2011 Life Jacket Wear Rate Observation Study

featuring

National Wear Rate Data from 1999 to 2011

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I. INTRODUCTION

This report provides data and analysis on the 2011 National Life Jacket Wear Rate Observation Study with comparison information from the previous twelve years' studies (1999-2010). 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 2010 report, published by the United States Coast Guard (USCG), shows that among the 484 drowning deaths in 2010, approximately 88% (427) of the individuals were reported as not 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 2011 marked the fourteenth 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.

Most information in this report is presented separately for adults (18+ years old) and youth (0 to 17 years old). Over the 13 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 1999-2011 of data collection.

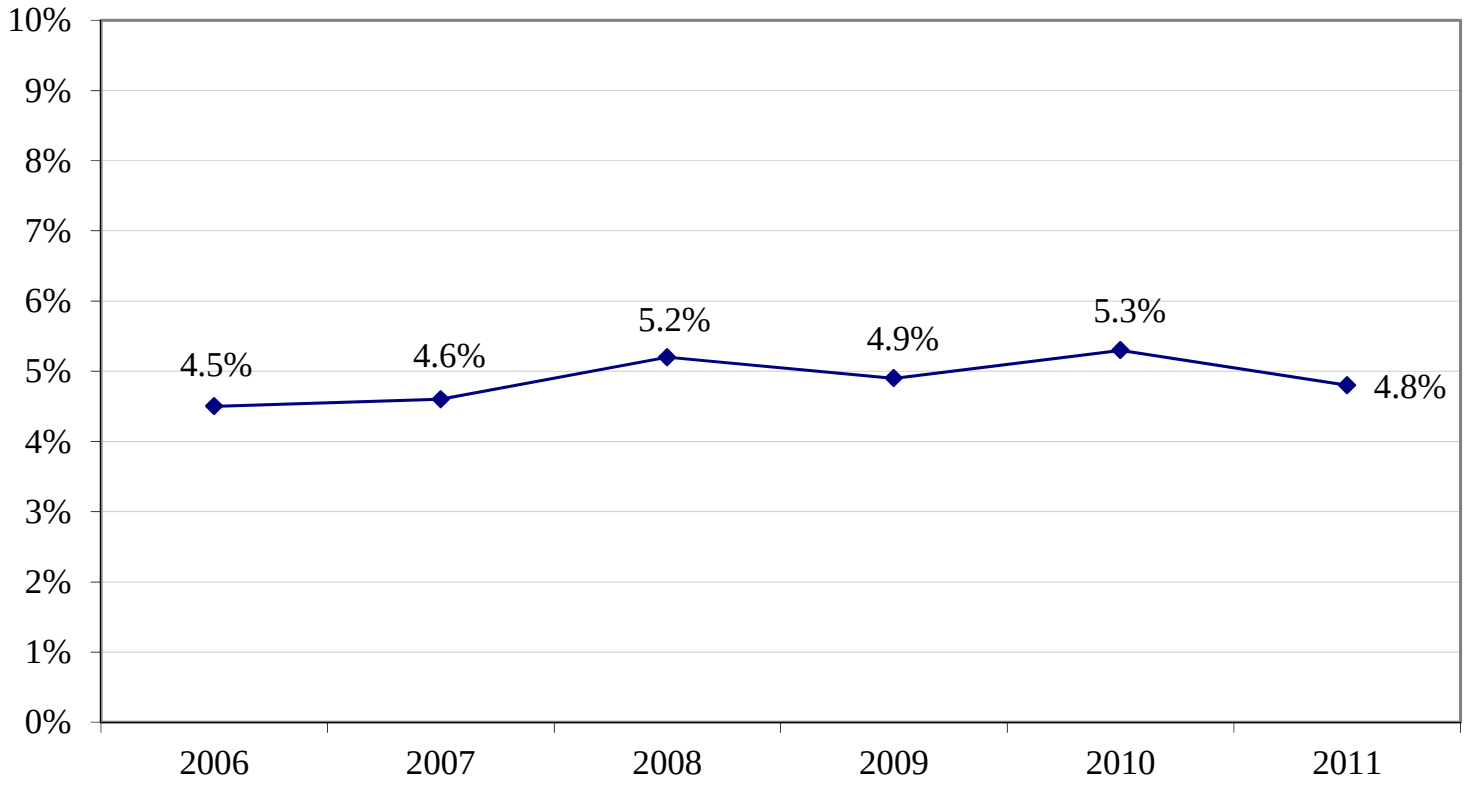
II. STRATEGIC PLAN OBJECTIVE

Adult Life Jacket Wear on Open Motorboats 2006 to 2011

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 valid, the proportion of skiffs to speedboats in each state for each subsequent year was set to mirror the proportions found 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 2011 the proportions were 31% to 69%. If proportions of these boat categories were not adjusted, the 2011 combined wear rate would appear more positive simply because JSI observed more skiffs relative to speedboats this year than in 2006. Similarly, the proportions are likely to fluctuate each year in each state. Weighting each state's data to correspond to the 2006 state ratios, the wear rate for open motorboats in 2011 is 4.8%. (See Figure A on the opposite page for a chart showing these trends and also Table 2 on page 11.) This rate is down slightly from 2010, which is not surprising given that counts of both skiffs and speedboat rates were lower in 2011 than in 2010. (See discussion in next section).

Figure A – Adult Wear Rates on Open Motorboats* 2006-2011
(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.

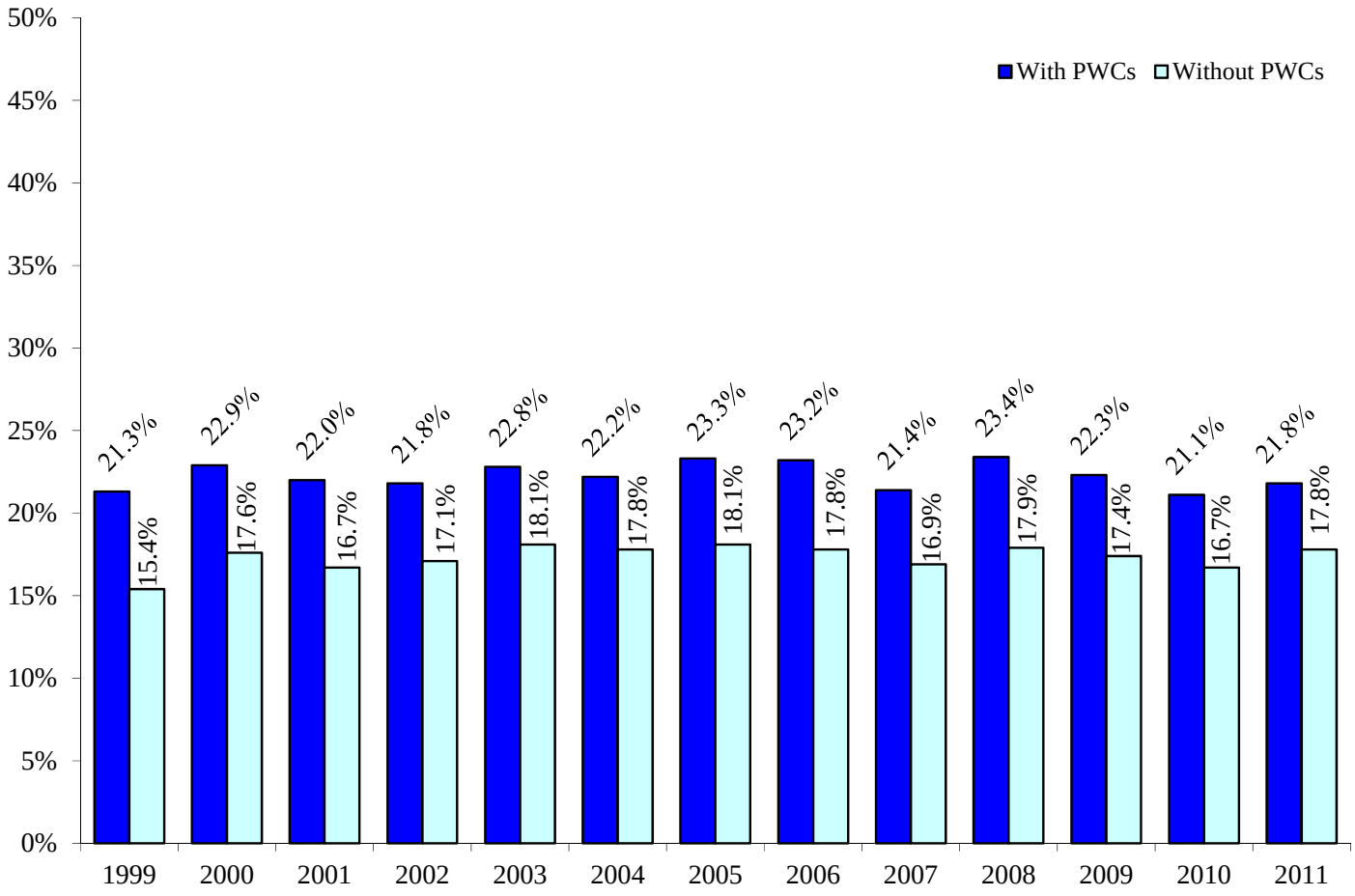
III. RESULTS

National Life Jacket Wear Rates for ALL Boaters 1999 to 2011

Figure B shows trends for national life jacket wear rates, including all groups of recreational boaters together (youth and adults) for two groups of boats—"all boats" and "all boats except PWCs". Presenting the two sets of data gives a clear indication of the impact of PWCs on the overall average wear rates. In subsequent tables in this report we remove PWCs from the findings since this will provide a more valid representation of the trends in voluntary wear rates.

