</td>
<td>1494</td>
<td>333</td>
<td>196</td>
<td>57</td>
<td>85</td>
<td>2302</td>
</tr>
<tr>
<td>% positive</td>
<td>4.4%</td>
<td>9.2%</td>
<td>5.4%</td>
<td>6.6%</td>
<td>10.5%</td>
<td>2.4%</td>
<td>7.9%</td>
</tr>
</tbody>
</table>

Table 4 shows that open motorboats and canoe/kayak/rowboats have the highest percentage of positive rates at 9.2% and 10.5% respectively. The sailboat and skiff categories have the lowest at 2.4% and 4.4%.
After removing sailboats from the table (due to the small number) and running another chi square test for independence of all factors, a significant difference emerged in the proportion of positive rates for the different boat types. The data shows that people in canoes/kayaks/rowboats and open motorboats wear PFDs more frequently than people in other types of boats, such as pontoon boats.

**Effects of Boat Size**

Boat size was not a statistically significant indicator of operator or passenger PFD wear rates \((p > .05)\). Observers noted 1,043 boats less than 21 feet long and 1,241 boats larger than 21 feet. A Pearson's chi-square test was conducted and the test statistic was \(X\)-square = 0.1416 with a \(p\)-value = 0.7067. Thus, there is no statistical difference detected.

**Rental Boats**

Operators of rental boats \((n=102 \text{ or } 4.4\%)\) were not statistically significantly more likely to wear PFDs \((p > .05)\) than those in other boats. Of the 102 rental boats, ten \((9.8\%)\) had positive PFD rates. Of the non-rentals, 7.9% had positive PFD wear rates. Pearson's chi-square test without Yates' continuity correction does not show any significant difference between the two groups. \(\text{Chi}^2 = 0.4520825 \text{ d.f.}= 1, p=0.5013.\)

**Effects of Observation Location**

Operator’s PFD wear rates did not vary significantly by observation location. Operator wear rates were: Matlacha Pass \((9.5\%, \text{ } N=267)\), Caloosahatchee \((31\%, \text{ } N=712)\), Matanzas Pass \((20\%, \text{ } N=633)\), and New Pass \((39\%, \text{ } N=681)\).

**Relationship between Operator and Passenger PFD Wear Rates**

To examine relationships between operator and passenger wear rates, researchers created three variables: (1) whether there was a passenger on the boat wearing a PFD, (2) whether there
was an adult passenger wearing a PFD, and (3) whether there was a younger passenger wearing a PFD. We calculated Chi-squared tests of independence for each of the three variables with operator PFD use to determine whether operators have influence over their passengers.

Passengers on boats with operators wearing PFDs were statistically significantly ($p < .05$) more likely to be wearing PFDs (41% compared to 3%). Adult passengers were statistically significantly ($p < .05$) more likely to be wearing PFDs (63% compared to 3%) if their operators were wearing PFDs. Finally, younger passengers were more likely to be wearing PFDs (24% compared to 7%) if their operators were wearing PFDs.

**Predictors of Operator PFD Use**

Binary logistic regression identified statistically significant predictors of operator PFD use. Correlations between potential predictors and operator PFD use were calculated to determine those to include in the model (i.e., those that were statistically significant). Four variables were statistically significant ($p < .05$) predictors of operator PFD use, including operator age, operator gender, boat type (specifically paddle), and whether there was a child passenger on board. At the bivariate level, females were statistically more likely to wear PFDs than males ($r=.05, p < .05$), younger operators were more likely to wear PFDs than older operators ($r=-.48, p < .05$), and paddle boat operators (kayaks, canoes, and rowboats) were more likely to wear PFDs than those in open motorboats ($r=.07, p < .05$). Operators were more likely to wear PFDs when younger passengers were on board ($r=.23, p < .05$). Logistic regression results suggested two factors statistically significantly predicted operator PFD use: operator age and paddle craft. Younger operators were almost 63 times more likely than operators over the age of 18 to wear PFDs. Operators in open motorboats were 90% less likely to be wearing PFDs than those in paddle craft.
Predictors of Passenger PFD Use

Table 4 displays the results of a logistic regression on the passenger data. A number of factors have significant relationships with PFD wear. Boat type, rental status, operator age, operator PFD use, and passenger age were statistically significant at the 5% level. Using backwards regression technique, after all possible factors were included, we removed the least significant factor at each iteration.

