

2010 Life Jacket Wear Rate Observation Study

featuring

National Wear Rate Data from 1999 to 2010

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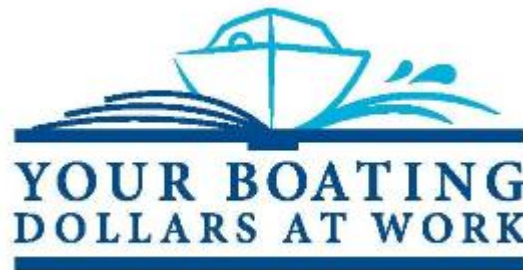
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I. INTRODUCTION

This report provides data and analysis on the 2010 National Life Jacket Wear Rate Observation Study with comparison information from the previous eleven year's studies (1999-2009). This year's report drops displaying data reported for 1998, since the table format has reached the limit of number of columns that can be displayed in a single table. Tracking changes in life jacket wear rates over time provides important statistics for those individuals and groups responsible for educating the public about boating safety, improving boating safety programs, and for legislative efforts targeting safety improvements for recreational boating. The Boating Statistics 2009 report, published by the United States Coast Guard (USCG), shows that among the 543 drowning deaths in 2009, approximately 84% (456) of the individuals were not reported as wearing a life jacket. These statistics make it essential to not only track the national life jacket wear rate among recreational boaters, but also to understand the circumstances and patterns in which life jackets are worn.

Calendar year 2010 marked the thirteenth year of life jacket wear rate data collection efforts conducted by JSI. The cumulative years of data allow for a higher level of analysis (i.e., controlling for the impact of influencing factors like age, weather, and boat type) in order to unmask potential trends and indicators of increased or decreased life jacket wear among different groups of recreational boaters (e.g., adult boaters or male boaters).

Most information in this report is presented separately for adults (18+ years old) and youth (0 to 17 years old). Over the 12 years of the presented data, the general distribution of ages, gender, boat types, boat characteristics and site characteristics have remained relatively stable. The appendix contains a detailed description of methods used and proportions of various boaters, boat and site characteristics are shown for the period 1999-2010 of data collection.

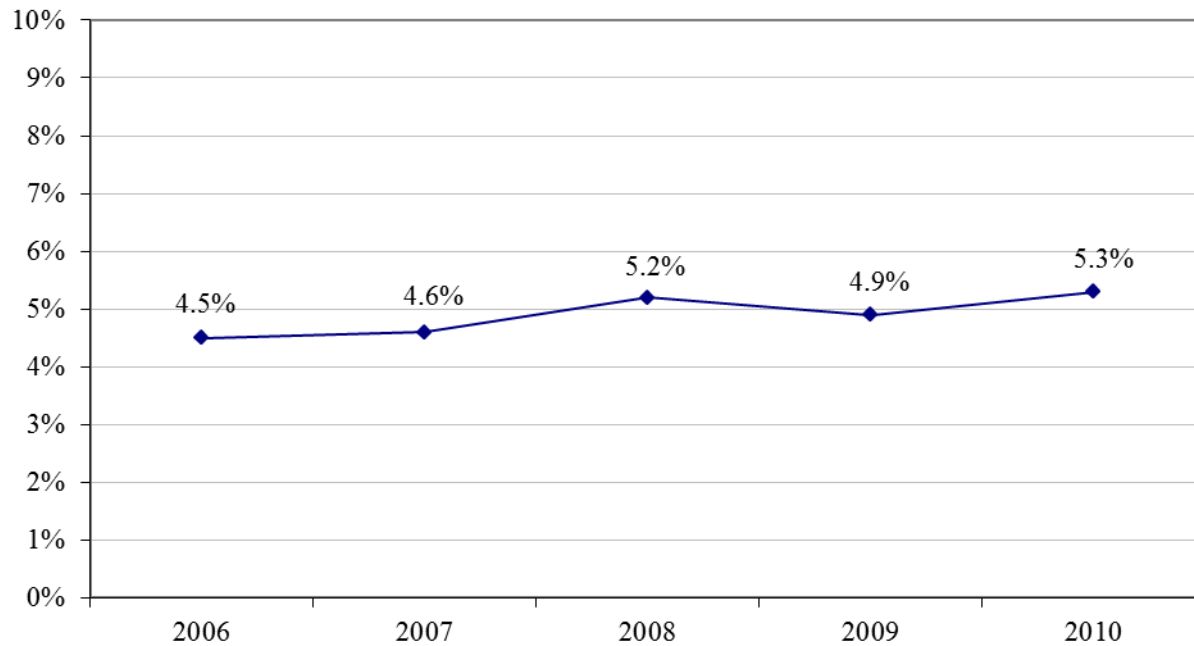
II. STRATEGIC PLAN OBJECTIVE

Adult Life Jacket Wear on Open Motorboats 2006 to 2010

The National Boating Safety Advisory Council (NBSAC) recommended the creation of a strategic plan for the National Recreation Boating Safety Program in 2005. The goals, objectives, and strategies in this Plan can help all partners in boating safety work together to reduce the incidents of preventable deaths, injuries, and property damage. One of the objectives of the Strategic Plan is to increase the observed life jacket wear rate of adults in open motorboats. For the purposes of this measurement, “open motorboats” are a combination of the Skiff/Utility and Runabout/Speedboat categories that are individually presented later in this report. This objective was put in place beginning in the year 2006.

To ensure that comparisons to 2006 are accurate, the proportion of skiffs to speedboats in each state for each subsequent year was set to mirror the proportions in 2006. For example, in 2006 the national proportion across all states of the number of skiffs to the number of speedboats was 22% versus 78%, but in 2010 the proportions were 29% to 71%. Similarly, the proportions are likely to be different in each state. If proportions of these boat categories were not adjusted, the 2010 wear rate would appear more positive simply because JSI observed more skiffs relative to speedboats this year than in 2006. Using the fixed proportions, however, the baseline wear rate for adults in open motorboats was 4.5% in 2006. In 2007 the wear rate was 4.6%; in 2008 the wear rate was 5.2%; in 2009 the wear rate was 4.9%, and in 2010 the wear rate was 5.3% (the highest that it has been since 2006). The average wear rate for the last three years is higher than the average for the first two years of the strategic plan period. See Figure A on the opposite page for a chart showing these trends.

**Figure A – Adult Wear Rates on Open Motorboats* 2006-2010
(Weighted to 2006 Skiff-Speedboat Proportions for Each State)**



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* The Open Motorboat category is created by grouping "Skiffs" and "Speedboat/Runabouts" together. Factors controlled for in this chart are Age (proportions of 18 to 64 and 65+ adults) and the proportion of Skiffs to Speedboat/Runabouts has been set in each year within each state to reflect the proportions observed in 2006, the year in which the Strategic Plan goals were first measured. In addition, each state's contribution to the national average is weighted to reflect the 2006 proportions.

III. RESULTS

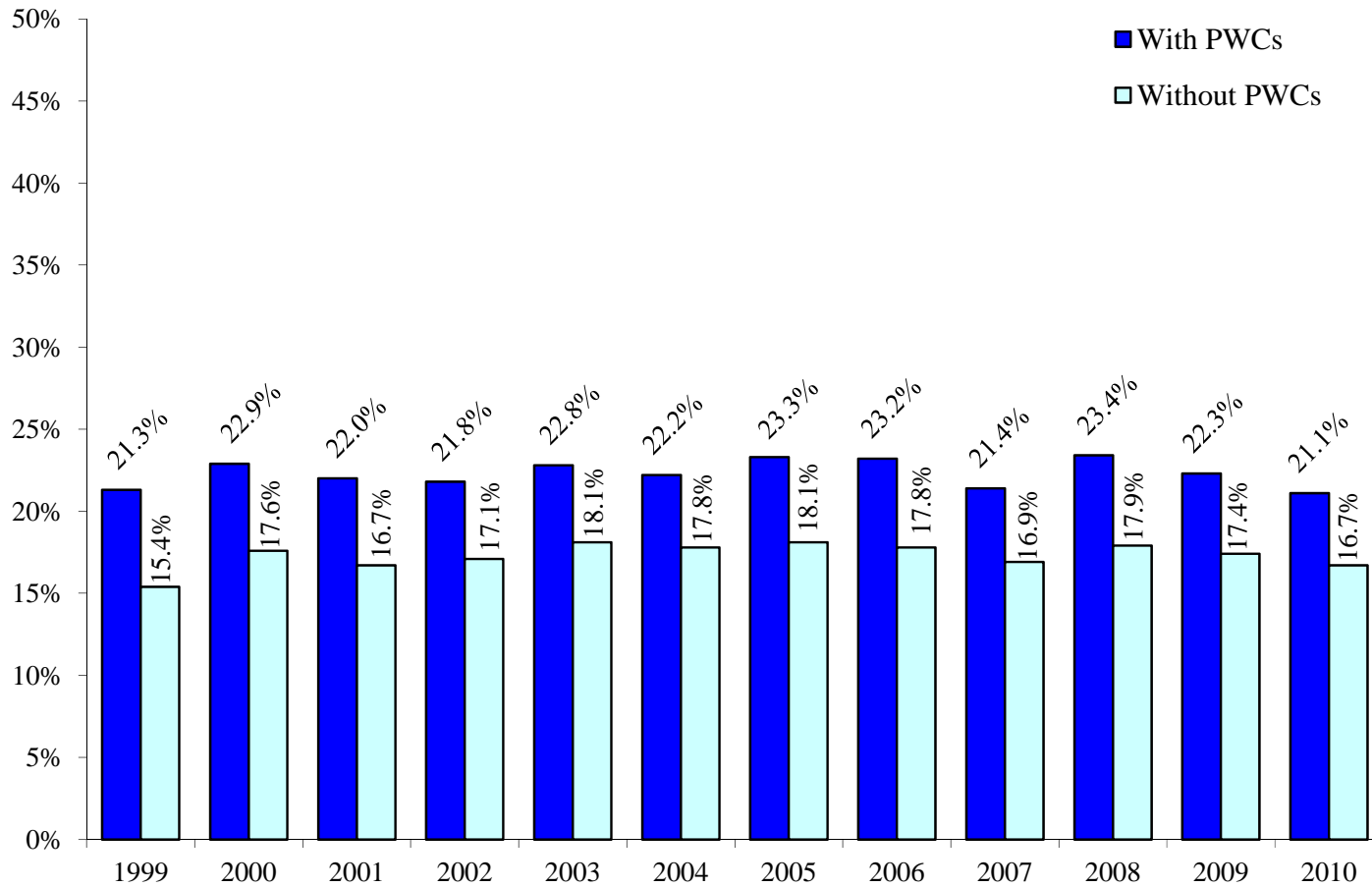
National Life Jacket Wear Rates ALL Boaters 1999 to 2010

Figure B shows trends for national life jacket wear rates, which includes all groups of recreational boaters together (youth and adults) for all boats. The average life jacket wear rate for 2010 was 21.1%, which is the lowest rate since the study began. The 2010 rate is down from 2009 in which the rate was 22.3%. Over the twelve year period, the previous lowest rates were 21.3% (1999) and 21.4% (2007). The highest wear rates observed were 23.3% (2005), 23.2% (2006) and 23.4% (2008). However, focusing on this combined life jacket wear rate obscures the influence of age and boat type on life jacket wear.

Figure B also shows the impact of Personal Watercraft (PWC) wear rates on the national average wear rate for all boaters by presenting rates with PWCs removed. Life jacket wear is mandated on PWCs, therefore excluding them provides a more valid representation of voluntary wear rate trends.

In 2010 wear rates for adults and youth combined on all boats except PWCs was 16.7%, down from the 2009 rate of 17.4%. There has been a national downward trend from a high of 18.1% in 2005.

Figure B – Life Jacket Wear Rates ALL Boaters (Adults and Youth Combined)



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National Life Jacket Wear Rates for ADULTS excluding PWCs 1999 to 2010

The national average wear rate for all adults on all boats excluding PWCs in 2010 was 7.8%, down slightly from 2009 and at its lowest point since observations began (see Figure C below).

**Figure C – Life Jacket Wear Among Adult Boaters (18 years or older)*
(All boats except PWCs)**

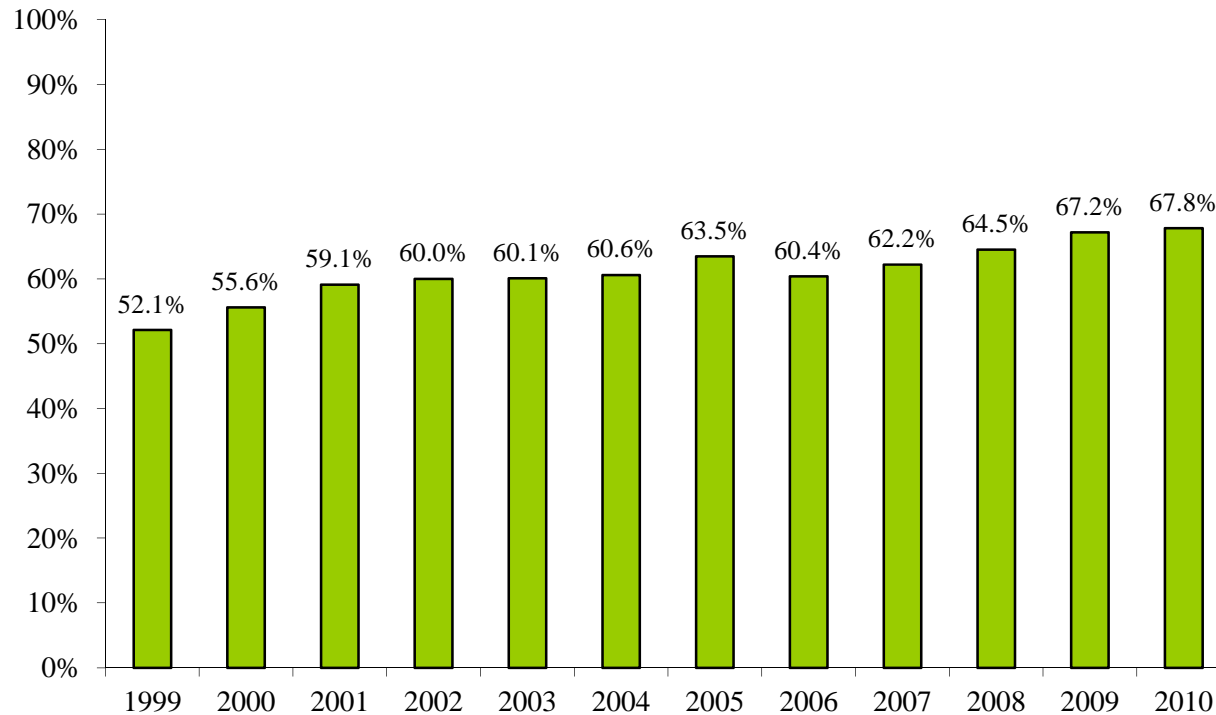


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*Factors controlled for: Age & Boat Type.

National Life Jacket Wear Rates for YOUTH excluding PWCs 1999 to 2010

Figure D shows the national wear rate trend for all youth (17 years or younger) on all boats except PWCs. These rates are relatively high across the twelve years of data shown with a general upward trend. The rate for 2010 is 67.8%, the highest it has been since the beginning of the study, and approximately a 30% relative increase since 1999.

**Figure D – Life Jacket Wear Among Youth Boaters (17 years or younger)*
(All boats except PWCs)**



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*Factors controlled for: Age & Boat Type.

Life Jacket Wear Rates by Age Groupings 1999 to 2010

Table 1 presents wear rates by the different age groupings used in the study. The trends in wear rates for children under 6 has remained very high, but relatively flat since 2004, with the 2010 rate at 94.8%, the second highest wear rate ever. For the 6 to 12 year olds there is an increase from 86.5% last year to 89.1% in 2010. Teens (13 to 17 years old) show an increasing trend since 1999; however, the 2010 rate of 35.1% decreased from the 2009 rate of 38.9%.

As was mentioned earlier in the discussion for Figure D, all youth grouped together show a generally increasing trend with 2010 having the highest reading across the twelve years at 67.8%.

For adults ages 18 to 64 and 65+ there are no noticeable upward trends across the twelve years of data collection. In 2010 there was a decrease in national wear rates for the 18 to 64 years old group, from 8.1% in 2009 to 7.7% in 2010. For older boaters (65+) the wear rates went up from 7.0% in 2009 to a 2010 wear rate of 10.7%.

As indicated in Figure C shown earlier, and in Table 1, when both adult groups are combined (18+ yrs), there was a decline from 2009 to 2010, with rates of 8.1% in 2009 to 7.8% in 2010. This decrease in wear rates mirrored the 18 to 64 age group because there are many more boaters in the 18 to 64 age group than the 65+ age group.