The average life jacket wear rate for all boats and boaters combined for 2011 was 21.8%, a slight increase from 2010 (21.1%). The 2011 average wear rate excluding PWCs was 17.8%.

Figure B – Life Jacket Wear Rates for ALL Boaters



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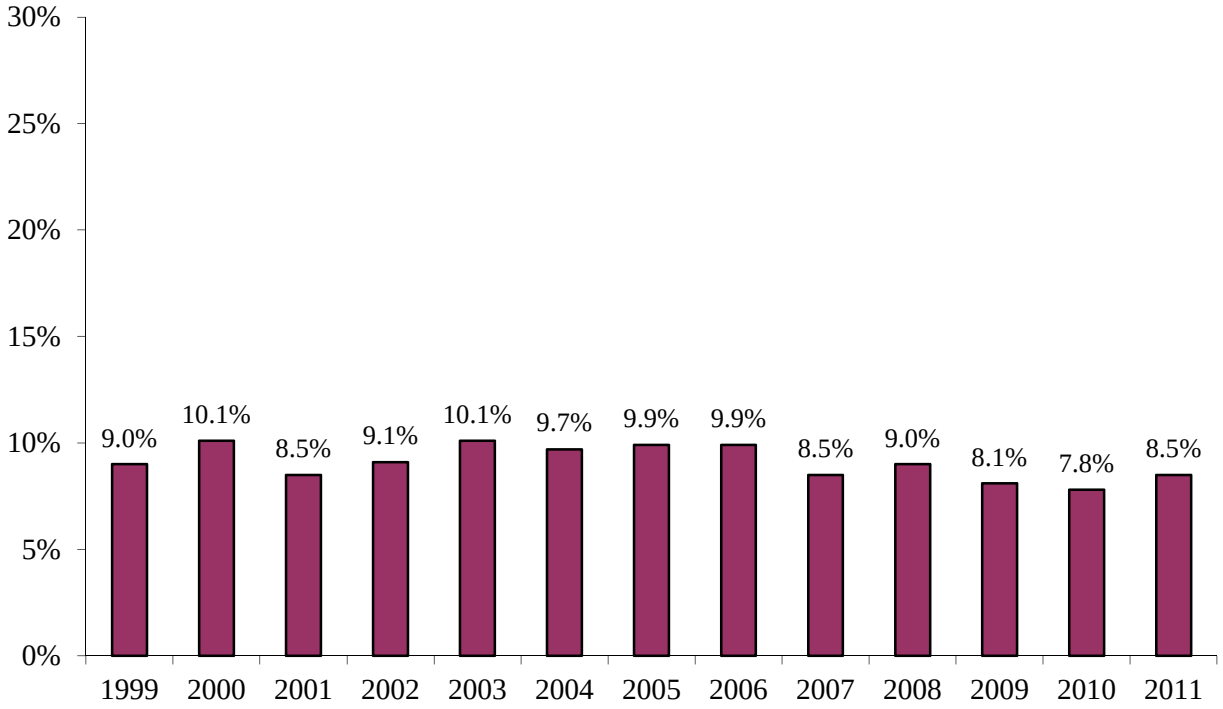
*Factors controlled for: Age & Boat Type.

National Life Jacket Wear Rates for ADULTS (18 years or older) 1999 to 2011

The national average wear rate for all adults on all boats excluding PWCs in 2011 was 8.5%. This was somewhat higher than the previous two years and counters to a generally decreasing trend since 2005 (see Figure C below). Discussions for individual boat type wear rates later in this report will show that this increase is due to higher counts of paddle craft and sailboats.

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



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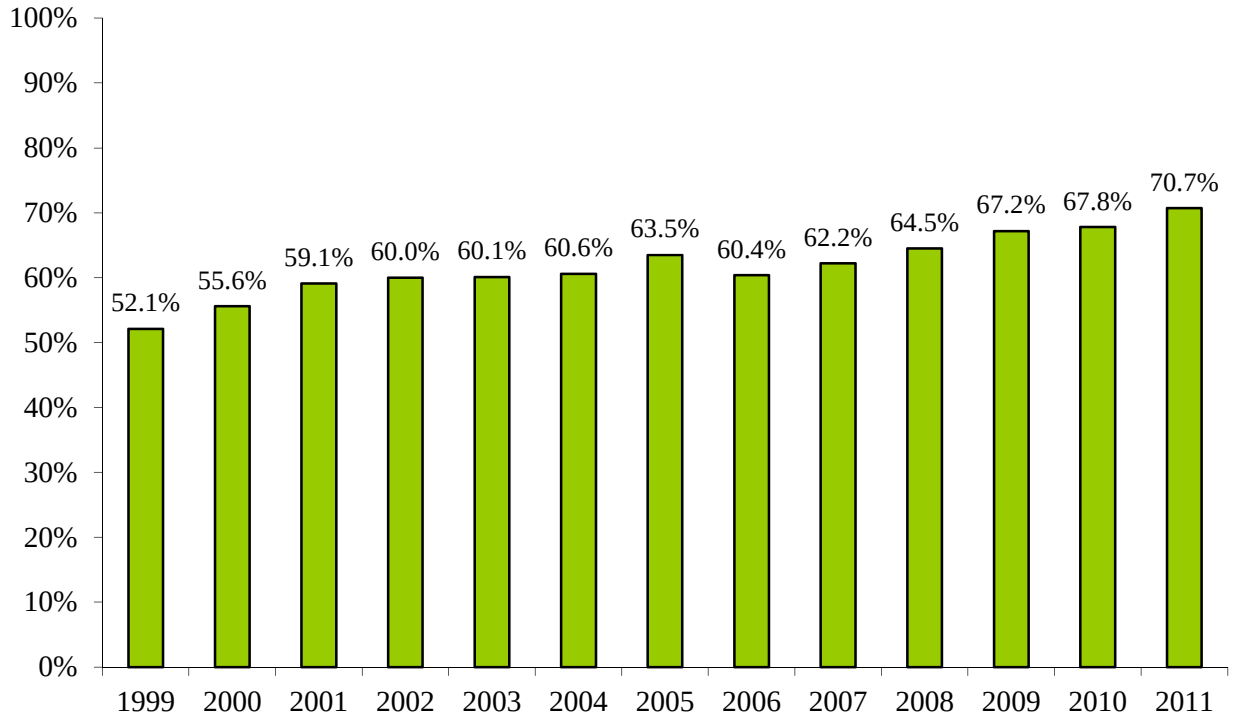
*Factors controlled for: Age & Boat Type.

National Life Jacket Wear Rates for YOUTH (17 years or younger) 1999 to 2011

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 thirteen years of data shown with a general upward trend. The rate for 2011 is 70.7%, the highest it has been since the beginning of the study, and approximately a 35% relative increase since 1999.

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



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*Factors controlled for: Age & Boat Type.

Life Jacket Wear Rates by Age Groupings 1999 to 2011

Table 1 presents wear rates by the different age groupings used in the study.

Youth trends continued their upward climb, as they have since the beginning of the study. Wear rates in 2011 are the highest they have ever been for each age group of youth (96.6% for children under age 6; 90.7% for children 6 to 12 years of age; and 41.4% for the 13 to 17 year old group).

As was mentioned earlier in the discussion for Figure D, all youth grouped together show a generally increasing trend with 2011 having the highest reading across the thirteen years at 70.7%.