Boat type is a factor variable with five levels: skiff/utility, cabin motorboats, pontoons, canoe/kayak/rowboat, and sailboats. The reference group is open motorboats. The houseboat and airboat levels were removed and the canoes, kayaks, and rowboats were combined into one level.

Of the remaining five levels, only pontoon boats had a significant p-value at the 5% level of significance. The regression coefficient is -1.18, which translates into an odds ratio of .307. Thus, people in pontoon boats are almost 70% less likely to wear PFDs than passengers in open motorboats.

Table 4. Coefficients, standard errors, t-values and p-values.

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Std. Error</th>
<th>t value</th>
<th>Pvalue</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>-2.41287</td>
<td>0.350326</td>
<td>-6.88748</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Skiff/Utility</td>
<td>0.887946</td>
<td>0.4625</td>
<td>1.919882</td>
<td>0.0549</td>
</tr>
<tr>
<td>Cabin</td>
<td>-0.39914</td>
<td>0.277699</td>
<td>-1.43733</td>
<td>0.1507</td>
</tr>
<tr>
<td>Pontoon</td>
<td>-1.17822</td>
<td>0.337923</td>
<td>-3.48665</td>
<td>0.0005</td>
</tr>
<tr>
<td>Canoe/Kayak/Rowboat</td>
<td>0.196345</td>
<td>1.241566</td>
<td>0.158143</td>
<td>0.8744</td>
</tr>
<tr>
<td>Sailboat</td>
<td>-0.14446</td>
<td>0.817952</td>
<td>-0.17661</td>
<td>0.8598</td>
</tr>
<tr>
<td>Boat size</td>
<td>-0.40598</td>
<td>0.199041</td>
<td>-2.03971</td>
<td>0.0414</td>
</tr>
</tbody>
</table>
The regression coefficient for boat size is negative, which means that if a boat is larger than 21 feet, passengers are less likely to wear PFDs than passengers on boats less than 21 feet in length. The regression coefficient for rental status is 0.875, which means passengers on rented boats are 2.4 times more likely to wear PFDs than passengers not on rented boats.

As expected, operator characteristics influence the PFD use of passengers. Both the age and the PFD status of the operator are big influences. If an operator is over the age of 18, the passengers are more likely to wear PFDs. The odds ratio for the operator PFD use status is 69.3, meaning passengers who were in a boat with an operator wearing a PFD were over 69 times more likely to be wearing PFDs themselves (see Table 5).

**Table 5. 95% Confidence intervals for the odds ratios**

<table>
<thead>
<tr>
<th>Category</th>
<th>OR</th>
<th>LCL</th>
<th>UCL</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pontoon vs. open motorboat</td>
<td>0.307827</td>
<td>0.16</td>
<td>0.6</td>
<td>0.0005</td>
</tr>
<tr>
<td>Boat Size (&gt; 21 ft vs. &lt;21 ft)</td>
<td>0.666321</td>
<td>0.45</td>
<td>0.98</td>
<td>0.0414</td>
</tr>
<tr>
<td>Rental status (yes vs. no)</td>
<td>2.399496</td>
<td>1.04</td>
<td>5.51</td>
<td>0.0393</td>
</tr>
<tr>
<td>Operator age (&gt;18 vs. &lt;18)</td>
<td>10.77696</td>
<td>5.65</td>
<td>20.56</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Operator PFD use status (yes vs. no)</td>
<td>69.25929</td>
<td>35.65</td>
<td>134.56</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Passenger age (&gt;18 vs. &lt;18)</td>
<td>0.008151</td>
<td>0.005</td>
<td>0.013</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>
Conclusion

As previously stated, Lee County ranks ninth in boating fatalities in the state, with one fatality reported in 2008. Many studies across the United States have found that personal floatation devices can save the lives of drowning victims. For this reason, the Center for Social Marketing led an observational study of PFD usage in Lee County in the spring of 2009. The analysis included 2,315 boats. Their operators plus 4,774 passengers were observed during the study. Most operators were male and over the age of 18. Most passengers also were over the age of 18.