Table 1 - Life Jacket Wear Rates by Age Excluding Boaters on PWCs*

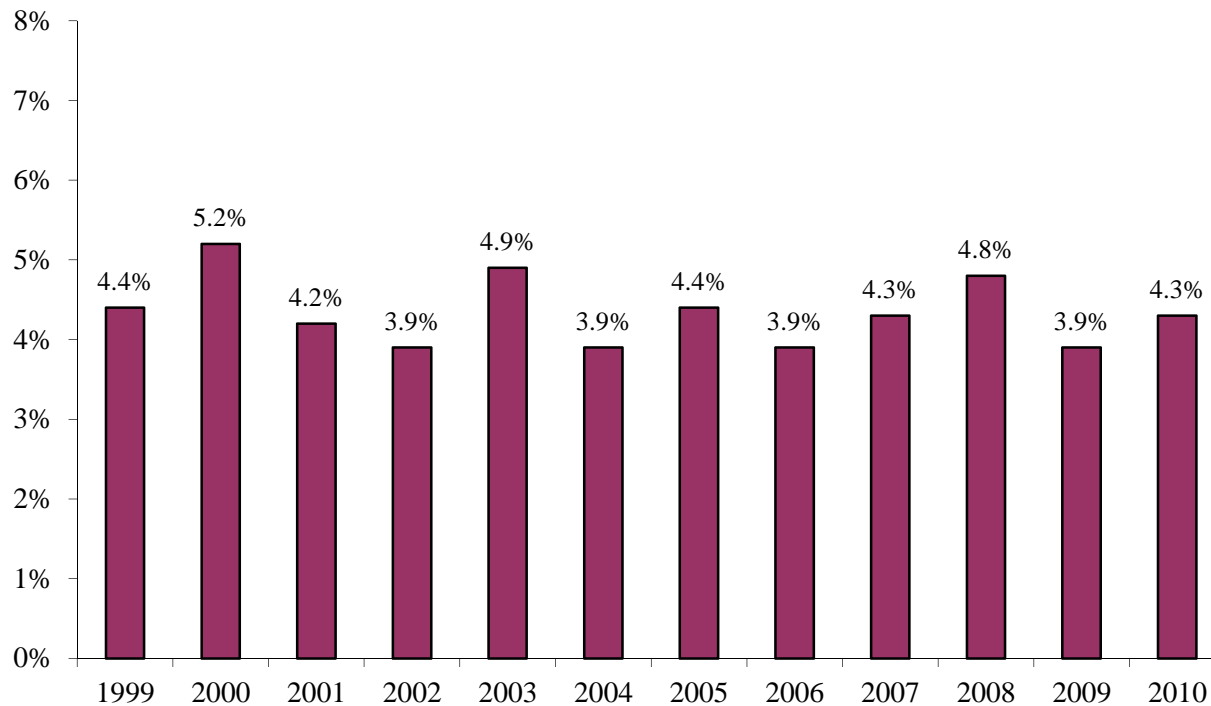
Age	1999 % (N's)	2000 % (N's)	2001 % (N's)	2002 % (N's)	2003 % (N's)	2004 % (N's)	2005 % (N's)	2006 % (N's)	2007 % (N's)	2008 % (N's)	2009 % (N's)	2010 % (N's)
0-5 yrs	80.6% (500)	89.1% (716)	91.7% (703)	90.1% (676)	90.3% (658)	94.9% (743)	93.1% (714)	94.4% (921)	92.2% (930)	93.5% (938)	93.6% (854)	94.8% (811)
6-12 yrs	69.1% (2104)	72.1% (2696)	76.6% (3122)	79.2% (2752)	79.7% (2627)	81.6% (27411)	80.6% (2487)	79.1% (2403)	84.1% (2819)	87.3% (2579)	86.5% (2812)	89.1% (2809)
13-17 yrs	24.1% (2244)	30.5% (2725)	31.2% (2893)	32.4% (2575)	32.0% (2767)	29.8% (2572)	32.8% (2230)	33.5% (2403)	31.5% (2652)	33.2% (2507)	38.9% (2420)	35.1% (2127)
0-17 yrs (all youth)	52.1% (4624)	55.6% (6094)	59.1% (6695)	60.0% (5924)	60.1% (5970)	60.6% (5955)	63.5% (5414)	60.4% (5713)	62.2% (6401)	64.5% (6024)	67.2% (6086)	67.8% (5747)
18-64 yrs	8.8% (24321)	10.1% (27100)	8.5% (32528)	9.2% (31742)	10.1% (28551)	9.7% (33319)	9.9% (30176)	10.0% (29591)	8.4% (32108)	9.1% (30743)	8.1% (34632)	7.7% (36420)
65+ yrs	12.9% (1147)	9.9% (1040)	6.9% (1276)	6.8% (922)	9.4% (1106)	8.3% (1331)	11.0% (823)	8.3% (803)	11.7% (881)	6.1% (1190)	7.0% (1129)	10.7% (763)
18+ yrs (all adults)	9.0% (25468)	10.1% (28140)	8.5% (33804)	9.1% (32664)	10.1% (29657)	9.7% (34650)	9.9% (30999)	9.9% (30394)	8.5% (32989)	9.0% (31933)	8.1% (35761)	7.8% (37003)

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 *Factors controlled for: Age & Boat Type.

Power Boats for Adults (18 years or older).

Figure E and Table 2 present information for the various types of power boats for adults. Averaging across these types of boats (not including PWCs) for 2010, we see an increase from 3.9% in 2009 to 4.3% in 2010 (see Figure E below). Comparing rates for individual types of power boats provides a better understanding of these results. Skiffs increased substantially to 9.7% from 6.2%, while runabouts decreased slightly (3.5% down to 3.2%). The increase in wear rate on skiffs is reflected in the open motorboat category which saw an increase from 2009 levels of 4.9% to 5.3% in 2010. Cabin cruisers and pontoon boats continued to show very low wear rates. PWCs continued to have almost universal wear rates. Powered inflatables had an increase from 11.9% to 16.7%.

Figure E – Adult Wear Rates for ALL Power Boats Except PWCs*



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*Factors controlled for: Age & Boat Type.

Table 2 - Life Jacket Wear Rates by Power Boats for Adults (18 years or older)*

Boat Type	1999 % (N's)	2000 % (N's)	2001 % (N's)	2002 % (N's)	2003 % (N's)	2004 % (N's)	2005 % (N's)	2006 % (N's)	2007 % (N's)	2008 % (N's)	2009 % (N's)	2010 % (N's)
All Power Boats (no PWC's)	4.4% (19894)	5.2% (22448)	4.2% (27864)	3.9% (26304)	4.9% (24190)	3.9% (28285)	4.4% (25741)	3.9% (25412)	4.3% (27623)	4.8% (27315)	3.9% (29924)	4.3% (30894)
Skiff/Utility	10.0% (1867)	10.3% (1903)	9.7% (2469)	5.9% (3177)	10.4% (4214)	7.9% (4429)	7.2% (5038)	7.3% (4091)	8.5% (5340)	9.2% (6633)	6.9% (7257)	9.7% (6634)
Runabout/Speedboat	4.2% (13195)	5.3% (14463)	4.5% (16985)	4.3% (14066)	4.6% (13057)	3.9% (16633)	4.7% (13643)	3.7% (14512)	3.6% (14414)	4.1% (13901)	3.5% (14635)	3.2% (15093)
Open Motorboats** (Skiff/Utility+ Runabout/Speedboat)	5.5% (15062)	6.4% (16366)	5.6% (19454)	4.7% (17243)	5.9% (17271)	4.8% (21052)	5.3% (18681)	4.5% (18603)	4.6% (19754)	5.2% (20534)	4.9% (21892)	5.3% (21727)
Cabin Cruiser	1.8% (3396)	1.6% (4391)	1.2% (6222)	1.9% (7111)	1.7% (5119)	1.0% (5242)	1.1% (5054)	1.7% (4280)	2.0% (5353)	1.4% (4430)	1.6% (5342)	1.5% (5900)
Houseboat	0.0% (151)	0.0% (216)	0.6% (162)	0.8% (124)	0.0% (328)	5.6% (216)	0.4% (219)	0.0% (112)	0.0% (43)	0.0% (51)	0.0% (31)	0.0% (140)
Pontoon	4.0% (1231)	6.2% (1458)	1.9% (1929)	2.7% (1796)	2.9% (1610)	2.9% (1770)	4.1% (1849)	2.4% (2276)	2.7% (2150)	1.1% (2051)	2.1% (2436)	1.5% (2922)
PWC	94.2% (1899)	97.4% (1761)	96.0% (2091)	95.8% (1798)	94.7% (1589)	95.5% (1721)	95.3% (1858)	97.1% (1962)	96.1% (1736)	97.6% (2009)	97.4% (2093)	97.5% (1921)
Powered Inflatable/Raft	15.7% (205)	22.3% (233)	13.5% (259)	27.2% (154)	14.8% (190)	9.0% (211)	1.9% (157)	11.0% (253)	19.1% (366)	17.6% (228)	11.9% (254)	16.7% (345)

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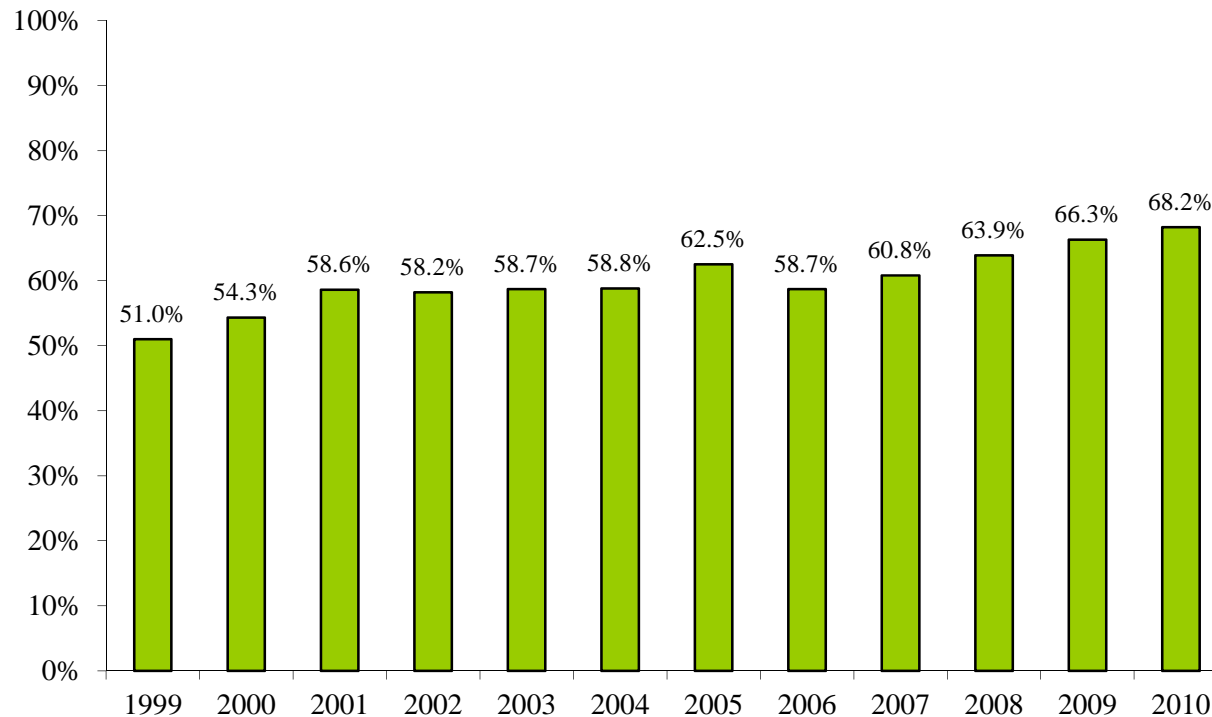
*Factors controlled for: Age & Boat Type.

** The Open Motorboat category is created by grouping "Skiffs" and "Speedboat/Runabouts" together. Factors controlled for in this chart are Age (proportions of 18 to 64 and 65+ adults) and the proportion of Skiffs to Speedboat/Runabouts has been set in each year within each state to reflect the proportions observed in 2006, the year in which the Strategic Plan goals were first measured. In addition, each state's contribution to the national average is weighted to reflect the 2006 proportions.

Power Boats for Youth (17 years or younger).

Figure F and Table 3 present data for each type of power boat for the three age groups of youth combined (17 years or younger). For all youth on all power boats (excluding PWCs), we find an increase in 2010 (68.2%) from 2009 (66.3%). Extrapolating from the age results reported in Table 1, this change is driven mostly by the increase in wear rates for the 6 to 12 year old group of boaters. The information for specific types of power boats shows gains among speedboats/runabouts, which are one of the most frequently used boats by this age group. The wear rate moved from 68.2% in 2009 to 69.7% in 2010 for speedboats/runabouts. Because of this increase, the open motorboat wear rate also increased to the highest wear rate compared to all previous years (69.5%). As seen in previous years, PWC wear rates are extremely high. (Data for open-motor boats since 2006 were calculated differently in this report compared to previous reports. In previous years we used weighted proportions as well as statistical controls in the GLM analyses; because relatively few younger youth are seen in skiffs, this combination produced unstable results. The data from 2006 in this report are calculated only using weighted proportions of type of boat and age distributions.)

Figure F – Youth Wear Rates for ALL Power Boats Except PWCs*



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*Factors controlled for: Age & Boat Type.

Table 3 - Life Jacket Wear Rates by Power Boats for Youth (17 years or younger)*

Boat Type	1999 % (N's)	2000 % (N's)	2001 % (N's)	2002 % (N's)	2003 % (N's)	2004 % (N's)	2005 % (N's)	2006 % (N's)	2007 % (N's)	2008 % (N's)	2009 % (N's)	2010 % (N's)
All Power Boats (no PWC's)	51.0% (3834)	54.3% (5179)	58.6% (5717)	58.2% (5162)	58.7% (5170)	58.8% (5191)	62.5% (4737)	58.7% (5043)	60.8% (5583)	63.9% (5257)	66.3% (5451)	68.2% (5090)
Skiff/Utility	52.7% (338)	49.5% (369)	68.2% (441)	54.9% (557)	63.2% (768)	60.7% (641)	63.3% (781)	58.4% (661)	63.1% (947)	68.4% (988)	70.4% (1097)	68.1% (862)
Runabout/Speedboat	51.6% (2744)	55.2% (3776)	58.8% (3987)	59.4% (3479)	60.0% (3369)	60.0% (3574)	63.5% (2966)	60.9% (3348)	61.7% (3517)	64.6% (3256)	68.2% (3133)	69.7% (2943)
Open Motorboats** (Skiff/Utility+ Runabout/Speedboat)	51.8% (3082)	54.3% (4145)	60.1% (4428)	58.7% (4036)	60.5% (4137)	60.1% (4215)	63.5% (3747)	60.4% (4009)	61.9% (4464)	65.2% (4244)	68.6% (4230)	69.5% (3805)
Cabin Cruiser	42.6% (418)	48.2% (587)	48.3% (774)	50.7% (690)	45.3% (659)	49.6% (529)	54.6% (528)	50.7% (501)	52.0% (639)	51.0% (581)	51.2% (644)	58.8% (524)
Houseboat	8.7% (46)	12.7% (64)	25.7% (44)	30.3% (30)	17.8% (63)	24.7% (35)	12.9% (38)	28.2% (40)	37.6% (5)	0.0% (1)	25.8% (4)	19.1% (18)
Pontoon	38.3% (272)	46.3% (379)	54.8% (455)	55.6% (399)	51.8% (338)	48.5% (394)	64.6% (440)	50.3% (505)	64.1% (414)	65.9% (392)	66.2% (530)	68.4% (716)
PWC	96.0% (551)	99.1% (649)	99.1% (691)	98.8% (502)	98.0% (562)	98.5% (543)	98.3% (652)	99.2% (580)	98.7% (522)	99.4% (664)	98.6% (572)	99.4% (427)
Powered Inflatable/Raft	59.3% (62)	69.7% (68)	79.5% (60)	72.8% (37)	66.8% (36)	65.8% (53)	71.2% (22)	70.6% (28)	71.1% (66)	79.7% (39)	70.3% (47)	78.2% (45)

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*Factors controlled for: Age & Boat Type.

** The Open Motorboat category is created by grouping "Skiffs" and "Speedboat/Runabouts" together. The proportion of Skiffs to Speedboat/Runabouts has been set to reflect the national proportions observed in 2006, the year in which the Strategic Plan goals were first measured and additional statistical controls are not used for this type of boat.

All Paddle Craft for Adults (18 years or older).

Figure G and Table 4 present results for adults in paddle craft. All paddle craft combined rates stayed moderate, but dipped somewhat from last year's rate (41.4% to 35.4%). This dip was due to low rates for paddled inflatables which for 2010 were due to one particular site with high numbers of paddled inflatables. Observations were conducted on a hot, busy day with low water level, which resulted in a lower wear rate than in previous years at that particular site. Comparing the combined rates for the two types of craft that make up the bulk of the activity in this group (canoes and kayaks), there is a decrease from 2009 in which the rate was 49.1% to 2010 when the rate went down to 47.3% (see Table 4). This is mirrored by the separate wear rate changes for canoes and kayaks, in which canoes went from 25.0% to 19.1% and kayaks increased from 72.6% to 75.9%. Rowboat/Dinghies decreased slightly from 35.3% to 34.8%, but this rate change was based on a relatively few number of these boaters observed.

Figure G – Adult Wear Rates for ALL Paddle Craft*



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*Factors controlled for: Age & Boat Type.