For adults ages 18 to 64, the 2011 data reverses a generally downward trend since 2006 with a rate of 8.5%. As we will see later in this report, this increase is related to increased observations of paddle craft and sailboats.

For adults 65 years of age and older, the 2011 data show wear rates of 7.2%, lower than 2010 but higher than 2008 and 2009.

As indicated in Figure C shown earlier and in Table 1, when both adult groups are combined (18+ years), there is an increase from 2010 (7.8%) to 2011 (8.5%).

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)	2011 % (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)	96.6% (874)
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)	90.7% (2381)
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)	41.4% (1817)
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)	67.7% (5747)	70.7% (5072)
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)	8.5% (33267)
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)	7.2% (951)
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)	8.5% (34218)

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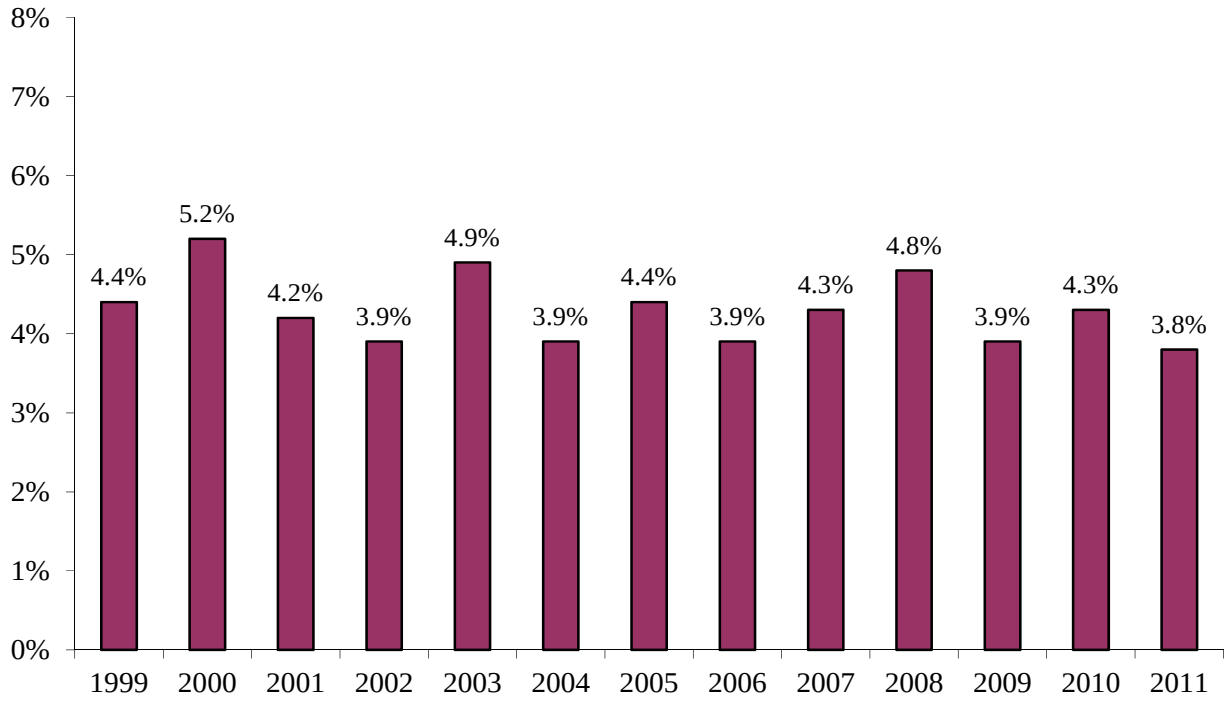
*Factors controlled for: Age & Boat Type.

Powerboats for Adults (18 years or older)

Figure E and Table 2 present information for all powerboats for adults. We see generally decreasing trends since 1999 with the 2011 rate for all powerboats being the lowest it has ever been (3.8%). For specific powerboat types, none of them show any increasing trends except possibly for PWCs which are seen to have a slight upward trend even though wear rates on these craft are almost universal. The two most popular craft in use (skiffs and speedboats) both show lower rates in 2011 than in 2010 and therefore, as previously described, wear rates on open-motorboats are lower as well. However, this decline may actually be a reflection of a shift to larger powerboats over this same time period. In 2004, 34% of the powerboats observed were 21 feet or greater, whereas in 2011 47% were 21 feet or greater.

Figure E – Adult Wear Rates for ALL Powerboats Except PWCs*



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*Factors controlled for: Age & Boat Type.

Table 2 - Life Jacket Wear Rates by Powerboats for Adults*

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)	2011 % (N's)
All Powerboats (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)	3.8% (28954)
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)	8.2% (6530)
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)	3.0% (14381)
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)	4.8% (20911)
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)	1.6% (5085)
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)	1.2% (309)
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)	1.4% (2734)
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)	97.7% (1524)
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)	14.3% (224)

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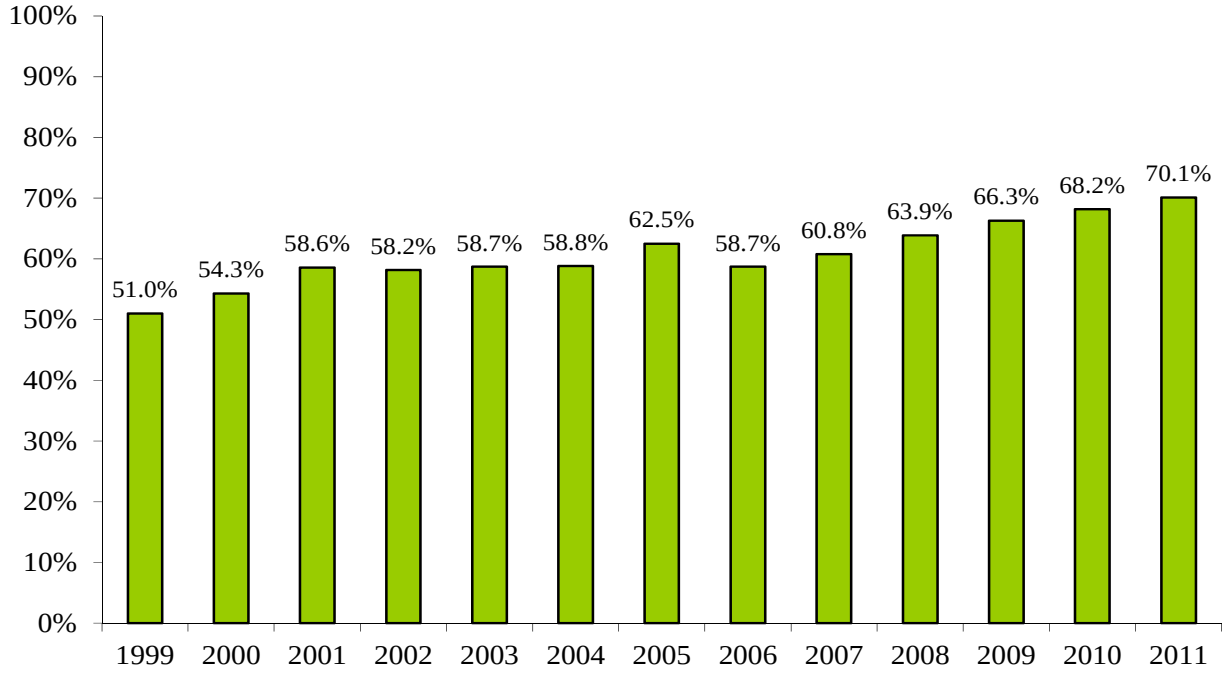
*Factors controlled for: Age & Boat Type.
** The Open Motorboat category is created by grouping "Skiffs" and "Speedboat/Runabouts" together. Factors controlled for in this chart are Age (proportions of 18 to 64 and 65+ adults) and the proportion of Skiffs to Speedboat/Runabouts has been set in each year 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.

Powerboats for Youth (17 years or younger)

Figure F and Table 3 present data for all powerboats for the three age groups of youth combined (17 years or younger). In contrast to the adult trends, wear rates for youth keep increasing with the overall rate for boats in 2011 being the highest it has ever been (70.1%). For specific boat types, 2011 showed the highest wear rates ever for youth on the three most common types of boats (skiffs, 75.4%; speedboats, 71.0% and cabin cruisers, 61.6%). Because of these increases, the open motorboat category (combination of skiffs and speedboats) also increased to its highest levels (71.6%).