PFD wear rates in Lee County are very low, with the highest rates, as would be expected, among youth (those under 18). Only 3.2% (N=74) of operators observed were wearing PFDs. Female operators and passengers under the age of 18 were more likely to wear PFDs. Very few operators or passengers wore inflatable PFDs (less than 1%). Less than 1% (N=4197) of adult passengers wore PFDs. However, 39% (N=515) of those under the age of 18 were wearing PFDs. Obviously, there is great room for improvement in PFD wear rates in Lee County.

We examined several factors that may predict PFD usage. These factors included weather conditions, boat type, boat size, rental boat status, age, and gender. There was not enough variation in weather conditions during the observation period to determine an effect on PFD usage. Boat type did have an impact on PFD usage, with paddle craft more likely than open motorboats to have operators and passengers wearing PFDs. Boat size and rental boat status did not have a statistically significant impact on PFD wear rates. As stated previously, females and younger operators and passengers were more likely to wear PFDs than their male and adult counterparts.
Perhaps one of the most important findings of this observational study was the relationship between operator PFD use and passenger PFD use. Passengers on boats whose operators were wearing PFDs were statistically significantly ($p < .05$) more likely to be wearing PFDs themselves (41% compared to 3%). Adult passengers were statistically significantly ($p < .05$) more likely to be wearing PFDs (63% compared to 3%) if their operators were wearing PFDs. Finally, younger passengers were more likely to be wearing PFDs (24% compared to 7%) if their operators were wearing PFDs. Operators’ behavior has an obvious impact on adult and youth passengers’ usage of PFDs. Given their influence on passengers, this finding supports the creation of focus groups with male operators.

We used binary logistic regression to determine multivariate predictors of operator PFD use and passenger PFD use. This approach reveals the important predictors of wear rates that should be targeted in future social marketing campaigns (combined with focus group data). Logistic regression results suggested that two factors statistically significantly predicted operator PFD use: operator age and paddle craft. Younger operators were almost 63 times more likely than operators over the age of 18 to wear PFDs. Operators in open motorboats were 90% less likely to be wearing PFDs than those in paddle craft. A multitude of factors predicted passenger PFD use, including boat type, rental status, operator age, operator PFD use, and passenger age. Passengers in pontoon boats were less likely than those in open motorboats to wear PFDs. Passengers on boats larger than 21 feet were less likely than those on smaller boats to wear PFDs. Passengers on rental boats were more than twice as likely to wear PFDs than those on non-rental boats. Finally, operator characteristics including age and PFD usage influenced passenger wear rates. Passengers on boats with older operators who were wearing their PFDs
were more likely to wear PFDs than passengers with younger operators or those not wearing PFDs.
References

Appendices
## Appendix A. Site form

### Site Form

1. Location
   - [ ] Callossahatchee River
   - [ ] Matanzas Pass
   - [ ] Matlacha Pass
   - [ ] New Pass

2. Site
   - [ ] Bridge
   - [ ] Shoreline
   - [ ] Boat
   - [ ] Ramp
   - [ ] Other

3. If response above was "Other", please specify in the box below.

   

4. Observer Name

   

5. Observer Name 2

   

6. Date of observation

   

   For questions 6 & 7 please fill in the boxes given the following format -- hour: minutes and either A for AM or P for PM.