Table 4 - Life Jacket Wear Rates by Paddle Craft for Adults (18 years or older)*

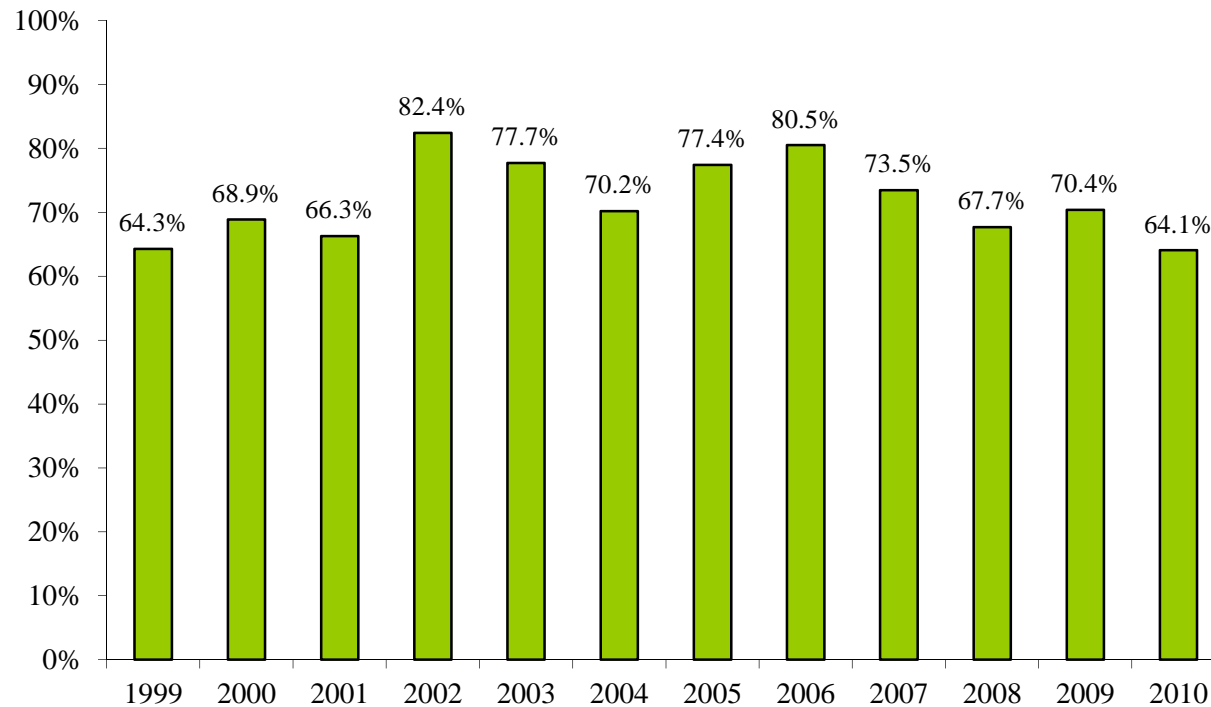
Boat Type	1999 % (N's)	2000 % (N's)	2001 % (N's)	2002 % (N's)	2003 % (N's)	2004 % (N's)	2005 % (N's)	2006 % (N's)	2007 % (N's)	2008 % (N's)	2009 % (N's)	2010 % (N's)
All Paddle Craft	46.2% (1676)	50.7% (1676)	51.9% (1816)	50.7% (1864)	55.4% (1672)	56.7% (1637)	47.0% (1616)	62.8% (1456)	40.1% (2065)	43.1% (1523)	41.4% (1939)	35.4% (2551)
Paddled Inflatable/Raft	71.8% (174)	13.0% (198)	65.1% (250)	65.6% (307)	60.5% (290)	57.8% (283)	76.0% (225)	77.8% (308)	23.9% (526)	38.4% (311)	8.2% (340)	6.9% (813)
Rowboat/Dinghy	24.4% (82)	37.2% (118)	18.7% (119)	27.3% (193)	22.8% (117)	10.1% (38)	59.2% (71)	26.7% (78)	15.0% (92)	23.0% (65)	35.3% (51)	34.8% (46)
Canoe	17.7% (809)	33.8% (714)	23.6% (750)	15.4% (701)	30.4% (607)	26.7% (622)	14.8% (679)	29.2% (364)	19.4% (764)	19.7% (481)	25.0% (758)	19.1% (994)
Kayak	82.7% (611)	85.7% (646)	84.4% (697)	85.7% (663)	81.4% (658)	87.0% (694)	74.1% (675)	77.9% (706)	72.0% (683)	65.5% (648)	72.6% (790)	75.9% (698)
Canoe/Kayak Combined	45.9% (1420)	58.6% (1360)	53.1% (1447)	49.7% (1364)	56.8% (1265)	58.6% (1316)	44.4% (1354)	61.2% (1070)	44.3% (1447)	46.0% (1129)	49.1% (1548)	47.3% (1692)

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 *Factors controlled for: Age & Boat Type.

All Paddle Craft for Youth (17 years or younger).

Figure H and Table 5 present results for youth in paddle craft. Data in this table should be viewed cautiously because of the relatively small number of youth who use these types of craft. For all paddle craft combined wear rates have fluctuated across the years, and the rates went down for 2010 to 64.1% compared to 70.4% in 2009. For the combined canoe/kayak category there was a decline from 76.0% in 2009 to 75.1% in 2010 (see Table 5). This is a reflection of the drop in canoe wear rates to 68.0% in 2010 from 70.6% in 2009 compared to an increase in kayak wear rates from 85.3% in 2009 to 85.4% in 2010. Wear rates for inflatable boats which were being paddled went down from 59.0% to 41.9%, but this boat type is used by a relatively small number of youth boaters.

Figure H – Youth Wear Rates for ALL Paddle Craft*



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*Factors controlled for: Age & Boat Type.

Table 5 - Life Jacket Wear Rates by Paddle Craft for Youth (17 years or younger)*

Boat Type	1999 % (N's)	2000 % (N's)	2001 % (N's)	2002 % (N's)	2003 % (N's)	2004 % (N's)	2005 % (N's)	2006 % (N's)	2007 % (N's)	2008 % (N's)	2009 % (N's)	2010 % (N's)
All Paddle Craft	64.3% (317)	68.9% (457)	66.3% (457)	82.4% (312)	77.7% (372)	70.2% (360)	77.4% (281)	80.5% (225)	73.5% (520)	67.7% (492)	70.4% (319)	64.1% (419)
Paddled Inflatable/Raft	62.4% (82)	45.8% (124)	52.3% (153)	90.3% (136)	68.9% (113)	68.4% (118)	77.5% (79)	77.9% (87)	58.4% (244)	55.6% (218)	59.0% (76)	41.9% (139)
Rowboat/Dinghy	11.1% (9)	47.1% (15)	60.3% (32)	54.7% (31)	88.6% (21)	58.0% (11)	77.1% (17)	67.3% (26)	61.0% (21)	77.8% (25)	91.1% (9)	98.0% (14)
Canoe	57.7% (142)	74.6% (222)	62.4% (181)	71.1% (98)	75.0% (130)	60.3% (146)	69.4% (101)	68.9% (49)	81.0% (123)	78.0% (158)	70.6% (132)	68.0% (169)
Kayak	83.3% (84)	89.2% (96)	94.3% (91)	83.7% (47)	91.6% (108)	91.2% (85)	88.7% (94)	89.0% (63)	90.1% (132)	83.5% (86)	85.3% (102)	85.4% (97)
Canoe/Kayak Combined	67.3% (226)	78.9% (318)	73.1% (272)	74.5% (145)	82.9% (238)	71.3% (231)	79.6% (195)	82.2% (112)	85.7% (255)	80.0% (244)	76.0% (234)	75.1% (266)

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*Factors controlled for: Age & Boat Type.

Sail Craft for Adults (18 years or older).

Figure I and Table 6 document results for adults in sail craft. For all sailing craft combined there was a small decrease in wear rates from the previous year of 23.2% in 2009 to 22.0% in 2010 (see Figure I below). From 2009 to 2010 there was a decrease for day sailors (61.7% to 57.5%). In 2010 there was also a small decrease for cabin sailboats (13.0% in 2009 to 11.7% in 2010). Cabin sailboats wear rates peaked in 2006 at 19.1%, but in the four subsequent years have shown a decline.

Figure I – Adult Wear Rates for ALL Sail Craft*



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*Factors controlled for: Age & Boat Type.

Table 6 - Life Jacket Wear Rates by Sail Craft for Adults (18 years or older)*

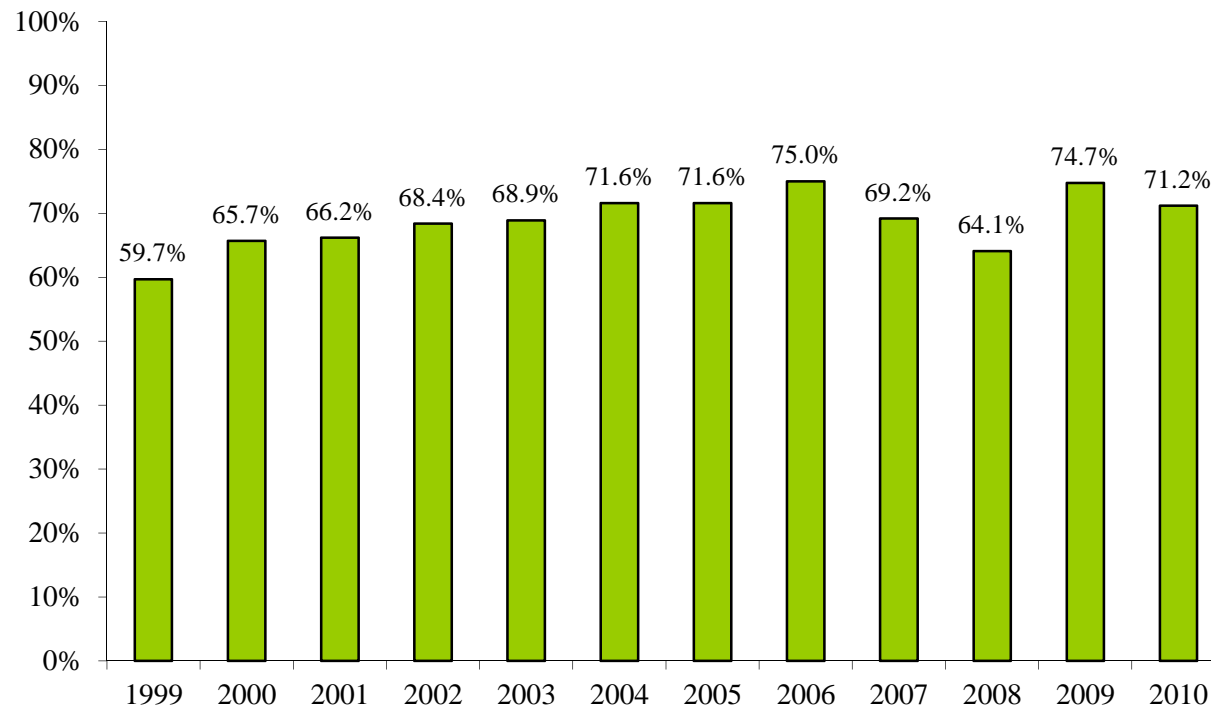
Boat Type	1999 % (N's)	2000 % (N's)	2001 % (N's)	2002 % (N's)	2003 % (N's)	2004 % (N's)	2005 % (N's)	2006 % (N's)	2007 % (N's)	2008 % (N's)	2009 % (N's)	2010 % (N's)
All Sail Craft	13.6% (3420)	17.1% (3565)	17.0% (3843)	18.4% (4087)	16.7% (3149)	19.5% (4149)	24.8% (3084)	28.0% (3279)	24.7% (3217)	20.0% (3079)	23.2% (3733)	22.0% (3336)
Sailboard	16.4% (46)	94.0% (30)	80.6% (15)	83.2% (55)	96.7% (27)	92.9% (40)	53.0% (20)	92.1% (12)	83.7% (18)	94.6% (17)	71.9% (7)	83.2% (29)
Day Sailor	30.7% (739)	35.6% (791)	37.9% (604)	46.7% (1124)	38.4% (815)	49.7% (984)	56.4% (736)	59.1% (607)	50.4% (397)	48.3% (649)	61.7% (652)	57.5% (731)
Cabin Sailboat	9.1% (2635)	11.3% (2744)	10.2% (3224)	9.5% (2908)	10.2% (2307)	10.1% (3125)	15.4% (2328)	19.1% (2660)	17.1% (2802)	12.0% (2413)	13.0% (3074)	11.7% (2576)

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 *Factors controlled for: Age & Boat Type.

Sail Craft for Youth (17 years or younger).

Figure J and Table 7 below show that the national average wear rates on all sailboats for youth decreased from 74.7% in 2009 to 71.2% in 2010. However, relatively few youth are found on this type of craft and therefore fluctuations in rates should be interpreted cautiously.

Figure J – Youth Wear Rates for ALL Sail Craft*



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*Factors controlled for: Age & Boat Type.

Table 7 - Life Jacket Wear Rates by Sail Craft for Youth (17 years or younger)*

Boat Type	1999 % (N's)	2000 % (N's)	2001 % (N's)	2002 % (N's)	2003 % (N's)	2004 % (N's)	2005 % (N's)	2006 % (N's)	2007 % (N's)	2008 % (N's)	2009 % (N's)	2010 % (N's)
All Sail Craft	59.7% (347)	65.7% (329)	66.2% (424)	68.4% (381)	68.9% (323)	71.6% (323)	71.6% (327)	75.0% (371)	69.2% (270)	64.1% (274)	74.7% (305)	71.2% (202)
Sailboard	0.0% (3)	100.0% (7)	66.7% (6)	75.0% (4)	n/a (0)	92.1% (48)	100% (1)	100% (4)	82.2% (8)	-- (0)	-- (0)	100% (1)
Day Sailor	71.1% (114)	81.6% (81)	92.0% (85)	82.1% (113)	84.3% (107)	87.5% (83)	73.4% (67)	93.2% (122)	86.5% (54)	88.0% (75)	92.5% (80)	85.2% (86)
Cabin Sailboat	58.3% (230)	61.5% (241)	58.2% (333)	63.5% (264)	60.6% (216)	68.3% (192)	69.4% (259)	65.7% (245)	62.4% (208)	56.4% (196)	66.4% (225)	65.9% (115)

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 2010 National Observational Life Jacket Wear Rate Study
 *Factors controlled for: Age & Boat Type

Boat Type and Size for Adults (18 years or older).

Table 8 shows the breakdown of wear rates for three general categories of boats: power boats, sail boats and paddle craft. Data are presented only for 2004 to 2010 since 2004 was the first year that observations were classified in two categories as 16 to 21 feet and 21 to 26 feet. Within each of these boat types, the groups are further broken down by size. For each boat type and size category, there are multiple types of boats that fall within those groups. Table Z gives a breakdown for each group and size category of the types and numbers of boats contained in that group.

Wear rates show predictable relationships with size; decreasing as size of the boat increases. However, the general level of wear is highly influenced by the general type of craft. Power boat wear rates range from a seven year average of 8.4% for boats under 16 feet to 1.6% for boats over 26 feet in length. For sailboats the seven year average goes from 62.0% for sailboats under 16 feet to 14.0% for sailboats over 26 feet in length. For paddle craft the seven year average for boats under 16 feet is 51.6% and for boats in the 16 to 21 foot category it is 35.3%.

Table 8 - Life Jacket Wear Rates by Boat Type and Size for Adults (18 years or older)*

Boat Type and Size	2004 % (N's)	2005 % (N's)	2006 % (N's)	2007 % (N's)	2008 % (N's)	2009 % (N's)	2010 % (N's)	Total % (N's)
Power Boats								
<16 ft.	8.2% (2320)	7.6% (2734)	7.1% (3395)	8.7% (2173)	7.6% (1862)	8.5% (1824)	11.5% (2764)	8.4% (17072)
16-20.9 ft.	4.7% (16298)	5.1% (14629)	4.4% (11778)	4.9% (13034)	6.1% (12586)	5.0% (13125)	5.0% (13944)	4.9% (95395)
21-25.9 ft.	2.4% (6218)	3.2% (5503)	2.4% (6957)	3.7% (8634)	3.4% (9127)	2.3% (10420)	2.4% (9713)	2.9% (56572)
26+ ft.	0.8% (3407)	1.4% (2865)	1.6% (3268)	1.5% (3782)	1.5% (3650)	1.8% (4546)	1.3% (4473)	1.6% (25991)
Sail Boats								
<16 ft.	75.0% (481)	74.0% (376)	79.7% (265)	67.6% (77)	73.2% (163)	70.2% (247)	65.5% (299)	62.0% (1908)
16-20.9 ft.	34.2% (357)	41.9% (312)	57.7% (609)	51.8% (193)	46.8% (370)	58.0% (157)	57.4% (346)	41.7% (2344)
21-25.9 ft.	12.2% (1428)	24.1% (1527)	21.0% (793)	25.5% (797)	14.0% (911)	21.5% (949)	16.7% (766)	20.4% (7170)
26+ ft.	9.9% (1864)	3.2% (875)	11.5% (1614)	15.2% (2148)	11.6% (1629)	13.1% (2380)	11.0% (1925)	14.0% (12435)
Paddle Boats								
<16 ft.	60.4% (1056)	68.4% (1012)	70.6% (1147)	44.8% (1306)	38.2% (1319)	42.7% (1296)	38.0% (1953)	51.6% (9093)
16-20.9 ft.	49.4% (531)	11.1% (488)	53.0% (171)	35.7% (672)	67.9% (180)	64.4% (347)	42.0% (331)	35.3% (2720)

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 2010 National Observational Life Jacket Wear Rate Study
 *Factors controlled for: Age & Boat Type

IV. CONCLUSIONS FOR LIFE JACKET WEAR RATES - NATIONAL TREND DATA 1999 TO 2010

This report includes observational data collected from 1999 to 2010. Trends in life jacket wear for types of boats and for various age groups were displayed. A summary of key findings are:

1. The adult life jacket wear rate for all boats (excluding PWCs) is at its lowest point (7.8%) in twelve years of observations, continuing a general downward shift of wear rates since 1999.
2. National, adult wear rates continue to be high in boats that are perceived to be easier to capsize or for which there is mandated wear – PWCs, kayaks, inflatable/rafts, and day sailors.
3. Wear rates on PWCs for both adults and children are almost universal.
4. For all youth combined (17 years or younger), wear rates increased almost 30% since 1999. In all likelihood this is both a reflection of changing legal mandates at the state and federal level and possibly a demonstrated effect of targeted educational campaigns.