Figure F – Youth Wear Rates for ALL Powerboats Except PWCs*



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*Factors controlled for: Age & Boat Type.

Table 3 - Life Jacket Wear Rates by Powerboats for Youth*

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)	2011 % (N's)
All Powerboats (no PWCs)	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)	70.1% (4589)
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)	75.4% (929)
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)	71.0% (2624)
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)	60.5% (4009)	61.9% (4464)	65.2% (4244)	68.6% (4230)	69.5% (3805)	71.6% (3553)
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)	61.6% (507)
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)	39.9% (19)
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)	65.7% (494)
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)	99.1% (376)
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)	73.1% (35)

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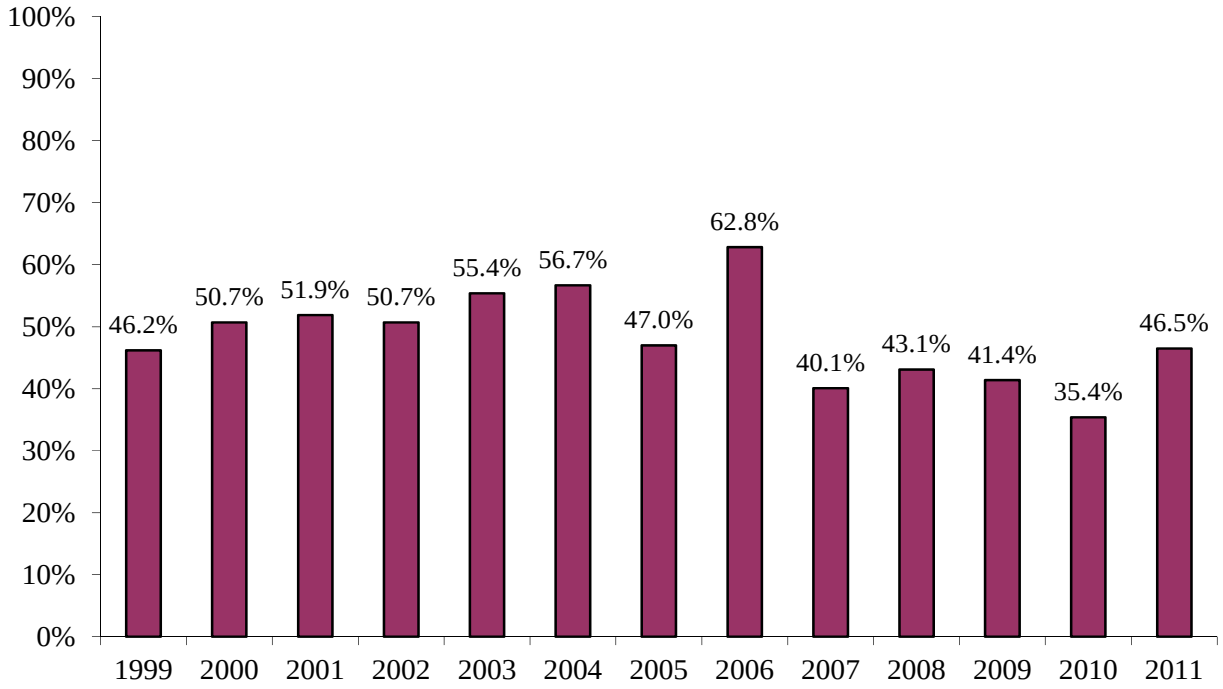
*Factors controlled for: Age & Boat Type.
** The Open Motorboat category is created by grouping "Skiffs" and "Speedboat/Runabouts" together. The proportion of Skiffs to Speedboat/Runabouts has been set to reflect the national proportions observed in 2006, the year in which the Strategic Plan goals were first measured but, in contrast to adults, 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 all paddle craft. The rates for all paddle craft combined increased noticeably from last year's rate (35.4% to 46.5%) returning to levels that were similar to the previous three years (2007-2009). This increase was primarily due to an increase in the canoe rates, largely due to observing fewer outrigger canoes in Hawaii, which have zero percent wear rates.

Figure G – Adult Wear Rates for ALL Paddle Craft*



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2011 National Observational Life Jacket Wear Rate Study
*Factors controlled for: Age & Boat Type.

Table 4 - Life Jacket Wear Rates by Paddle Craft for Adults*

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)	2011 % (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)	46.5% (1608)
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)	10.9% (324)
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)	34.3% (87)
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)	37.4% (386)
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)	68.6% (811)
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)	49.4% (1197)

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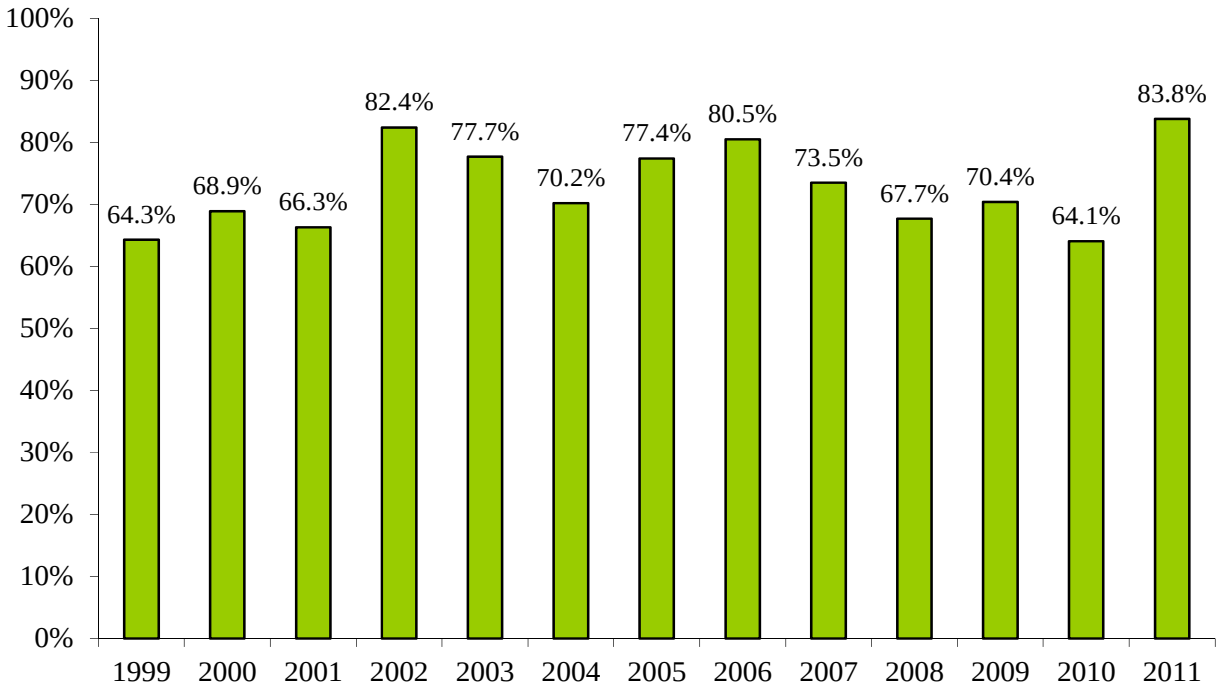
2011 National Observational Life Jacket Wear Rate Study
*Factors controlled for: Age & Boat Type.

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, but jumped to over 80% in 2011 from 64.1% in 2010. This increase is in large measure due to the increase in wear rates for canoes. The canoe increase can, in part, be traced to a high proportion of canoes with youth wearing life jackets at one site in Oklahoma that was visited during a teen outdoor event.

Figure H – Youth Wear Rates for ALL Paddle Craft*



JSI Research and Training Institute, Inc.
2011 National Observational Life Jacket Wear Rate Study
*Factors controlled for: Age & Boat Type.