   

7. Observation start time

   

8. Observation end time

   

   **First Weather Observation (to be completed between 8am and 10am)**

   9. Water conditions
      - [ ] Calm (less than 6")
      - [ ] Choppy (6" to 2')
      - [ ] Rough (over 2')

   10. Visibility
       - [ ] Good
       - [ ] Fair
       - [ ] Poor

   11. Weather Conditions
       - [ ] Sunny
       - [ ] Partly Cloudy
       - [ ] Cloudy
       - [ ] Rainy
       - [ ] Stormy

   **Second Weather Observation (to be completed between 10am-12pm)**

   12. Water Conditions
       - [ ] Calm (less than 6")
       - [ ] Choppy (6" to 2')
       - [ ] Rough (over 2')

   13. Visibility
       - [ ] Good
       - [ ] Fair
       - [ ] Poor

   14. Weather Conditions
       - [ ] Sunny
       - [ ] Partly Cloudy
       - [ ] Cloudy
       - [ ] Rainy
       - [ ] Stormy
### Appendix B. Selected boater observation form

<table>
<thead>
<tr>
<th>Location</th>
<th>Date: mm/dd/yy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caloosahatchee River</td>
<td></td>
</tr>
<tr>
<td>Matanzas Pass</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Boat Type</th>
<th>Gender</th>
<th>Age</th>
<th>PFD</th>
<th>Inflatable</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1</td>
<td></td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>P2</td>
<td></td>
<td></td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>P3</td>
<td></td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size</th>
<th>Rental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 21 feet</td>
<td></td>
</tr>
<tr>
<td>21 feet or more</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Boat Type</th>
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Appendix C. Alternate piloted boat form

Boat Form

1. Today's date is ____________________________________________________________

2. Location
   ○ Caloosahatchee River   ○ Matanzas Pass   ○ Matlacha Pass   ○ New Pass

3. Type of Vessel
   ○ Power boat   ○ Sail boat   ○ Paddle Craft (e.g., Kayak, Canoe)

4. Vessel Size
   ○ Under 12 feet   ○ Between 12 feet and 15 feet 11 inches   ○ Between 16 feet and 25 feet 11 inches

Person 1

Response Definition: M=Male  F=Female  U=Unknown

Gender ________________________________________________ M  F  U

Response Definition: 17=Less than or equal to 17 years  18=18+ years  U=Unknown

Age ________________________________________________ 17  18  U

Wearing a PFD ________________________________________ Y  N  N

PFD Type ____________________________________________ I  N  N  N  NA

Person 2

Response Definition: M=Male  F=Female  U=Unknown

Gender ________________________________________________ M  F  U

Response Definition: 17=Less than or equal to 17 years  18=18+ years  U=Unknown

Age ________________________________________________ 17  18  U

Wearing a PFD ________________________________________ Y  N  N

PFD Type ____________________________________________ I  N  N  N  NA

Person 3

Response Definition: M=Male  F=Female  U=Unknown

Gender ________________________________________________ M  F  U

Response Definition: 17=Less than or equal to 17 years  18=18+ years  U=Unknown

Age ________________________________________________ 17  18  U

Wearing a PFD ________________________________________ Y  N  N

PFD Type ____________________________________________ I  N  N  N  NA
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Introduction

Thank you for participating in the 2009 Lee County wear-rate study. Research has confirmed that many lives can be saved and many injuries prevented among recreational boaters by the use of PFDs (Personal Floatation Devices). The data that is collected for this study will initially determine the baseline wear-rate patterns of boaters in Lee County.

As an observer, it will be your job to record the important information related to watercraft (size and type of boats) and boaters (gender, age, and whether or not they are wearing a PFD). This guide will help provide you with the instructions as to how to record the necessary information and other information important to this study.

Personal Floatation Devices

Personal Floatation devices (PFDs) are a technical term to describe a life preserver. The initial goal of this study is to estimate Lee County wear-rates, as well as to look at various types of crafts, under various weather conditions, among passengers of different ages and genders.