V. APPENDIX: METHODS & DESCRIPTIVE INFORMATION

To provide reliable and valid indicators of changes in life jacket wear rates, it was essential for observation procedures to remain as close as possible to those used in previous years. The same states were observed for each of the years of data collection efforts, over the same period of time. The vast majority of the sites in each of 30 states observed have remained the same for all years. The following is a detailing of the methods used in all years of data collection.

Time period - Observations were conducted during the summer months of each year, beginning the weekend of July 4th and ending on Labor Day weekend.

Site selection - A total of 30 states were chosen in which to conduct observations. The states were originally selected by a stratified random sampling procedure. Approximately three-fourths of the coastal states (20 out of 26 states) were chosen, and approximately one-half of the inland states (10 out of 24) were selected. Four sites from each state were visited, except in California, where eight sites were observed due to the size of the state. The 124 sites represented a wide range of water venues including lakes, rivers, harbors and bays, and intra-coastal waterways. The sites were selected based on consultations with local offices of the USCG, members of the local Coast Guard Auxiliary or Power Squadron, and state boating or fishing law enforcement agencies. Sites were selected to roughly represent a variety of available boating venues in the state, as well as their proximity to one another to allow for relatively short travel time between sites. In addition, sites needed to have suitable shore-based viewing locations from which observations of life jacket wear could be made using high-powered binoculars.

Observational procedures - Observations were conducted for four-hour periods either in the morning or the afternoon of a Saturday or Sunday. The goal was to observe as many boats as possible during a four-hour time frame. Viewing locations were on shore at a narrowing, bridge, or near a marina to facilitate observations. Two-person teams observed boating activity. One team member made the observations using high-powered binoculars and called out the information, which was then recorded on observation forms by the second team member. Team members alternated responsibilities frequently to ward off fatigue. In addition to recording information on boating activity and life jacket wear, observers recorded data about the site. This included information on weather and water conditions. JSI project staff trained the observers during two half-day sessions. The first half-day training consisted of reviewing the observation manual, observation forms, and required equipment. The observation manual contained procedures, definitions, and pictures of various types of boats to facilitate consistent classification by the observers. The second half-day of training allowed observation team members an opportunity to practice using the required equipment and observation forms with the assistance and guidance of a JSI project staff member.

Observation Forms - There were two observation forms designed. The first was the boat observation form, which was intended to record information about the boat and people on the boat. The second form was the site form, which was designed to record information about the site, weather and water conditions. The forms have remained the same from year to year, with the exception of two changes made in 1999 and one change made in 2004. These changes are discussed in detail below.

A) Boat Forms - Observers recorded the observation time period in two hour blocks of time (7:59 or earlier, 8am – 9:59am, 10am -11:59pm, 12pm – 1:59pm, 2pm – 3:59pm, 4pm – 5:59pm, 6pm or later); the type of boat observed (skiff, speedboat/runabout, cabin cruiser, personal watercraft (PWC), pontoon boat, houseboat, sailboard, day sailor, cabin sailboat, rowboat, inflatable, canoe, kayak, and other); the type of propulsion (outboard engine, sterndrive/inboard engine, sail only, sail and auxiliary engine/motor, paddles/oars/manual, air thrust, and other); length of boat (under 16 feet, 16-20.9 feet, 21-25.9 feet, 26-45.9 and 46+ feet); type of operation (motoring, sailing, paddling, drifting, or at anchor); and activity engaged in (fishing, intent to fish, water-skiing, white-water, high speed racing, swimming, pleasure boating, and other). Observers also recorded operator/passenger status; gender (male, female, or unknown); age (under six, 6 - 12, 13 - 17, 18 - 64, 65 or older); life jacket wear (wearing or not wearing); life jacket type (traditional=old or inflatable=new). In addition, if the boat was involved in water-skiing, observers indicated which boaters were skiing at the time.

B) Site Forms - At each site, the observers recorded the beginning time and ending time of the observation period, water type (lake, river, harbor/bay, Great Lake, intra-coastal waterway) and water temperature. The following environmental factors

were measured by observers at each two hour time block during the observation period: air temperature; wind speed; wave height (less than six inches, six inches up to two feet, or over two feet); weather (sunny, partly cloudy, cloudy, raining, or stormy); and visibility (good, fair, or poor).

Over the past twelve years of observations only three categories of information have changed. In 1999, the original 6 to 17 year old age category was divided into a 6 to 12 year old group and a 13 to 17 year old group. Also in 1999, the boat category of canoes/kayaks was separated to record canoes and kayaks individually. In this report, life jacket wear rates are reported for both the combined and separated categories of age and canoes and kayaks. Finally, in 2004 the USCG requested that JSI breakout the boat size categories from three (under 16 feet, 16-25 feet and over 26 feet) to four categories (under 16 feet, 16-20 feet, 21-25 feet and over 26 feet). Observations made in 2004 to 2010 are the only years to record observations using the expanded boat size categories.

2010 Boat Form

TIME: 7:59 or earlier 8:00 - 9:59 am 10:00 - 11:59 am 12:00 - 1:59 pm 2:00 - 3:59 pm 4:00 - 5:59 pm 6:00 or later

POWER BOAT:		PADDLE:	SAIL:	OTHER:	GENDER			AGE(years)					PFD			WS
<input type="radio"/> Skiff/Utility <input type="radio"/> PWC		<input type="radio"/> Kayak	<input type="radio"/> Day sailor	<input type="radio"/> Inflatable/Raft	M	F	?	0-5	6-12	13-17	18-64	65+	Old	New	No	Yes
<input type="radio"/> Runabout/Speedboat <input type="radio"/> Pontoon		<input type="radio"/> Canoe	<input type="radio"/> Cabin sailboat	<input type="radio"/> Houseboat	OP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
<input type="radio"/> Cabin cruiser		<input type="radio"/> Rowboat/Dinghy	<input type="radio"/> Sailboard	<input type="radio"/> Other	P1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SIZE (ft):	PROPULSION:	OPERATION:	ACTIVITY:		P2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Under 16	<input type="radio"/> Outboard	<input type="radio"/> Cruising/Motoring	<input type="radio"/> Pleasure	<input type="radio"/> Fishing	P3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> 16 - 20.9	<input type="radio"/> Sterndrive/Inboard	<input type="radio"/> Sailing	<input type="radio"/> Water skiing	<input type="radio"/> Intent to Fish	P4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> 21 - 25.9	<input type="radio"/> Sail Only	<input type="radio"/> Rowing/Paddling	<input type="radio"/> White water	<input type="radio"/> Swimming	P5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> 26 - 45.9	<input type="radio"/> Sail and Motor	<input type="radio"/> Drifting	<input type="radio"/> Racing or High Speed	<input type="radio"/> Other	P6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> 46 +	<input type="radio"/> Paddles, Oars/Manual	<input type="radio"/> Anchored			P7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/> Air Thrust				P8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/> Other				P9	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

POWER BOAT:		PADDLE:	SAIL:	OTHER:	GENDER			AGE(years)					PFD			WS
<input type="radio"/> Skiff/Utility <input type="radio"/> PWC		<input type="radio"/> Kayak	<input type="radio"/> Day sailor	<input type="radio"/> Inflatable/Raft	M	F	?	0-5	6-12	13-17	18-64	65+	Old	New	No	Yes
<input type="radio"/> Runabout/Speedboat <input type="radio"/> Pontoon		<input type="radio"/> Canoe	<input type="radio"/> Cabin sailboat	<input type="radio"/> Houseboat	OP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
<input type="radio"/> Cabin cruiser		<input type="radio"/> Rowboat/Dinghy	<input type="radio"/> Sailboard	<input type="radio"/> Other	P1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SIZE (ft):	PROPULSION:	OPERATION:	ACTIVITY:		P2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Under 16	<input type="radio"/> Outboard	<input type="radio"/> Cruising/Motoring	<input type="radio"/> Pleasure	<input type="radio"/> Fishing	P3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> 16 - 20.9	<input type="radio"/> Sterndrive/Inboard	<input type="radio"/> Sailing	<input type="radio"/> Water skiing	<input type="radio"/> Intent to Fish	P4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> 21 - 25.9	<input type="radio"/> Sail Only	<input type="radio"/> Rowing/Paddling	<input type="radio"/> White water	<input type="radio"/> Swimming	P5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> 26 - 45.9	<input type="radio"/> Sail and Motor	<input type="radio"/> Drifting	<input type="radio"/> Racing or High Speed	<input type="radio"/> Other	P6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> 46 +	<input type="radio"/> Paddles, Oars/Manual	<input type="radio"/> Anchored			P7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/> Air Thrust				P8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/> Other				P9	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

POWER BOAT:		PADDLE:	SAIL:	OTHER:	GENDER			AGE(years)					PFD			WS
<input type="radio"/> Skiff/Utility <input type="radio"/> PWC		<input type="radio"/> Kayak	<input type="radio"/> Day sailor	<input type="radio"/> Inflatable/Raft	M	F	?	0-5	6-12	13-17	18-64	65+	Old	New	No	Yes
<input type="radio"/> Runabout/Speedboat <input type="radio"/> Pontoon		<input type="radio"/> Canoe	<input type="radio"/> Cabin sailboat	<input type="radio"/> Houseboat	OP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
<input type="radio"/> Cabin cruiser		<input type="radio"/> Rowboat/Dinghy	<input type="radio"/> Sailboard	<input type="radio"/> Other	P1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SIZE (ft):	PROPULSION:	OPERATION:	ACTIVITY:		P2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Under 16	<input type="radio"/> Outboard	<input type="radio"/> Cruising/Motoring	<input type="radio"/> Pleasure	<input type="radio"/> Fishing	P3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> 16 - 20.9	<input type="radio"/> Sterndrive/Inboard	<input type="radio"/> Sailing	<input type="radio"/> Water skiing	<input type="radio"/> Intent to Fish	P4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> 21 - 25.9	<input type="radio"/> Sail Only	<input type="radio"/> Rowing/Paddling	<input type="radio"/> White water	<input type="radio"/> Swimming	P5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> 26 - 45.9	<input type="radio"/> Sail and Motor	<input type="radio"/> Drifting	<input type="radio"/> Racing or High Speed	<input type="radio"/> Other	P6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> 46 +	<input type="radio"/> Paddles, Oars/Manual	<input type="radio"/> Anchored			P7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/> Air Thrust				P8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/> Other				P9	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PFD Study 2010

CODE

State	Site	Block	Group	Phase	Page Number

35777



PFD Study 2010

of Belt Pack PFD's

of Boats Observed

ID

State

Site

Block

Group

Phase

1. Site Information

Observer Names: _____ City: _____

Site Name: _____ Water: _____

Date of Observation: / / Day of the week: Sat. Sun.
 Observation start time: : AM PM Observation end time: : AM PM

2. Type of Body of Water

- Bay, inlet or sound River, stream, creek or canal Other: _____
 Harbor Lake, pond, or reservoir (not Great Lakes)
 Intercoastal waterway Great lake (not including tributaries)

3. Site Conditions

Water temperature: degrees F

A. First Weather Observation (to be completed during 1st time block of boat observations)

Time:
 7:59 or before 8-9:59 AM 10-11:59 AM 12-1:59 PM 2-3:59 PM 4-5:59 PM 6 PM or later

Air Temp. <input type="text"/> <input type="text"/> <input type="text"/> F	Water Conditions <input type="radio"/> Calm (less than 6") <input type="radio"/> Choppy (6" to 2') <input type="radio"/> Rough (over 2')	Current <input type="radio"/> Strong <input type="radio"/> Moderate <input type="radio"/> Weak/None	Visibility <input type="radio"/> Good <input type="radio"/> Fair <input type="radio"/> Poor	Weather Conditions <input type="radio"/> Sunny <input type="radio"/> Raining <input type="radio"/> Partly Cloudy <input type="radio"/> Stormy <input type="radio"/> Cloudy
Wind Speed <input type="text"/> <input type="text"/> knots				

****Actual form provides 3 blocks to record Weather Observations across the 4 hours of data collection**

VI. INFORMATION ON BOATS AND PEOPLE OBSERVED

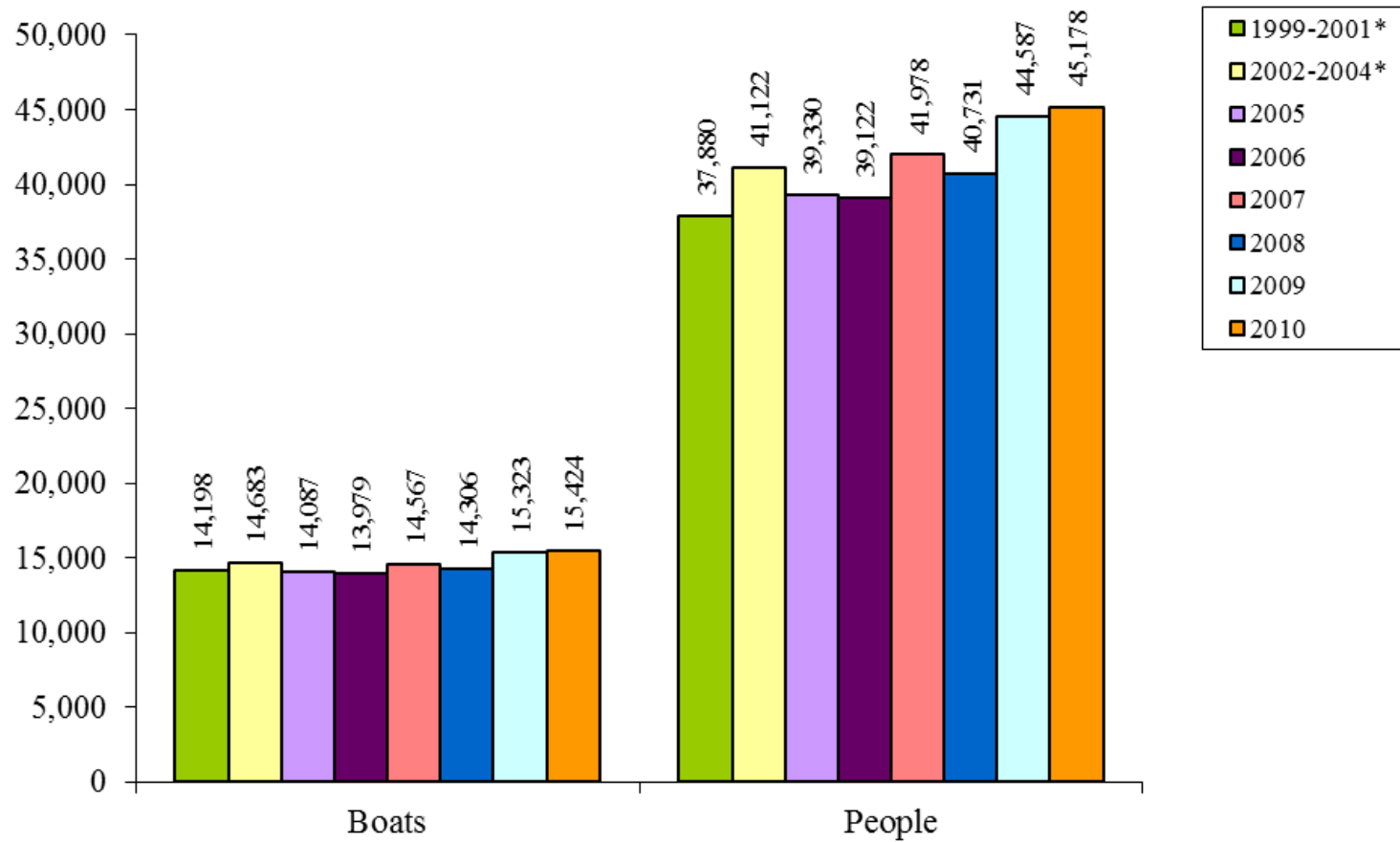
From 1999 to 2010, JSI has observed a total of 174,254 boats and 489,323 boaters (Figure K). This year, 2010, 15,424 boats carrying 45,178 boaters were observed. Across the twelve years, the number of boats, and the number of boaters observed have increased. However, the proportions of the different types of boats, length of boats, operation and activity of boats, as well as the age and gender of the boaters observed has remained fairly consistent (see Figures L through R2). This indicates not only that the sites chosen yielded diversity in the boats and boaters observed each year, but that diversity has remained consistent across the years. These figures demonstrate that the degree of representativeness of the sample of recreational boaters and their boating habits remained constant across this twelve year span.