Table 5 - Life Jacket Wear Rates by Paddle Craft for Youth*

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)	2011 % (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)	83.8% (231)
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)	68.5% (49)
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)	94.0% (15)
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)	95.2% (82)
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)	89.3% (85)
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)	88.8% (167)

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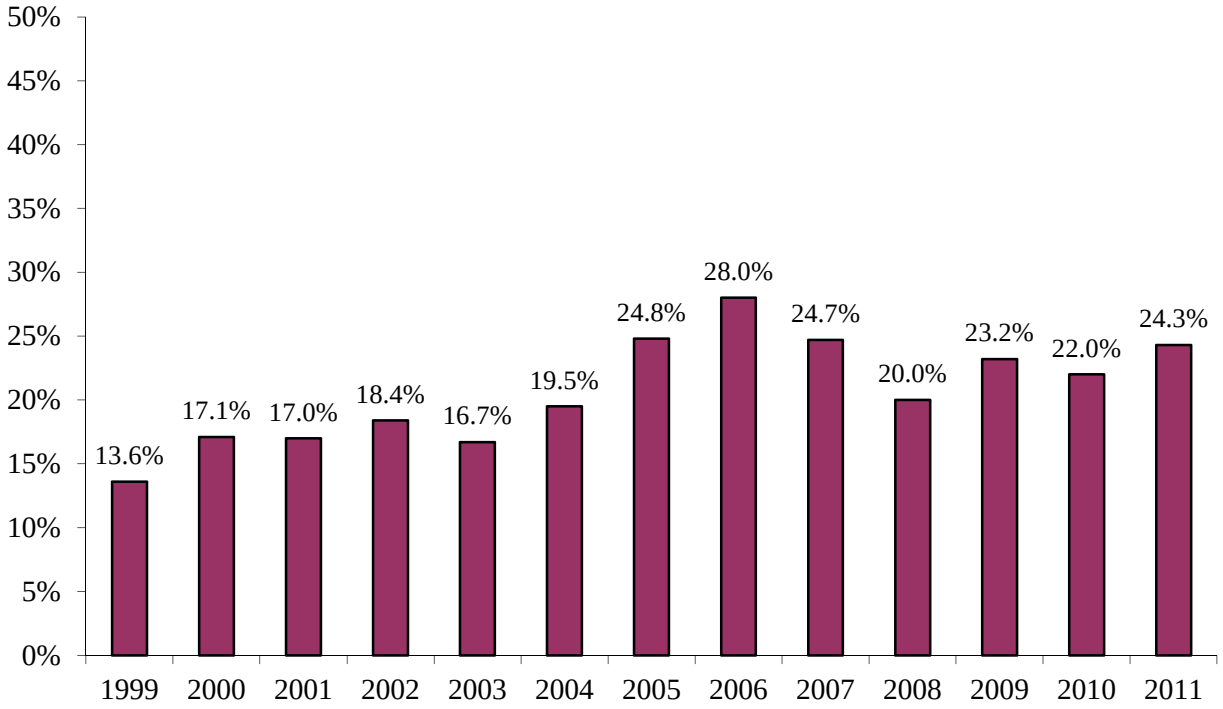
2011 National Observational Life Jacket Wear Rate Study
*Factors controlled for: Age & Boat Type.

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 an increase in the wear rate from the previous year of 22.0% in 2010 to 24.3% in 2011 (see Figure I below). From 2010 to 2011, all sailboat categories saw an increase in wear rates for adults. Day sailor rates for 2011 and 2009 are at the highest rates ever observed (61.3% and 61.7% respectively).

Figure I – Adult Wear Rates for ALL Sail Craft*



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2011 National Observational Life Jacket Wear Rate Study
*Factors controlled for: Age & Boat Type.

Table 6 - Life Jacket Wear Rates by Sail Craft for Adults*

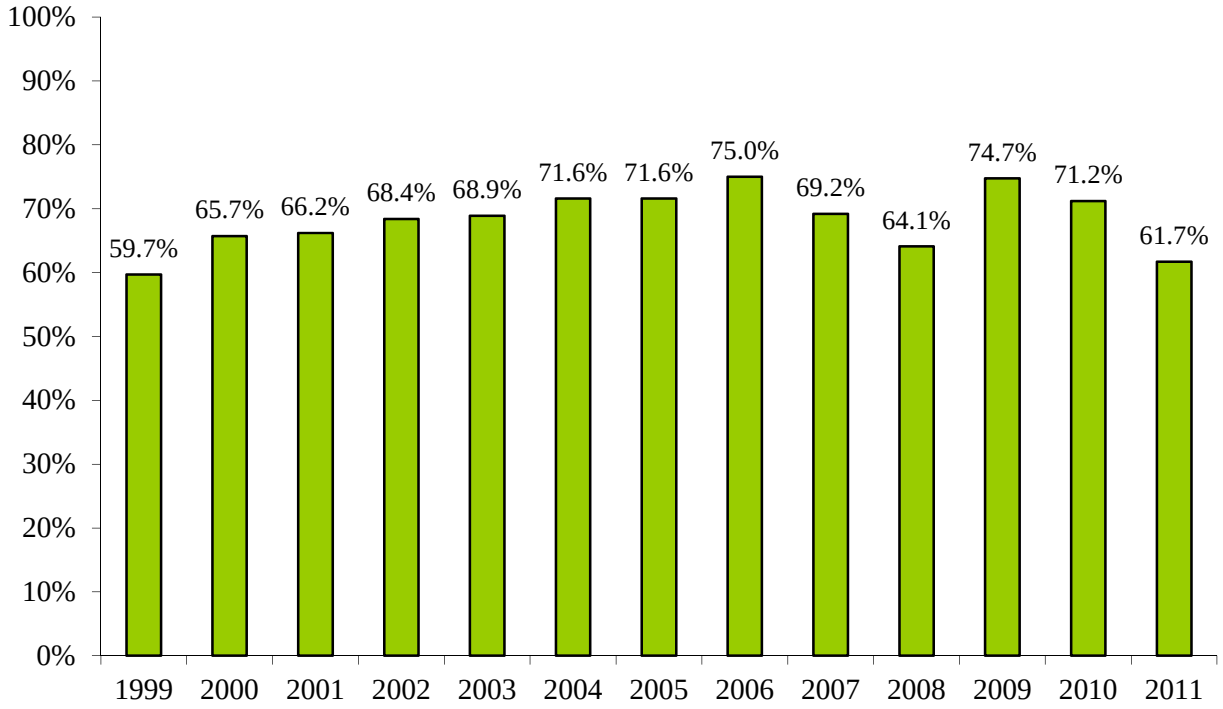
Boat Type	1999 % (N's)	2000 % (N's)	2001 % (N's)	2002 % (N's)	2003 % (N's)	2004 % (N's)	2005 % (N's)	2006 % (N's)	2007 % (N's)	2008 % (N's)	2009 % (N's)	2010 % (N's)	2011 % (N's)
All Sail Craft	13.6% (3420)	17.1% (3565)	17.0% (3843)	18.4% (4087)	16.7% (3149)	19.5% (4149)	24.8% (3084)	28.0% (3279)	24.7% (3217)	20.0% (3079)	23.2% (3733)	22.0% (3336)	24.3% (3231)
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)	100% (9)
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)	61.3% (736)
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)	13.4% (2486)

JSI Research and Training Institute, Inc.
2011 National Observational Life Jacket Wear Rate Study
*Factors controlled for: Age & Boat Type.

Sail Craft for Youth (17 years or younger)

In contrast to adults, Figure J and Table 7 below show that the national average wear rates on all sailboats for all youth decreased from 71.2% in 2010 to 61.7% in 2011. 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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2011 National Observational Life Jacket Wear Rate Study
*Factors controlled for: Age & Boat Type.

Table 7 - Life Jacket Wear Rates by Sail Craft for Youth*

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)	2011 % (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)	61.7% (219)
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)	-- (0)
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)	80.2% (57)
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)	54.9% (162)

JSI Research and Training Institute, Inc.
2011 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 adult wear rates by boat size for three general categories of boats: powerboats, sailboats, and paddle craft. Data are presented only for 2004 to 2011 since 2004 was the first year that observations were classified in two size categories as 16 to 21 feet and 21 to 26 feet, instead of one category 16 to 26 feet.

Wear rates show predictable relationships with size; rates decrease as size of the boat increases. However, the general level of wear is highly influenced by the type of craft. Powerboat wear rates range from a seven year average of 8.4% for boats less than 16 feet to 1.4% for boats over 26 feet in length. For sailboats, the seven year average goes from 73.0% for sailboats less than 16 feet to 11.3% for sailboats over 26 feet in length. For paddle craft, the seven year average for boats less than 16 feet is 49.2% and for boats in the 16 to 21 foot category it is 43.8%.

One interesting point to note (although not shown directly in Table 8) in the powerboat category: there is a shift in the proportion of boats over 21 feet from 34% in 2004 to 47% in 2011. This shift may contribute to a gradual decrease in wear rates among powerboaters across this time period.