There are many different kinds of PFDs. The older, traditional style, are considered the more bulky fluorescent orange PFDs. Often these are used in boats to satisfy the requirements of having one life preserver per occupant law.

The newer versions of PFDs look more like suspenders when not inflated. They contain a small tube of carbon dioxide, which will inflate the preserver. They can also be inflated manually. There are also inflatable PFDs that resemble “fanny packs”.

Pictures of these PFDs are located on the next page and should be counted in the PFD form if sighted on a boater. Other types of PFDs, such as throw rings, should not be counted as PFDs for the purposes of this study. In addition, children’s floatation devices such as those used in pools (arm rings) should not be included in the PFD count for this study.
Types of Personal Floatation Devices

Although there are many types, those shown below are to be included in the PFD count for the Lee County Study.

**Inflatable**

- Inflatable “Fanny Pack” PFD
- Same as to the left
- Inflatable “suspender” PFD

**Traditional**

- Traditional PFDs
Scheduling and Site Selection

Scheduling

Site scheduling will be coordinated between Lee County and the Center for Social Marketing. There are currently four sites selected for observation.

- Site 1: Caloosahatchee River - 8 a.m. – 12 p.m.
- Site 2: Matanzas Pass - 8 a.m. – 12 p.m.
- Site 3: Matlacha Pass – 8 a.m. – 12 p.m.
- Site 4: New Pass – 8 a.m. – 12 p.m.

These sites were chosen based on previous studies looking at boater traffic in Lee County waterways.

Weather Cancellations:

Our goal is to observe boaters use of PFDs. The weather condition will be monitored via the Coast Guard NOAA radio station for the area. Observations will be rescheduled if the weather condition is severe. If there is a passing shower, return to your car and wait the shower out, then continue the observations and stay later to make up for the lost time. With each weather condition and delay of observation, a new site form will need to be started with the new entries for date and time, etc.

If you hear that severe weather is expected for your area, contact your supervisor to determine whether you should travel to the observation site.

See the contact sheet in your folder for appropriate phone numbers to call.
Preparation

Please read the entire observation guide booklet in advance of your observation date. If you have any questions, make sure that you get answers prior to beginning your first observation.

You will need to bring to the observation site a number of items to help you complete the observations and to keep yourself comfortable during the observation period. Here is a checklist of items you will be provided with:

**Essential Items supplied to you by the Center for Social Marketing**
- Binoculars (you will be supplied with one pair per team) You may bring your own pair as a backup if necessary
- Clipboard to record notes
- Pencils
- Boat observation forms
- Site forms
- This observation guide
- Umbrella

**Optional items that you may also want to bring**
- Appropriate clothing to protect you from the elements
- Folding chair to sit on during observations
- Sunscreen, hat, sunglasses
- Bug/mosquito repellant
- Plenty of water/beverages and lunch/snacks
**Viewing Point**

The viewing point is the site at which you will be situated while you conduct the observations of PFD usage. Site information will be provided to you. Ideal site viewing vantage points are from areas located higher than the actual boats. This will enable you to see all passengers seated in the watercraft.

This includes bridges, fly bridges/tuna towers (if viewing from boat), and elevated shoreline if you are doing land-based observations.

Arrive at the viewing point approximately 30 minutes early. This will give you time to find a suitable spot and get settled. In addition, it is important that the viewing point has the following characteristics:

- Unobstructed views of recreational boats
- Allowable pedestrian access
- Is situated close to a shore narrowing where boats will be most visible
- Is not close to docking area or ramps (boaters may remove their PFDs at these locations as they approach)
- Is safe for the observations
A. General Observation Information

How many crafts will you observe? The number of crafts that you observe is a function of boater traffic in your area.

How many passengers will you observe? The maximum number of passengers to observe in one boat is 9 (nine). If there are more than nine passengers in the boat, note the first nine passengers that you see.

Remember: It is better to observe fewer boats more accurately than more boats inaccurately. Also if you are unable to record all nine people, record as many as you are able to clearly see on that boat.