Figures S through Y illustrate the weather and water conditions across the sites from year to year. Like the boat and boater data, across all of the sites the mixture of the weather and water conditions remained fairly constant over the years. Therefore, any overall changes reported in life jacket wear rates were not due to changes in types of boats or boaters observed from year to year, and most likely not due to fluctuations in weather or water condition changes across the sites. Of course, at individual site locations these factors could account for sizable fluctuations.

All Figures in this section have been modified slightly from previous years' reports. The percentages now exclude any missing observations on a particular characteristic. Since missing observations are relatively rare, this switch in presentation does not result in any major shifts in proportions shown in previous reports.

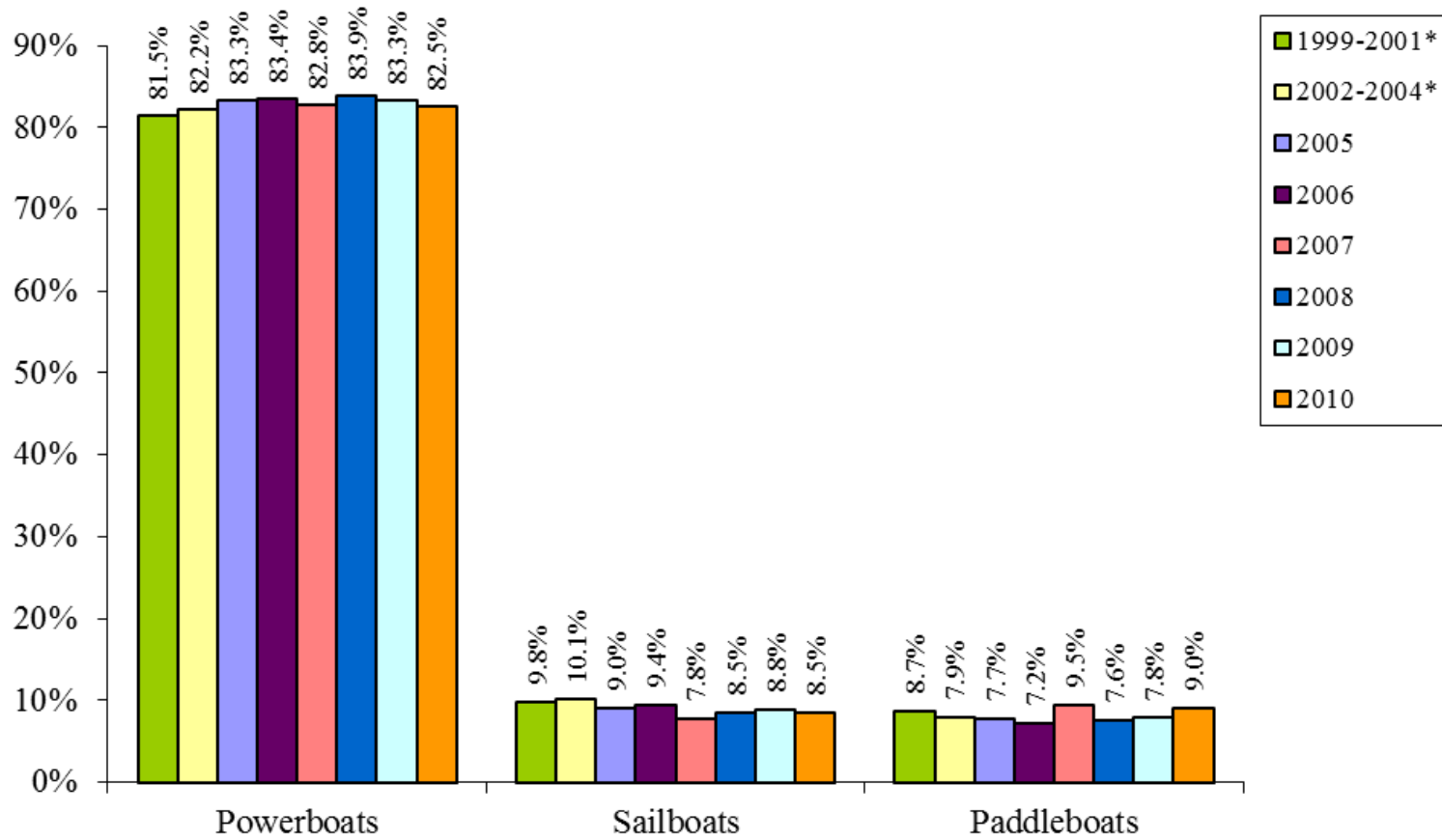
Figure L is constructed differently from previous years. It now compares only speedboats, sail boats, and paddle boats, and excludes "other" types of boats.