Table 8 - Life Jacket Wear Rates by Boat Type and Size for Adults*
2004 to 2011

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)	2011 % (N's)	Total % (N's)
Powerboats									
<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% (2183)	8.4% (19255)
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)	5.2% (13255)	5.0% (108649)
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)	2.0% (8718)	2.7% (65290)
26+ ft.	0.8% (3407)	1.4% (2865)	1.6% (3268)	1.5% (3782)	1.5% (3650)	1.8% (4546)	1.3% (4473)	1.3% (4798)	1.4% (30789)
Sailboats									
<16 ft.	75.0% (481)	74.0% (376)	79.7% (265)	67.6% (77)	73.2% (163)	70.2% (247)	65.5% (299)	74.6% (160)	73.0% (2068)
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)	63.8% (390)	52.1% (2734)
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)	27.5% (846)	20.1% (8017)
26+ ft.	9.9% (1864)	3.2% (875)	11.5% (1614)	15.2% (2148)	11.6% (1629)	13.1% (2380)	11.0% (1925)	9.6% (1835)	11.3% (14270)
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)	42.6% (1021)	49.2% (10114)
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)	53.2% (587)	43.8% (3307)

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2011 National Observational Life Jacket Wear Rate Study
*Factors controlled for: Age & Boat Type

Changes in Inflatable Life Jacket Use for All Adult Boaters

In 2002 a change was made to the observation procedures to distinguish between wearing an inflatable life jacket or a traditional type of life jacket. In this section we examine whether the use of inflatable life jackets increased across time, and if so, are inflatables contributing to an increase in life jacket use overall?

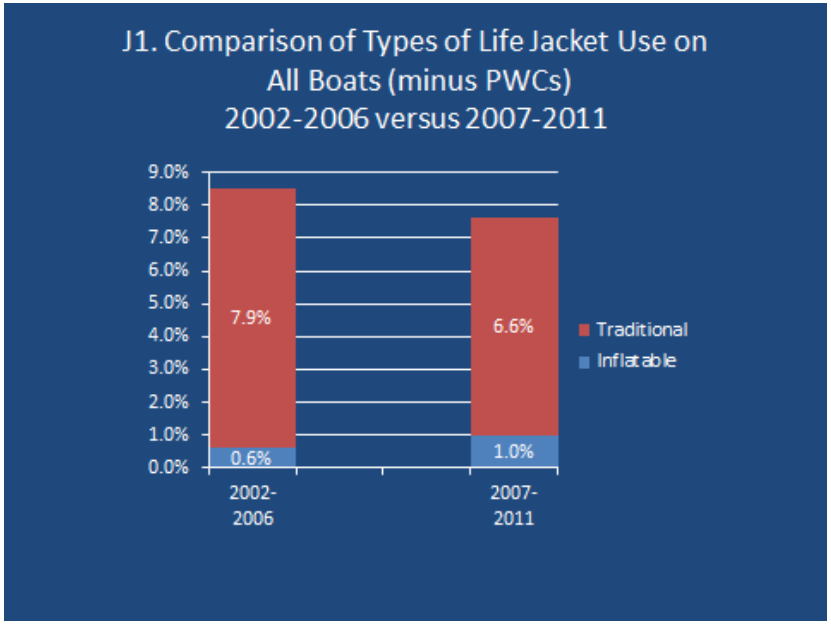
The charts on the next page, J1 and J2, indicate the differences in inflatable use for two periods of time—2002 to 2006 and 2007 to 2011. The first chart shows the absolute percent of all adult boaters (minus PWCs and in-the-water towed boaters) wearing either traditional style life jackets or the inflatable style. The second chart is limited to only those boaters wearing any type of life jacket and indicates the proportion of life jacket users who are wearing either traditional or inflatable styles.

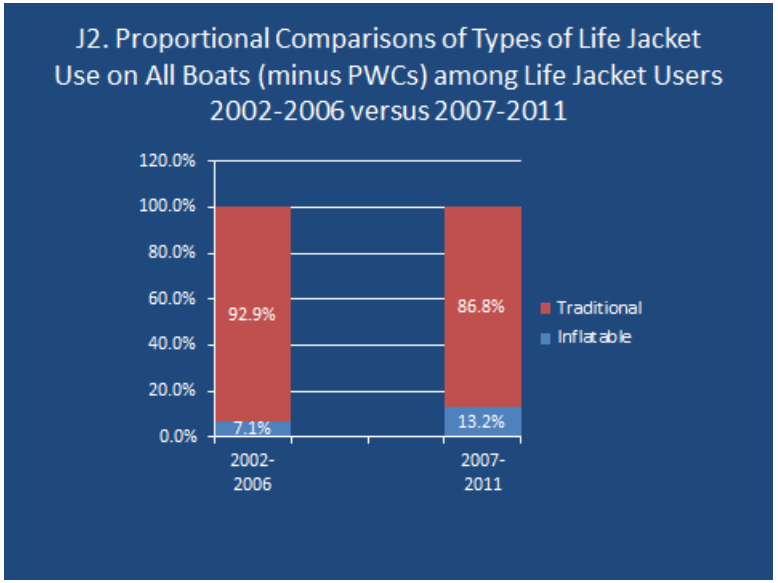
For all boaters, the absolute percent wearing inflatable life jackets has increased from 0.6% to 1.0% over the two time periods. At the same time, traditional life jacket wear rates have declined by a larger amount (7.9% decreasing to 6.6% or a decrease of 1.3%). So even though inflatable use almost doubled across all boaters, it was not enough of an increase to raise the total rate of life jacket wearers. Overall, then, it seems that the increase of inflatable life jacket use to date is essentially a "substitution" for traditional life jackets rather than a mechanism for increasing overall wear rates.

The second chart, J2, shows more clearly the increase in the proportion of life jacket users choosing an inflatable style. In the 2002-2006 period, 7.1% of the users were wearing inflatables, and this rate increases to 13.2% in the 2007 to 2011 period.

Charts on the following pages show changes in the use of inflatable styles for specific types of boats that have a sizeable absolute number of inflatable life jacket users or proportion of all users---skiffs, speedboats, cabin sailboats, and cabin cruisers.

As the data and summaries that follow will show, increases in inflatable use account for increases in overall wear rates for boaters on skiffs and cabin sailboats but not on cabin cruisers or speedboat/runabouts.

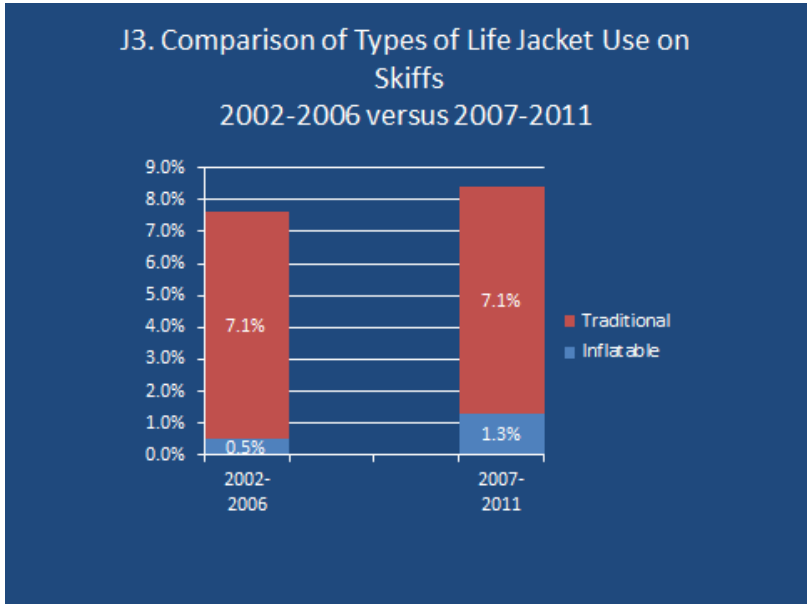

J1. Comparison of Types of Life Jacket Use on All Boats (minus PWCs) 2002-2006 versus 2007-2011
9.0%
8.0%
7.0%
6.0%
5.0%
4.0%
3.0%
2.0%
1.0%
0.0%
7.9%
0.6%
6.6%
1.0%
2002-2006
2007-2011
Traditional
Inflatable