Do Not observe the same boat twice. This is especially important in viewing areas where boaters may be frequently going back and forth. Your team may decide to only view outgoing boats to avoid overlap in high congestion areas.

Which boats should you observe?

This study is a study of PFD among certain recreational boaters only. Yes, Rental boats are to be included! On the boat observation form there is a box to check if it is a rental.
Boats not to include would be commercial fishing boats, professionally chartered boats, water shuttles, guided rafting excursions, guided canoeing parties, or ferries.

You also **SHOULD NOT** include:

- PWCs (personal water craft)
- Sailboards/Windsurfers

If a recreational boat is too far away for you to tell whether or not the boaters are wearing PFDs through your binoculars, then **DO NOT** include that boat in your observations. If you **CAN** determine the boaters’ PFD use at a minimum (even gender, for example, is difficult to ascertain), then you **SHOULD** include that boat in your observation and record age and gender as unknown.

At a given time there may be multiple boats passing by and you will need to choose which boat to observe first. **In order to avoid bias in which boats you select, you should choose a landmark at your site and observe the craft that is closest to that landmark at the time you are beginning the next observation.** This will keep you from inadvertently choosing a disproportionate number of boats whose passengers are wearing PFDs. It is also suggested that you and your teammate make a decision as to which direction of travel you will record observations. Choose either in-bound or out-bound traffic. This will cut down on confusion and hopefully eliminate counting a vessel twice in one observation period.

**The Role of Team Members**

Two people are necessary for each day at each site of observations so that one can act as the **Observer** (using binoculars to call out information about the boat and boaters) while the other person acts as the **Recorder** (taking down the information on the observation form). The **observer** and the **recorder** should switch roles every hour (or as necessary) to avoid binocular fatigue. If one team member has previous observation experience, then this person should take the first turn at being the **observer**.

In most cases, it is possible to record information about the watercraft (type and size) without the use of binoculars. Therefore, the recorder may want to fill in some of that information while the observer focuses on the task of determining the boaters’ ages, genders, and PFD use. As necessary, the **observer** should also call out information about the boat to confirm what the **recorder** is taking down (i.e. Power boat, sailboat may be difficult to ascertain without binoculars). **It is very important that the Observer and the Recorder make sure they are describing the same craft.** Communication is of utmost importance!
Each team should work out their own system of how the Observer should call out information to the Recorder. It may help for the recorder to ask brief questions to the observer (boat operator’s gender) so that it is clear both of the team members are talking about the same watercraft.

Forms

You will be supplied with copies of two different forms in your packet.

One form is for site observations and the other is for PFD/boat observations.

General Information

Once you have arrived at your observation location you can begin to fill out the form related to the observation site. Please fill out all information as legibly as possible. In the event of a rain shower or termination of observation, you will need to start a new site form and save the other form for verification of observation time and site information.

You will be supplied with enough sheets to record information on 300 boats per site (or approximately 75 boats per hour). This should be more than ample.

Please use the pencils provided to fill out the forms. DO NOT USE PENS. Circles should be filled out completely and as darkly as possible for scanning purposes. If you make a mistake, simply erase it fully using the eraser provided.

You may find it easier when you are doing the observations to mark the circles using a check mark. If you do this, please go back at the end of the day and fill in the circles completely before sending the forms back to the Project Team. Also, please erase any stray marks that you may have made on the forms.

The maximum number of people you will record per boat form is nine (9). Please be sure to distinguish the best you can inflatable PFDs from regular PFDs.

Gauge the boat lengths to the best of your ability. Common boat lengths for boats are listed on the next page.

Boats are to be classified as either closed cabin or open watercraft, skiff/utility, houseboats, pontoon boats, canoes, kayaks, rowboats, airboats and sailboats.
Determining size of boats

Next you will record the size (in feet) of the boat that you are observing. There are certain kinds of craft that generally fall into one of the two categories used for this study. However, the best way to judge the size of the craft is through practice. If a boat appears to be on the borderline between two sizes, use your best judgment in choosing one. Boats are generally longer than they seem when they are in the water and when farther away. Less than 21 feet is small and typically include one/two man kayaks and rowboats, inflatables. Please do not communicate with the boaters with regard to size of their boat, etc.