Figure K – Number of Boats and People



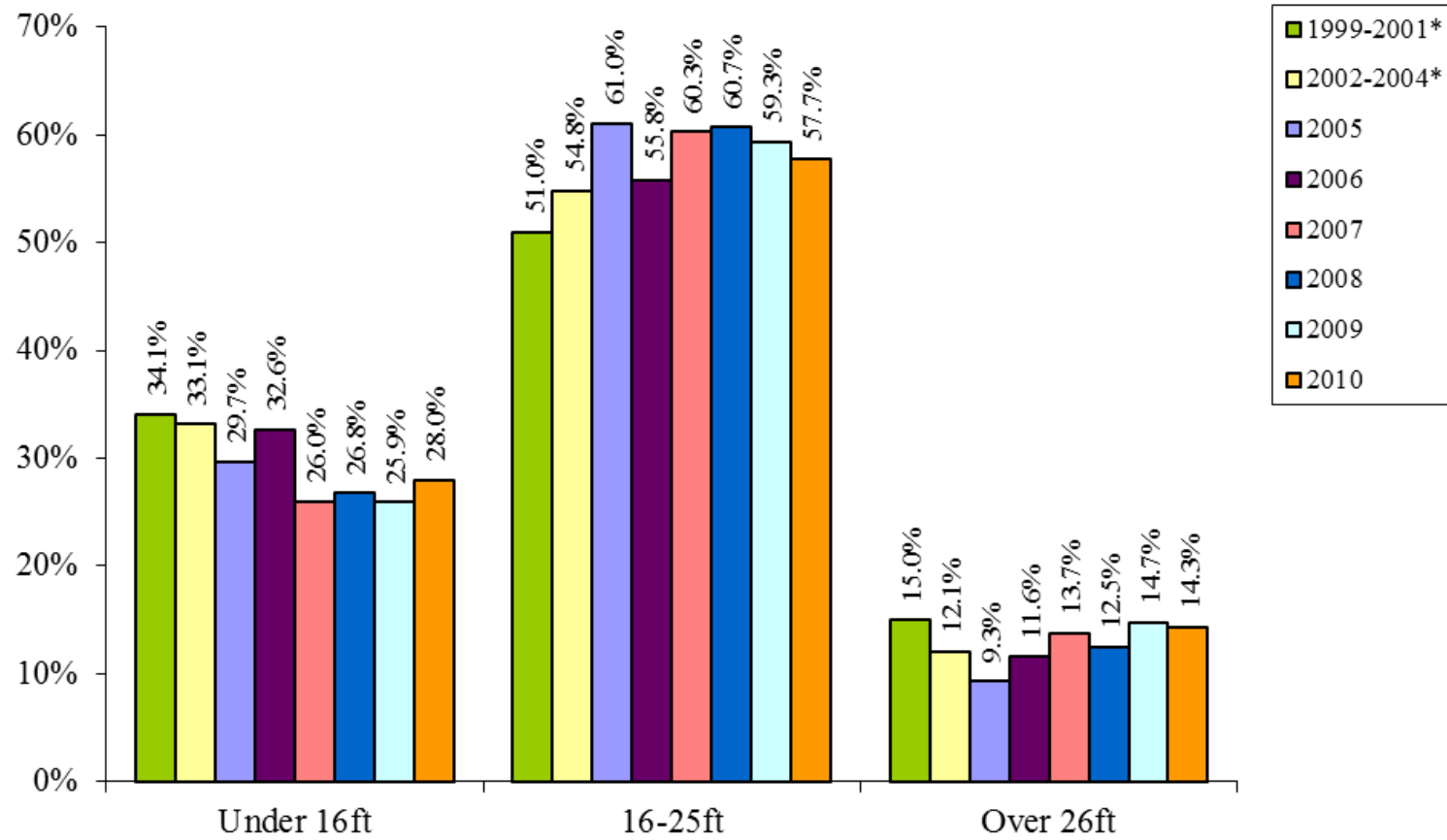
*Three-year average

Figure L – Types of Boats



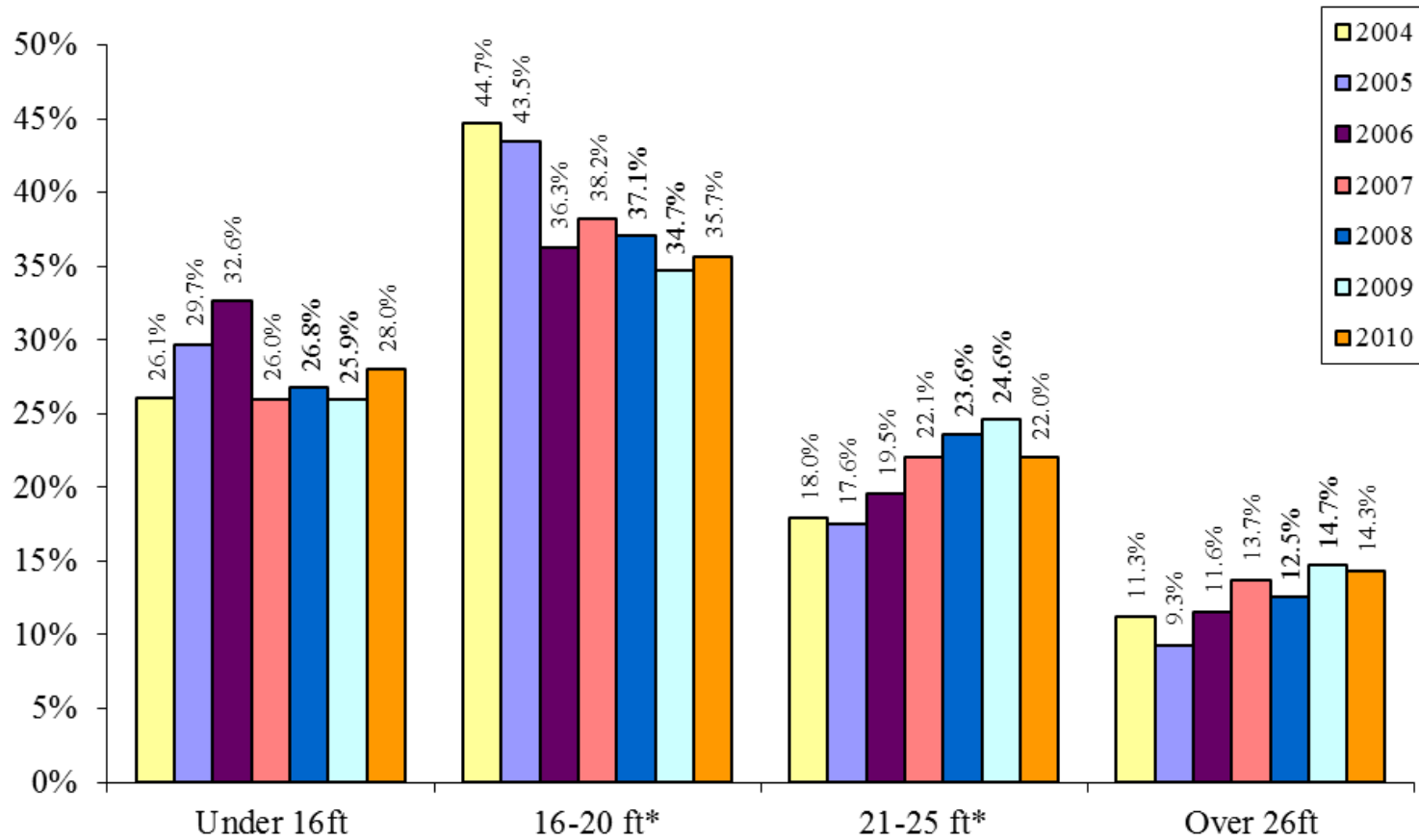
*Three-year average

Figure M – Length of Boats



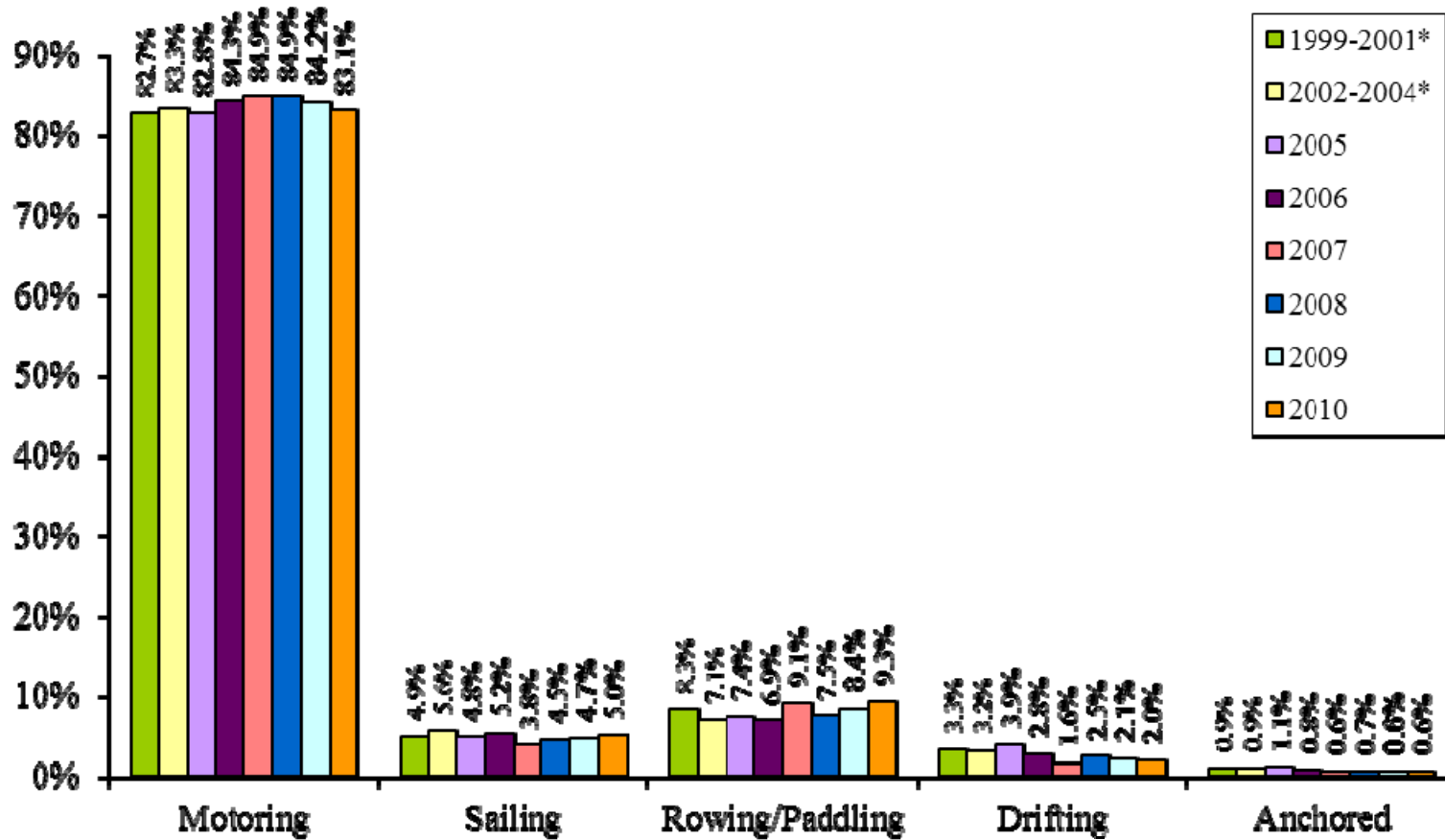
*Three-year average

Figure N – Length of Boats 2004-2010 Data Only



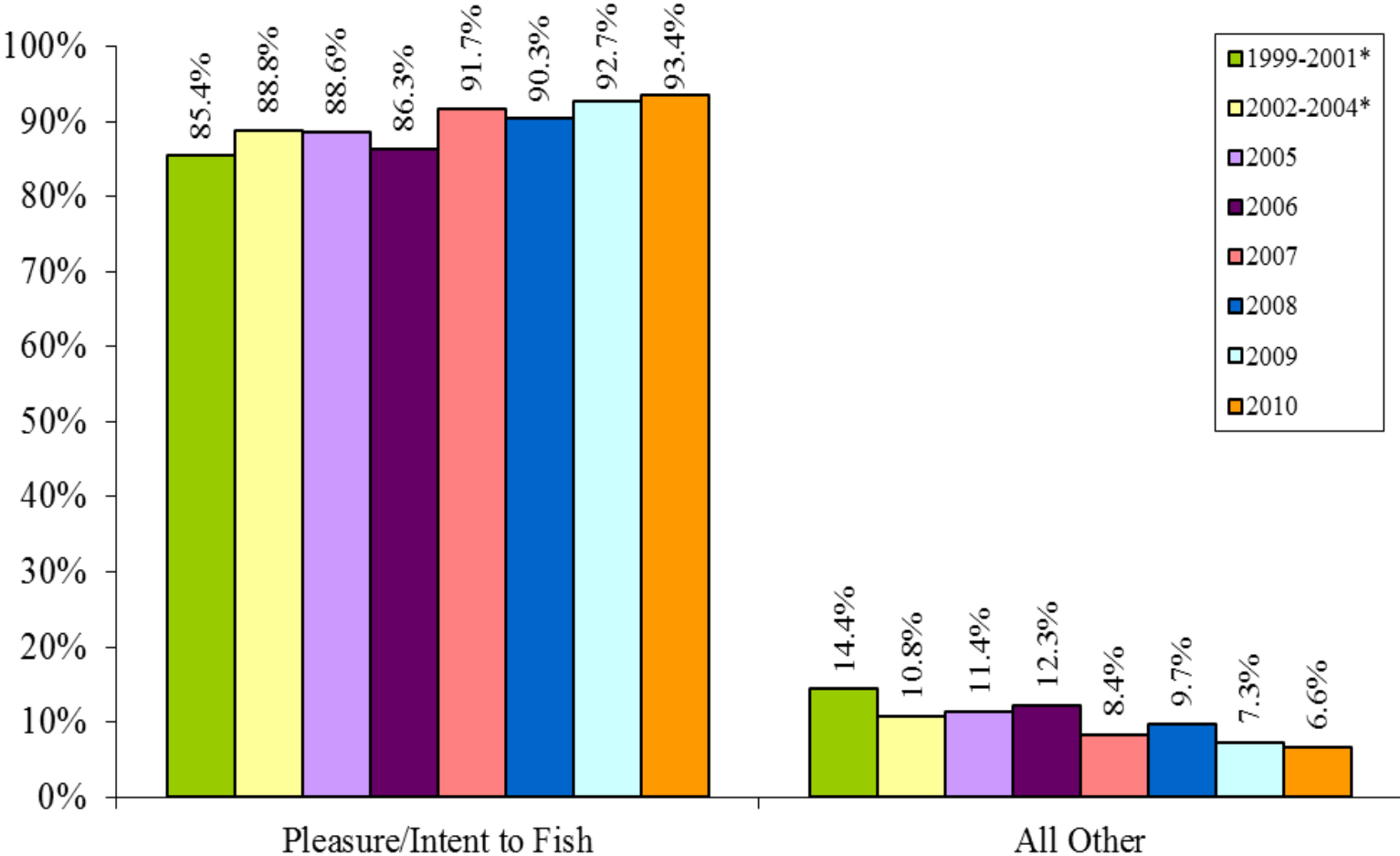
*Three-year average

Figure O – Operation of Boats



*Three-year average

Figure P1 – Activity of Boaters—ALL YEARS*



*Three-year average

Figure P2 – Activity of Boaters 2007-2010 Data

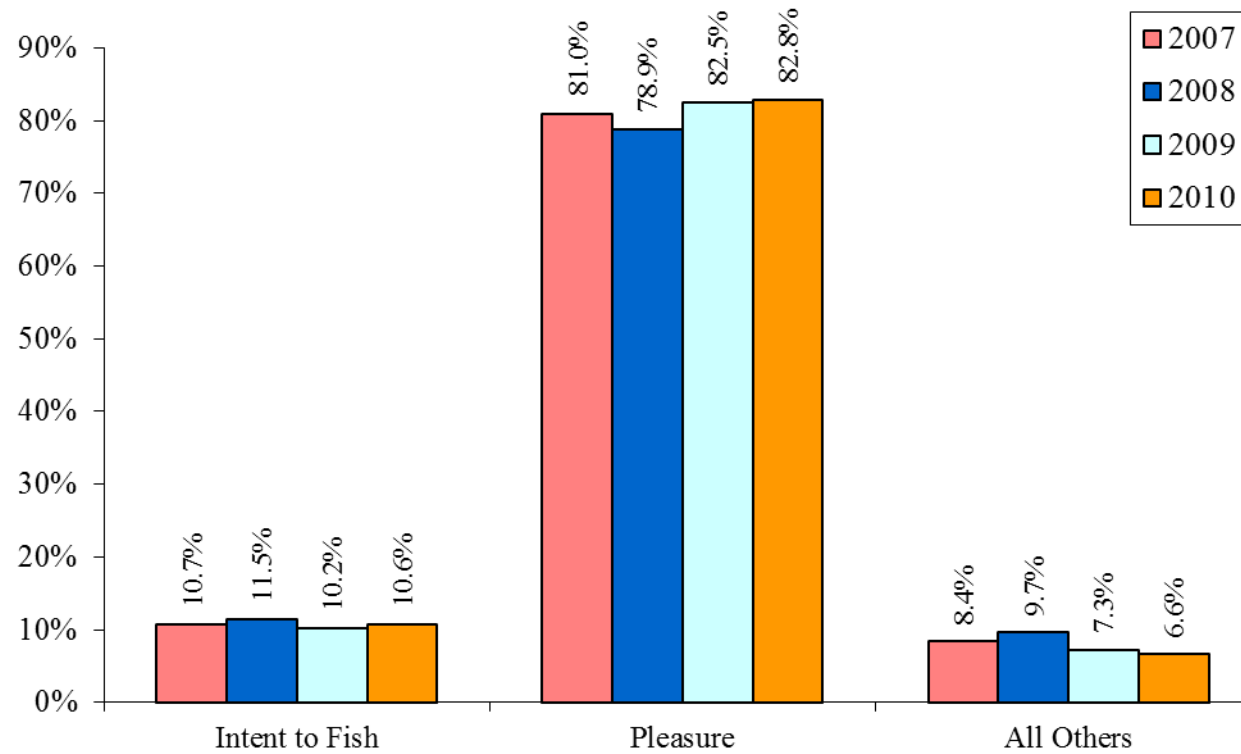
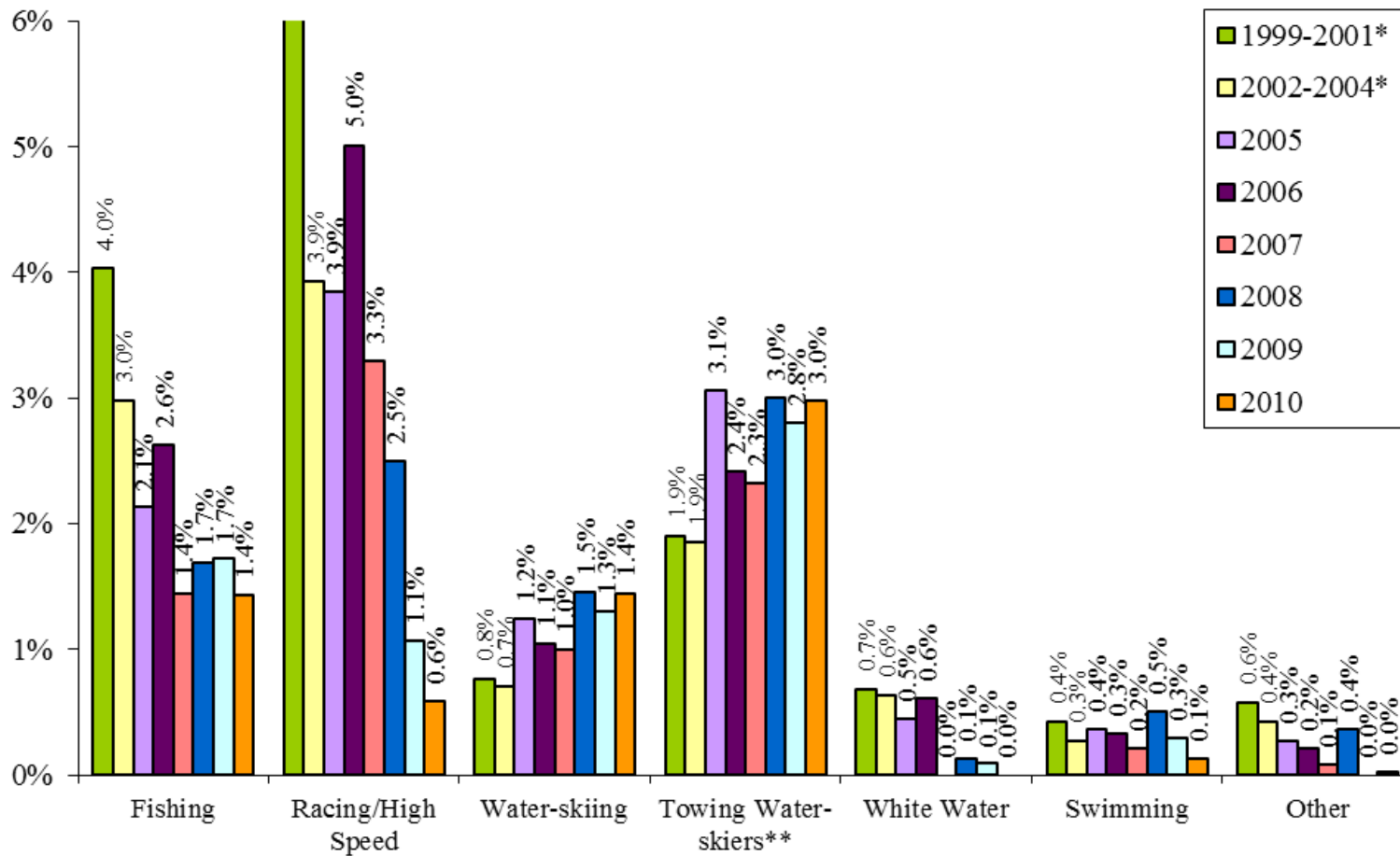


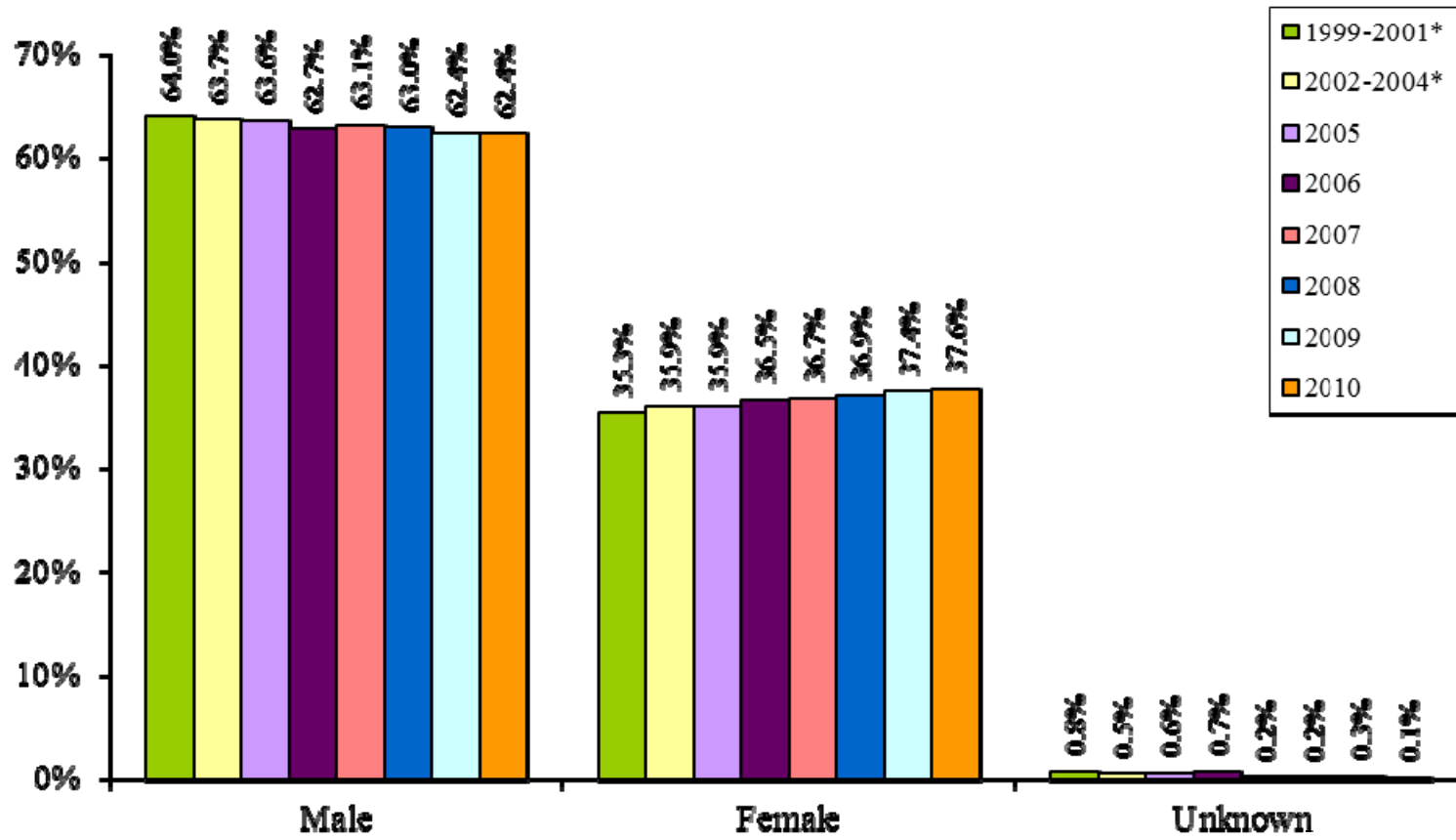
Figure P3 – Activity of Boaters
Detailed Breakdown of ALL OTHER Category from Figure P1



*Three-year average

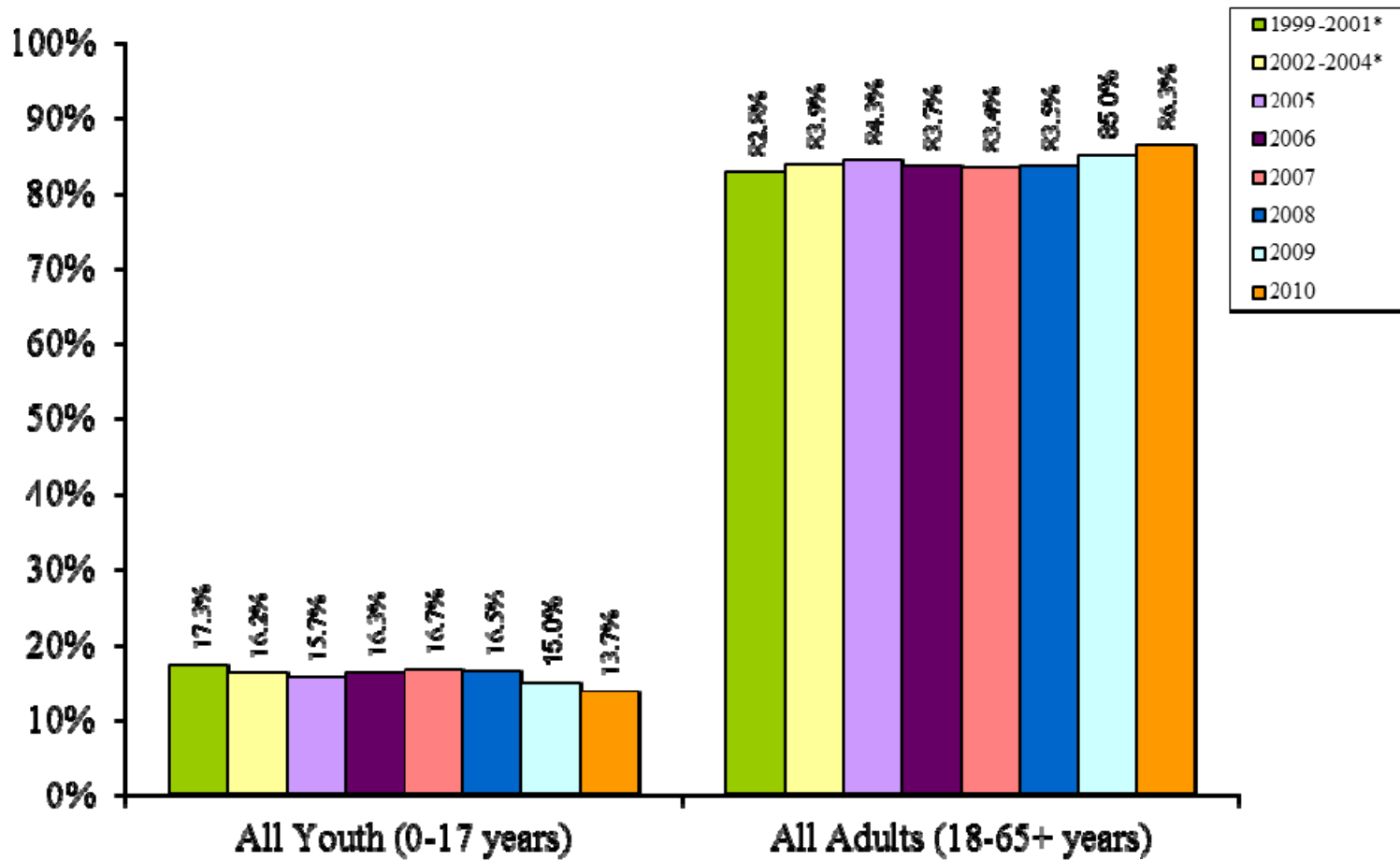
**The activity “Towing Water-skiers” indicates that these boaters were passengers in a boat towing water-skiers or other towing activities. Likewise, “water-skiing” includes all towing sports. The label was changed in April 2010.