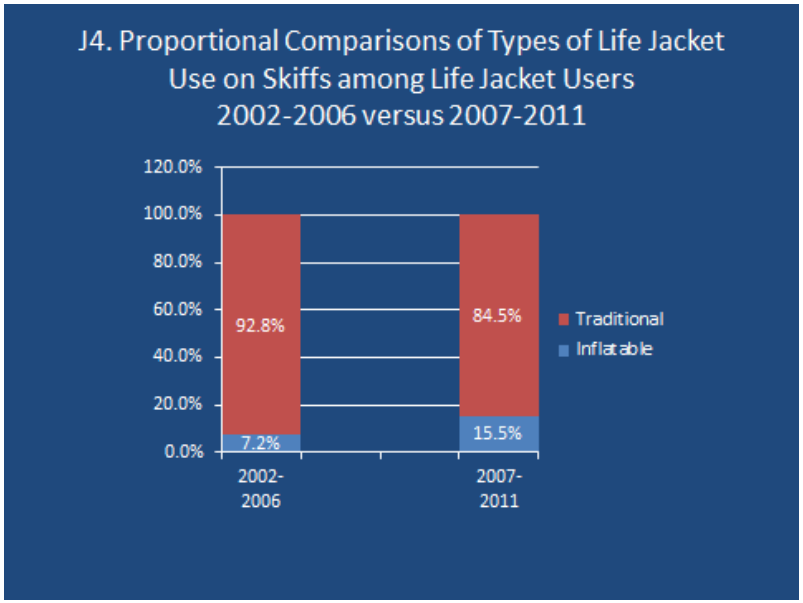

J2. Proportional Comparisons of Types of Life Jacket Use on All Boats (minus PWCs) among Life Jacket Users 2002-2006 versus 2007-2011
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
92.9%
7.1%
86.8%
13.2%
2002-2006
2007-2011
Traditional
Inflatable

Changes in Inflatable Life Jacket Use for Boaters on Skiffs

Inflatable and traditional style life jacket use is shown for skiffs in charts J3 and J4. Over the two time periods, the rate of use of traditional life jackets stayed the same at 7.1%. However, inflatable life jacket use increased in absolute wear rates from 0.5% to 1.3%, almost a tripling of use. In contrast to the findings for all boaters, inflatable life jacket use for boaters on skiffs seems to have contributed to an absolute increase in wear rates.

Chart J4 shows the relative increase moving from 7.2% of users in the 2002 to 2006 time period to 15.5% of users in the 2007 to 2011 time period. Although not shown in graphical form in this report, for those boaters on skiffs who are involved in fishing or intent to fish during the 2007 to 2011 time period, the proportion of life jacket users who are wearing inflatable styles increases to 21.2%

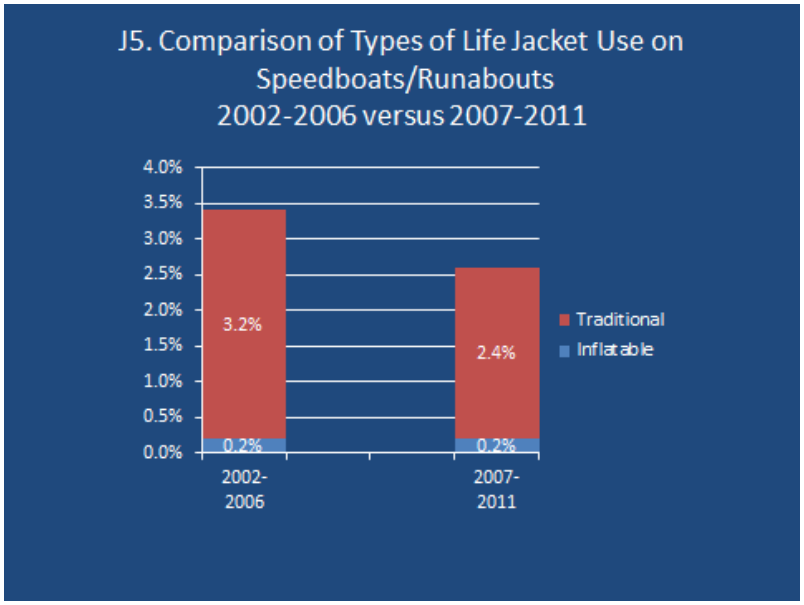

J3. Comparison of Types of Life Jacket Use on Skiffs
2002-2006 versus 2007-2011
9.0%
8.0%
7.0%
6.0%
5.0%
4.0%
3.0%
2.0%
1.0%
0.0%
7.1%
0.5%
7.1%
1.3%
2002-2006
2007-2011
Traditional
Inflatable

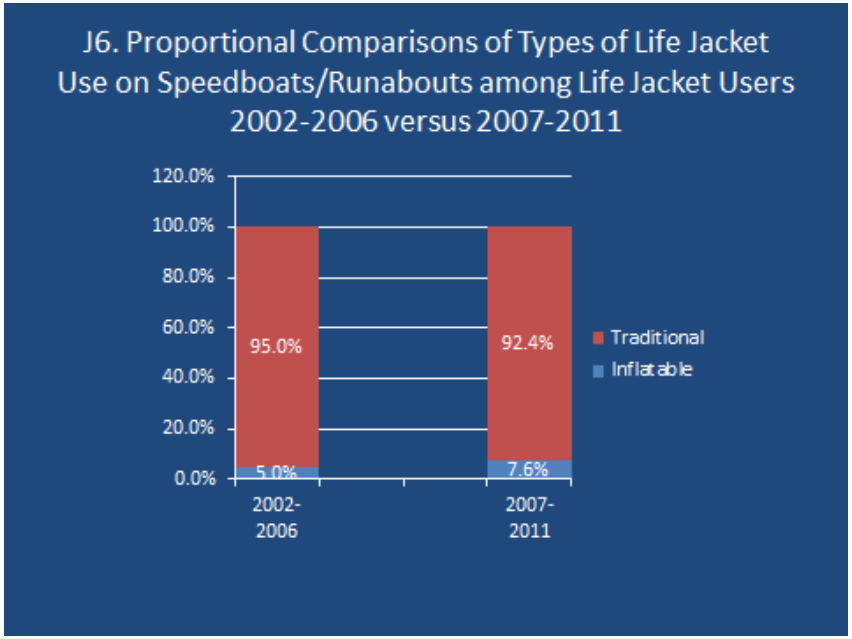

J4. Proportional Comparisons of Types of Life Jacket Use on Skiffs among Life Jacket Users
2002-2006 versus 2007-2011
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
92.8%
7.2%
84.5%
15.5%
2002-2006
2007-2011
Traditional
Inflatable

Changes in Inflatable Life Jacket Use for Boaters on Speedboats/Runabouts

Inflatable and traditional style life jacket use is shown for speedboats/runabouts in charts J5 and J6. Over the two time periods, the rate of use of traditional life jackets actually decreases from 3.2% to 2.4% (as discussed earlier, some of this is due to a proportional shifting of boaters to larger sized craft). However, inflatable life jacket use stayed the same in these two periods with an absolute wear rate of 0.2%.

Chart J6 shows the relative increase moving from 5.0% of users in the 2002 to 2006 time period to 7.6% of users in the 2007 to 2011 time period. Although not shown in graphical form in this report, for those boaters on speedboats/runabouts who are involved in fishing or intent to fish during the 2007 to 2011 time period, the proportion of life jacket users who are wearing inflatable styles increases to 19.4%.

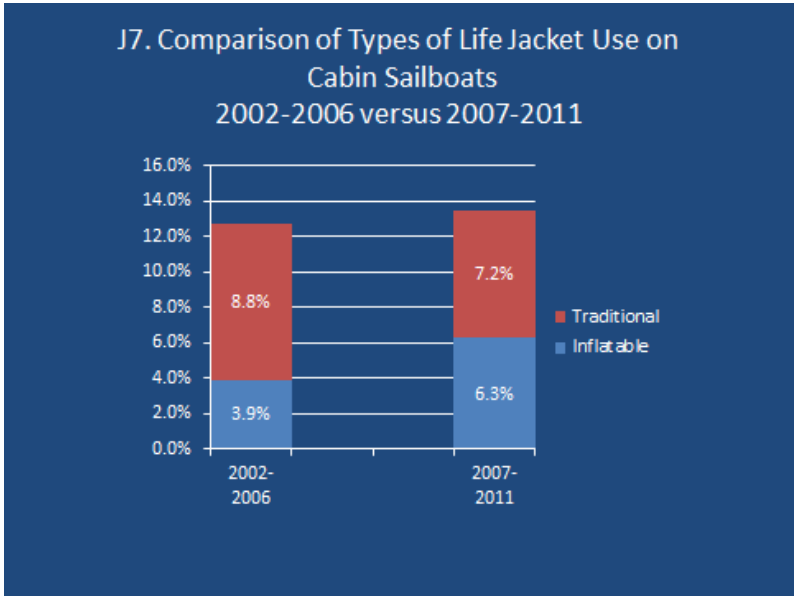

J5. Comparison of Types of Life Jacket Use on Speedboats/Runabouts 2002-2006 versus 2007-2011
4.0%
3.5%
3.0%
2.5%
2.0%
1.5%
1.0%
0.5%
0.0%
3.2%
0.2%
2.4%
0.2%
2002-2006
2007-2011
Traditional
Inflatable