Boat lengths are to be recorded in the following categories:

Less than 21 feet

21 feet or larger

Common Boat Models and Lengths

Skiff/Utility Boat

Skiffs are flat bottom boats that range in size from 13-24 feet in length. The most commonly seen skiff in Lee County are manufactured by Carolina Skiff. These are typically less than 21 feet but will have their length written on the side (hull) of the boat near the stern. In the picture below, the number 198 appears on the side of the vessel. This indicates that the skiff is at least 19 feet long.
Open Motorboat

This category will have the largest number of observations as it captures a large number of vessels. These vessels will differ notably from the skiff type in that their hull design is v-shaped. Included in the open motorboat category are: Flats boats, open fishing boats, deck boats, runabouts, bay boats, walkarounds, bow-riders and more. Some of the common brands and styles are listed below with length descriptions:

Flats Boats/Bay Boats- these boats have a very sleek, low profile appearance, with low gunnels and many times a polling platform in the rear above the engine. They are typically center-console with no canopy. Common brands found in Lee County include: Action Craft, Shearwater, Sterling, Lake and Bay, Palm Beach, Master Angler, Key West, Savage Creek, Pathfinder, Trophy, Sea Chaser, Sea Fox, and Sea Strike. These boats typically begin at 16’ and range up to 25’. The pictures below are a 18’ flats boat (left) and a 22’ bay boat (right).
Deck Boats- These vessels are very similar to the pontoon boats in that they have an open deck plan. However, they do not have the exposed pontoons and typically have a collapsible biminy and swim deck on the front or rear. Common brands found in Lee County are Hurricane, Chaparral, Four Winns, and Sun Tracker. Deck boats range from 18 feet to 28 feet. Pictured below is a 24’ Hurricane deck boat.

Open Fisher- If a vessel is not clearly a pontoon, deck, houseboat, or flats boat, then it is most likely an open fishing boat. These vessels are typically larger than 17’ in length, have a center console, canopy, and high gunnels. Typical brands found in Lee County are: Contender, Boston Whaler, Grady-White, Mako, Cape Haze, Pursuit, Triton, Shamrock, World Cat, Parker, Formula, Pro Sports, Sea Fox, Pro Kat, Grady White and Donzi. Pictured below are a Contender (left - 30’) and a Grady White (right - 30’).
Cabin Motorboat

Cabin Motorboats are very similar to the open fishing boats with the exception they will have an enclosed cabin area, which an open fisher will not. They are larger cruising vessels typically larger than 22’ in length. Common brands for Lee County are: Sea Ray, Carver, Hatteras, Egg Harbor, Silverton, Formula, Triton, and Viking. Below is a picture of a SeaRay (44’) and an Egg Harbor (50’) typically seen in Lee County.

Houseboat

Houseboats are very recognizable as the majority of their deck is enclosed. They are typically used for cruising. There are several businesses which rent them in Lee County and there are a number of residents who utilize them. Houseboats are typically larger than 21’. Below is a picture of a typical 41’ houseboat one might observe in Lee County.
Pontoon Boat

Pontoon boats are recognizable by their large, open deck plan with two to three pontoons underneath. The majority of pontoon boats will be over 21 feet. There are a large number of Pontoon boat rentals in the area. For your convenience, we have listed the vessel sizes by the larger rental businesses below. Also below is a typical pontoon boat seen in Lee County.

- Bonita Boat Rentals - are all over 21 feet.
- Fish Tale Marina - pontoon boats are either 18’, 22’, or 25’
- Bay Water Boat Rentals - pontoon boats are either 18’, 22’, or 25’
- Baybreeze Boat Rentals - pontoon boats are either 20’, 23’, or 26’
- Big Hickory Fishing Nook - are all over 21 feet
**Canoe**

Canoes are paddle-craft typically manned by two persons. They can be made from aluminum, wood, or plastic. Passengers use single-bladed oars for power and steerage. Below is a photo of a typical canoe.