Figure Q – Gender of Boaters



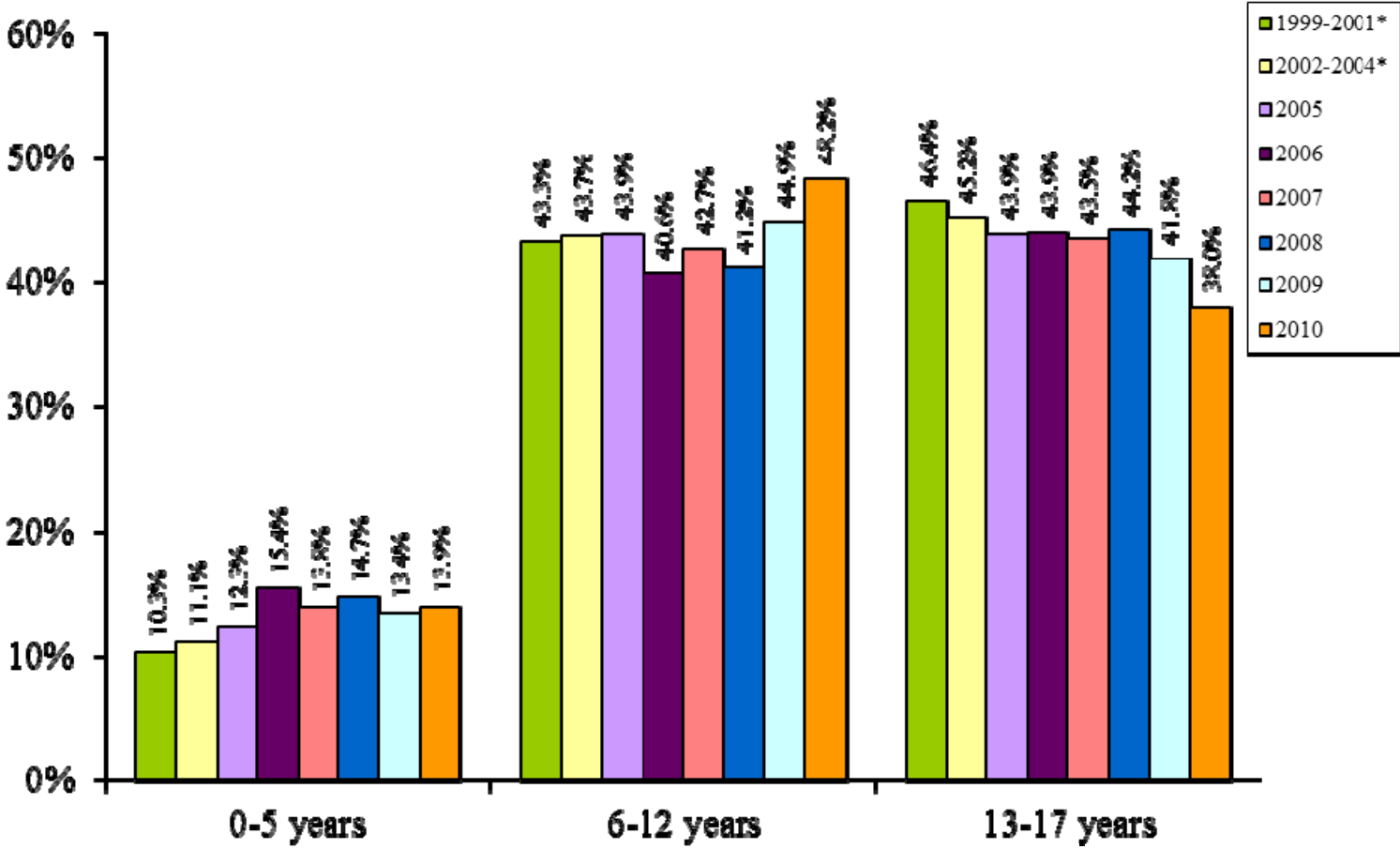
*Three-year average

Figure R1 – Age of Boaters



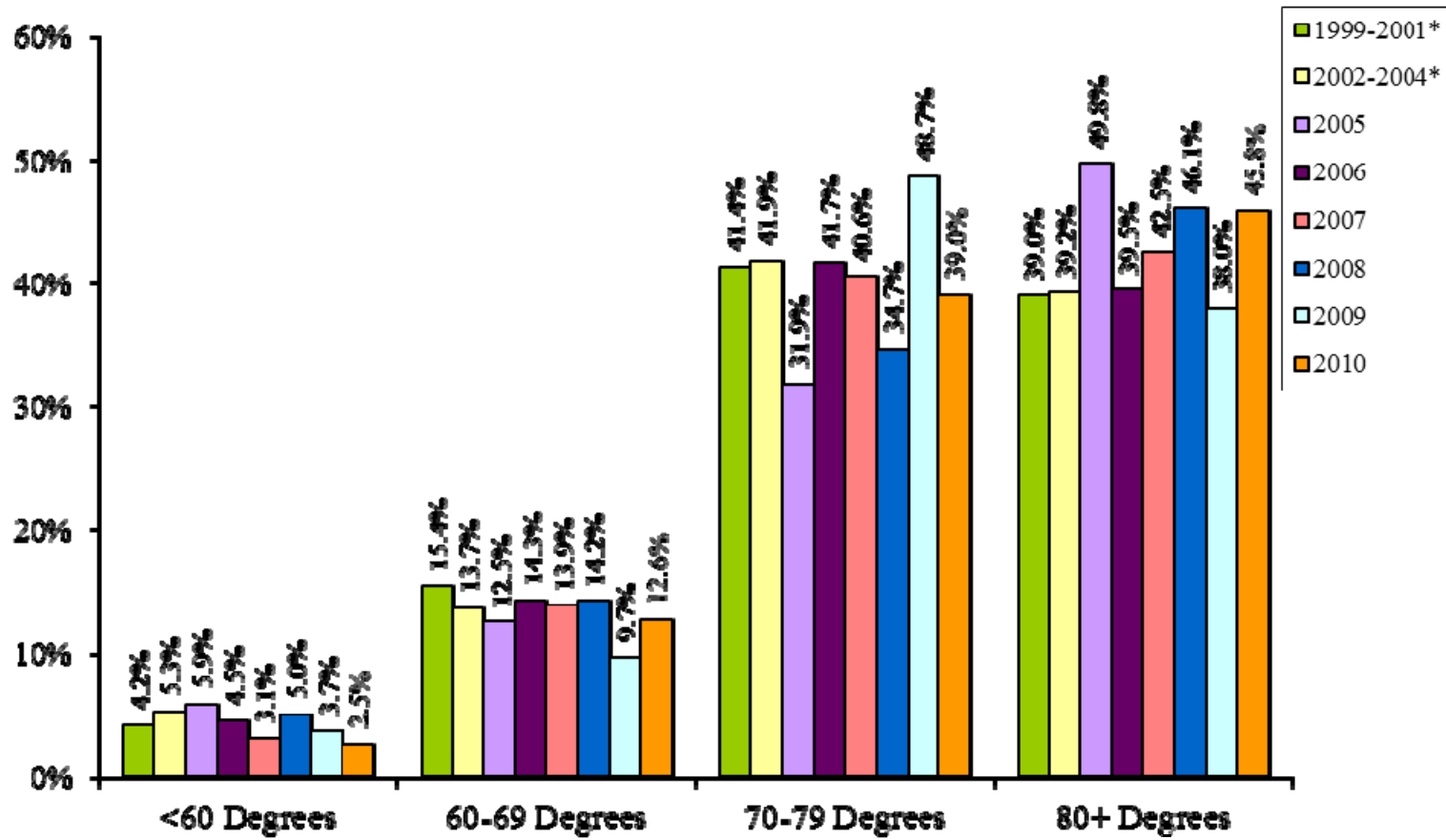
*Three-year average

Figure R2 – Age of Youth Boaters



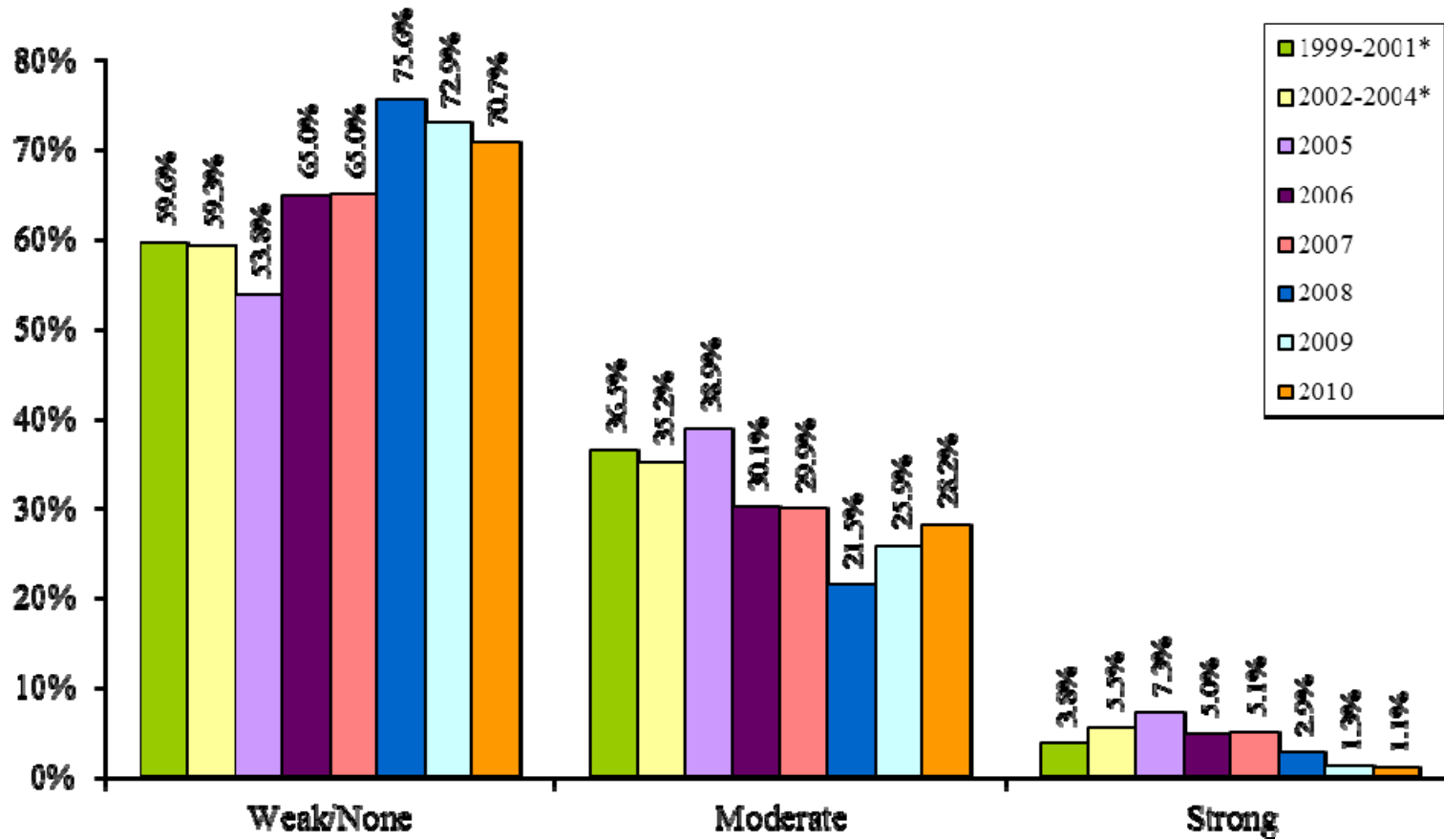
*Three-year average

Figure S – Water Temperature in which all Boaters were Observed



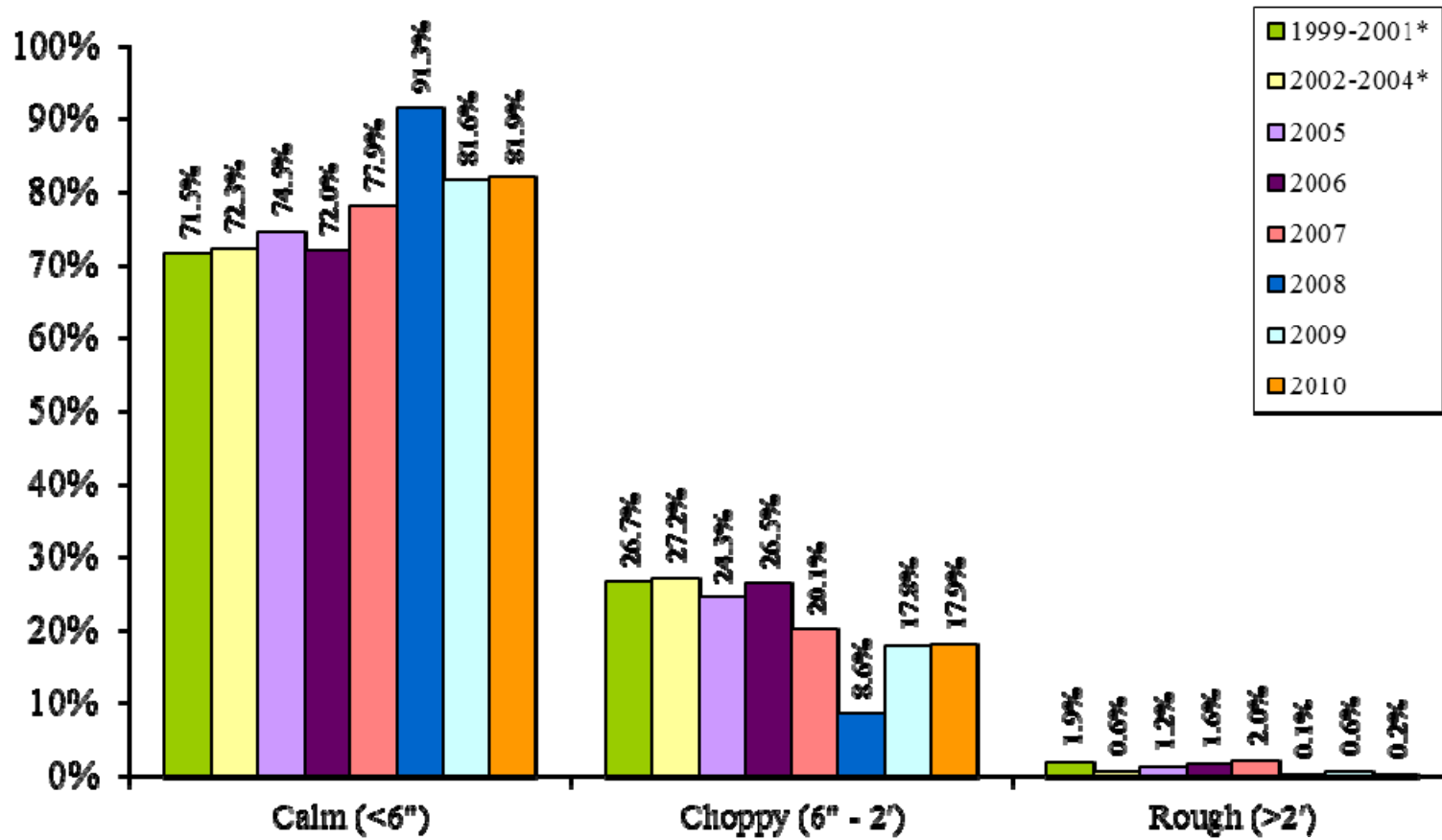
*Three-year average

Figure T – Water Current in which all Boaters were Observed



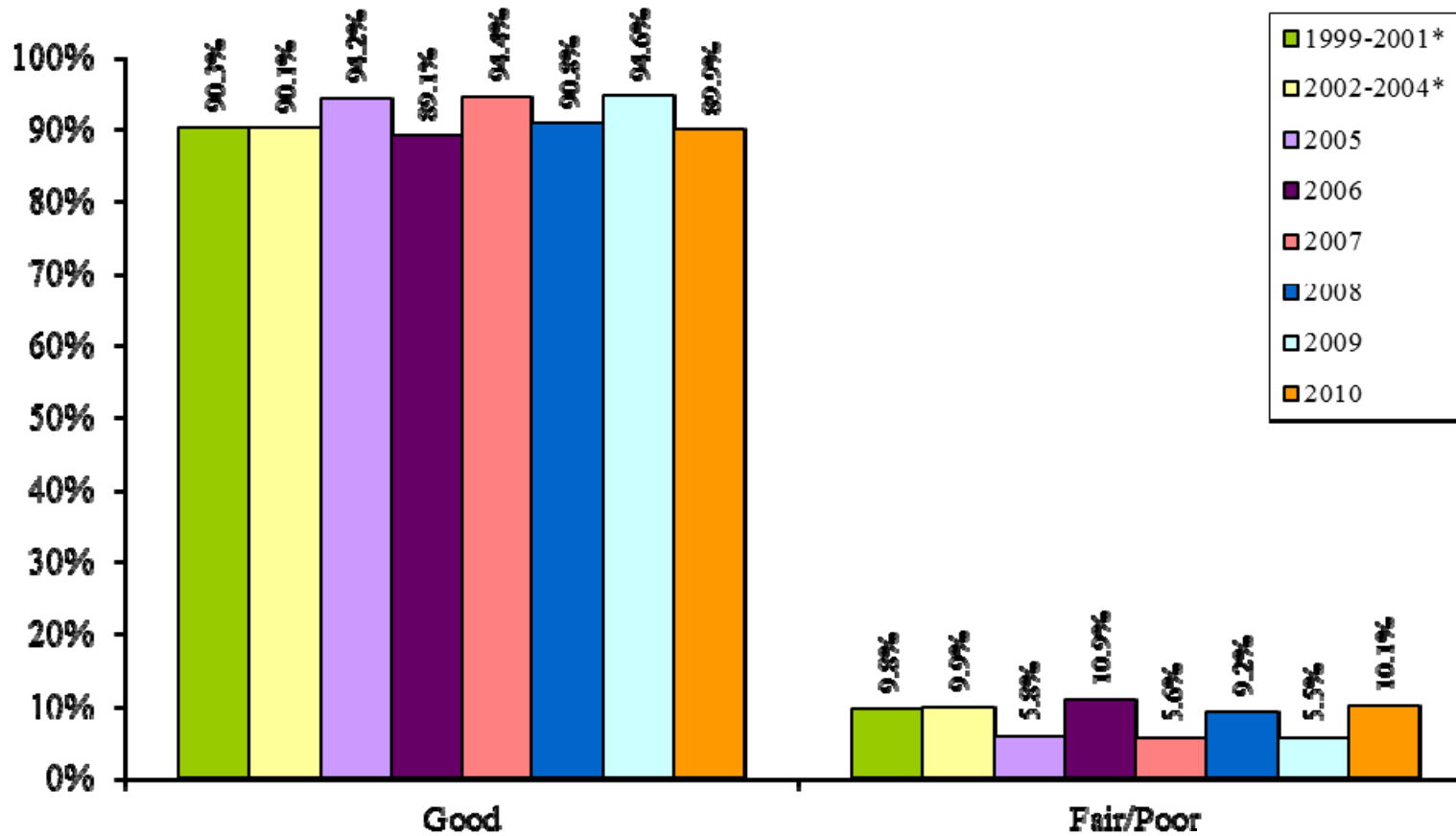
*Three-year average

Figure U – Wave Height in which all Boaters were Observed



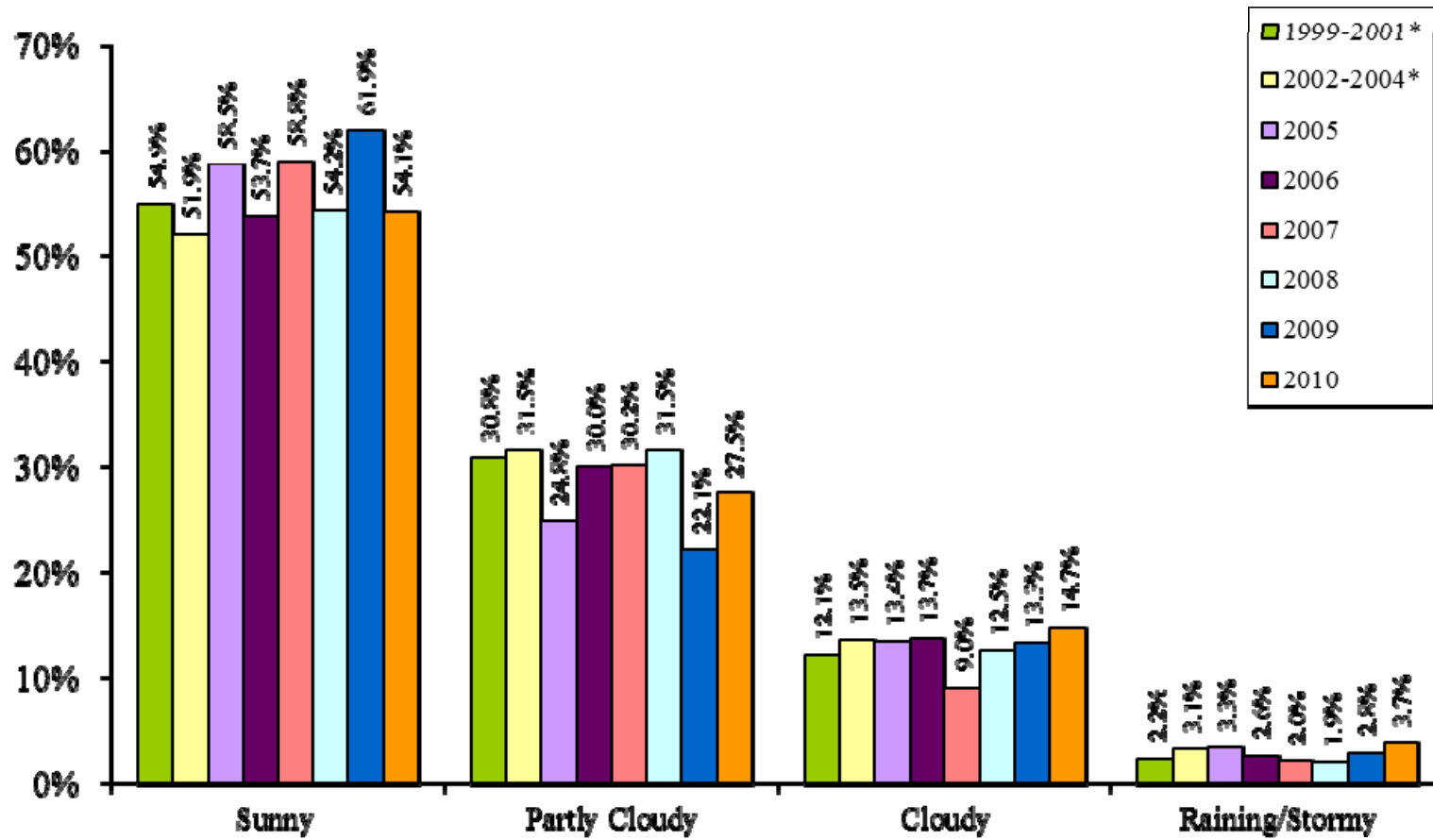
*Three-year average

Figure V – Visibility in which all Boaters were Observed



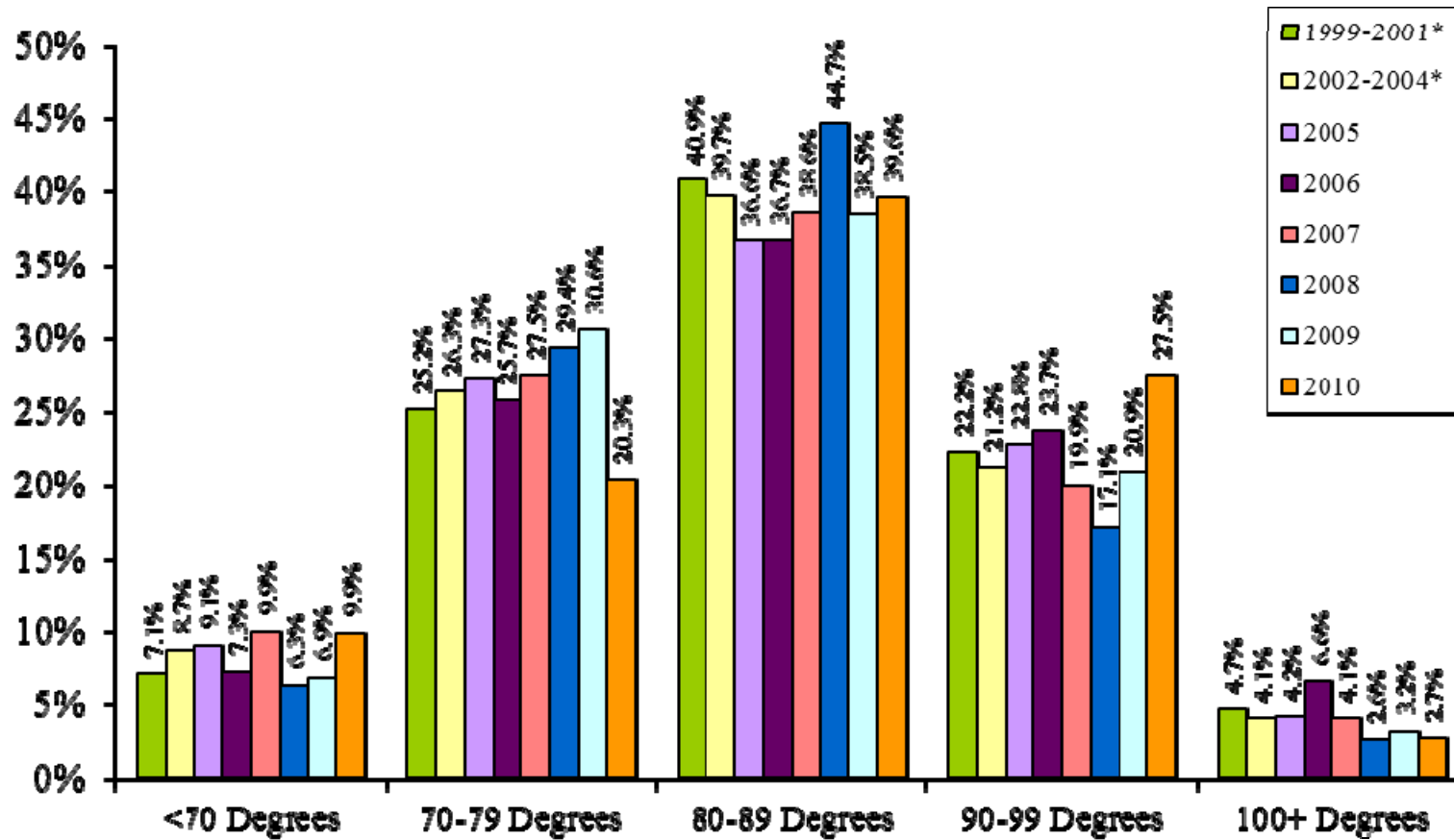
*Three-year average

Figure W – Weather in which all Boaters were Observed



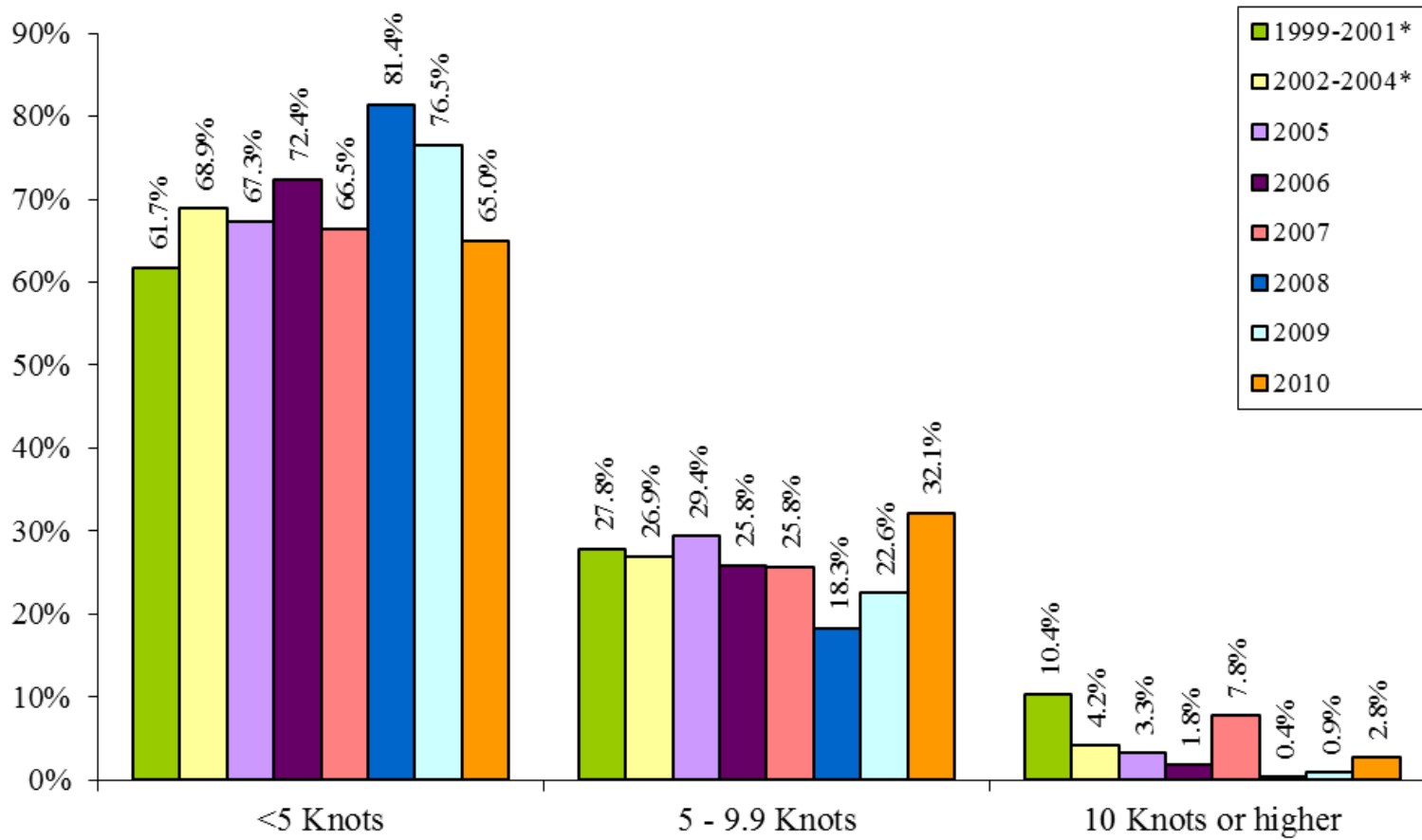
*Three-year average

Figure X – Air Temperature in which all Boaters were Observed



*Three-year average

Figure Y – Wind Speed in which all Boaters were Observed



*Three-year average

Figure Z – Proportions of Boat Type by Boat Size

Boat Size	Skiff		Runabout		Cabin Cruiser		Pontoon		Inflatable	
	%	(N's)	%	(N's)	%	(N's)	%	(N's)	%	(N's)
Powerboat										
<16 ft.	66.3%	(11324)	24.2%	(4134)	0.0%	(0)	0.0%	(9)	9.4%	(1605)
16-20.9 ft.	23.0%	(21917)	70.9%	(67600)	0.3%	(283)	5.7%	(5395)	0.2%	(199)
21-25.9 ft.	10.1%	(5689)	49.0%	(27724)	25.2%	(14248)	15.7%	(8901)	0.0%	(10)
26+ ft.	1.9%	(481)	12.8%	(3333)	81.0%	(21053)	4.3%	(1124)	0.0%	(0)

Boat Size	Sailboard		Day Sailor		Cabin Sailboat	
	%	(N's)	%	(N's)	%	(N's)
Sail Boat						
<16 ft.	7.0%	(133)	93.0%	(1775)	0.0%	(0)
16-20.9 ft.	0.0%	(0)	83.8%	(1964)	16.2%	(380)
21-25.9 ft.	0.0%	(0)	12.8%	(920)	87.2%	(6251)
26+ ft.	0.0%	(0)	0.7%	(92)	99.3%	(12343)

Boat Size	Inflatable		Rowboat/Dinghy		Canoe		Kayak	
	%	(N's)	%	(N's)	%	(N's)	%	(N's)
Paddle Boat								
<16 ft.	29.7%	(2698)	4.4%	(399)	21.4%	(1949)	44.5%	(4047)
16-20.9 ft.	4.0%	(108)	0.7%	(20)	64.7%	(1759)	30.6%	(833)

JSI Research and Training Institute, Inc.
2010 National Observational Life Jacket Wear Rate Study