![Canoe](image)

**Kayak**

Kayaks have become very popular in Lee County in recent years. A kayak is defined by the International Canoe Federation as a boat where the paddler faces forward, has their legs in front of them, and uses a double bladed paddle. Most kayaks have closed decks, however, there are many sit-on-top kayaks, which are very popular in Lee County. They can be made from Kevlar, wood, plastic, fiberglass, or plastic. They can be made for single or double passengers. Typical Kayaks range in size from 14’ to 21’. A typical single-person Kayak is pictured below.

![Kayak](image)
Row Boat

A row boat is a small, human-power craft with a v-hull design which can hold many people, depending upon size. The difference between a row boat and a canoe or kayak is that the oars in a row boat have a mechanical connection with the boat. Many will be associated with a large sailboat or cruiser as an inflatable dingy. Vessels in this Type are generally less than 21'. A typical row boat is shown below.

Air Boat

Airboats are vessels built using a hull design similar to that of a flats-boat in that they are flat-bottomed. They are made from aluminum or fiberglass and can carry up to 30 passengers depending upon size. Both driver and passengers sit in an elevated position, in front of the engine. For propulsion, airboats use either small-block v-8 automobile engines or aircraft engines, suspended above the hull. This engine turns a blade, similar to that of an airplane propeller to push the vessel along. Steerage is maintained when the operator moves flap(s) to direct the force of the fan. Typical airboats in Lee County will have 2 to four passengers. Typical airboat is pictured below.
Sail Boat

Sailboats are vessels which derive their primary means of propulsion through a sail or sails (wind-powered). Hull design is typically v-shaped and sizes range from less than 10 to over 100. There are many types of sailboats found in Lee County. For purposes of this study- any vessel that derives is primary means of propulsion via sail or sails shall be considered a Sail boat. Below are two typical sailboats seen in Lee County.

![Sailboat Images]

Boaters

The boater’s characteristics, AGE and GENDER and use of PFDs are the most crucial part of this study. As mentioned before, the recorder may want to focus on filling in some of the characteristics of the craft while the observer used the binoculars to decide on the boaters’ age, gender, and use of PFDs.

With regard to gender, use your best judgment; if unsure select the unknown box.
Age

Passengers should be classified into one of two different categories (Less than 18 and over the age of 18). There will be judgment calls here at the boundaries of the age categories.

PFDs

Lastly, but most important is PFD use. Record a boater as wearing a PFD only if you can definitively tell that he/she is wearing a PFD. If you are not fairly certain, then mark NO to avoid false-positives. Remember, PFDs now come in various colors and shapes. Do not count other floatation devices like rinks or rafts. Only count those we have previously defined for you at the beginning of this manual.

PFD Type

We ask that you try and differentiate between inflatable PFDs and the traditional life jackets. These newer inflatable PFDs are styled like suspenders and “fanny packs” and utilize carbon dioxide cylinders to automatically inflate the device.

Finishing it UP!

When you have completed a site, please look over all forms to make sure that they have been filled out in their entirety. Once completed, put the forms in the envelope labeled completed forms. Fill out the information on the outside of the envelope. Please place all equipment and forms back in the observation box so that you will be all ready for the next observation. If you need more boat observation forms, please let your supervisor know before the next scheduled observation date.

All forms and equipment are to be delivered to Justin/Joy at the end of the observation day if you are from Lee County and to Moya/Mary if you are from USF.

Thank you!
Contact Information

Lee County Contacts:

Justin McBride – 239-292-5467
Joy Hazell – 239-533-7518 or 239-707-1267

USF- Center for Social Marketing Contacts:

Dr. Moya Alfonso – 813-395-1015
Mary Martinasek – 813-493-4546