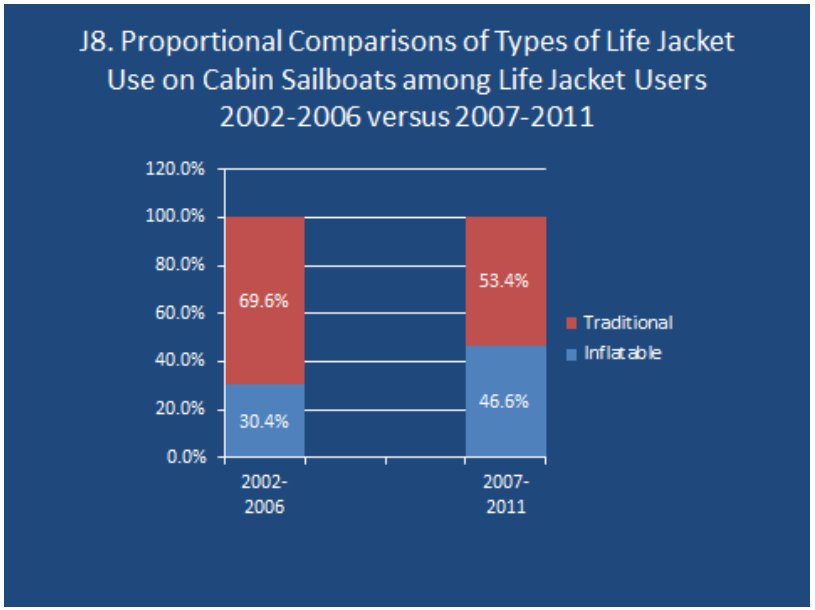

J6. Proportional Comparisons of Types of Life Jacket Use on Speedboats/Runabouts among Life Jacket Users 2002-2006 versus 2007-2011
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
95.0%
5.0%
92.4%
7.6%
2002-2006
2007-2011
Traditional
Inflatable

Changes in Inflatable Life Jacket Use for Boaters on Cabin Sailboats

Inflatable and traditional style life jacket use is shown for cabin sailboats in charts J7 and J8. Over the two time periods, the rate of use of any life jackets increases from 12.7% to 13.5%. However, traditional life jacket use actually decreases across these two time periods from 8.8% to 7.2%. On the other hand, inflatable life jacket use increased substantially from 3.9% to 6.3%. This means that about half of the increase in inflatable use was the substitution of traditional life jacket wear and the other half represents an increase in overall wearing behaviors.

Chart J8 shows the relative increase moving from 30.4% of users in the 2002 to 2006 time period to 46.6% of users in the 2007 to 2011 time period.

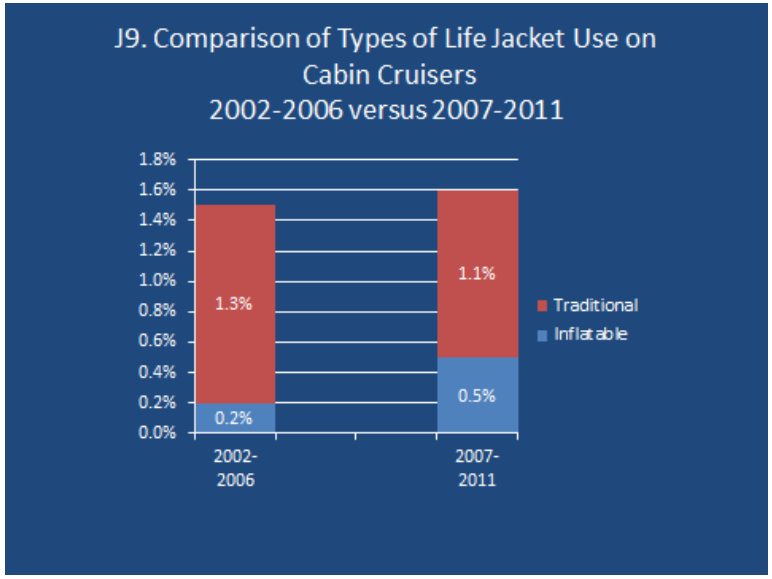

J7. Comparison of Types of Life Jacket Use on Cabin Sailboats
2002-2006 versus 2007-2011
16.0%
14.0%
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
8.8%
3.9%
7.2%
6.3%
2002-2006
2007-2011
Traditional
Inflatable

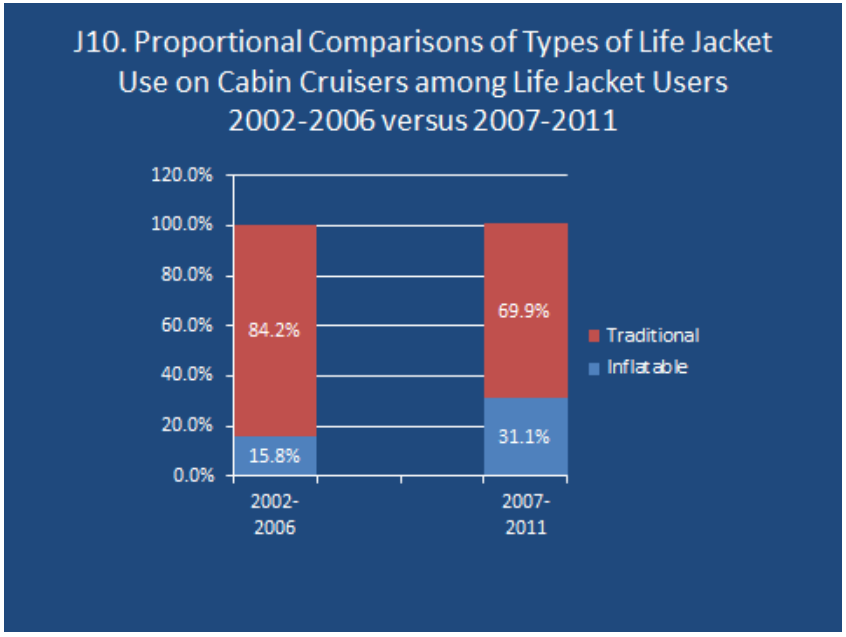

J8. Proportional Comparisons of Types of Life Jacket Use on Cabin Sailboats among Life Jacket Users
2002-2006 versus 2007-2011
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
69.6%
30.4%
53.4%
46.6%
2002-2006
2007-2011
Traditional
Inflatable

Changes in Inflatable Life Jacket Use for Boaters on Cabin Cruisers

Inflatable and traditional style life jacket use is shown for cabin cruisers in charts J9 and J10. Over the two time periods, the rate of use of any life jackets essentially stayed the same (1.5% versus 1.6%). However, traditional life jacket use decreases slightly across these two time periods from 1.3% to 1.1%. On the other hand, inflatable life jacket use increased from 0.2% to 0.5%. This means that although inflatable use increased, it was primarily about substitution behavior and not about increasing overall wear.

Chart J10 shows the relative increase moving from 15.4% of users in the 2002 to 2006 time period to 31.1% of users in the 2007 to 2011 time period.


J9. Comparison of Types of Life Jacket Use on Cabin Cruisers
2002-2006 versus 2007-2011
1.8%
1.6%
1.4%
1.2%
1.0%
0.8%
0.6%
0.4%
0.2%
0.0%
1.3%
0.2%
1.1%
0.5%
2002-2006
2007-2011
Traditional
Inflatable


J10. Proportional Comparisons of Types of Life Jacket Use on Cabin Cruisers among Life Jacket Users
2002-2006 versus 2007-2011
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
84.2%
15.8%
69.9%
31.1%
2002-2006
2007-2011
Traditional
Inflatable

IV. NOTE ON NATIONAL BOATING SAFETY ADVISORY COUNCIL MANDATORY LIFE JACKET WEAR RECOMMENDATIONS

Table 8 has relevance to policy makers' considerations of mandating life jacket wear for boats of certain types and sizes. One recommendation that has been made by the National Boating Safety Advisory Council to the U.S. Coast Guard is to make it mandatory for boaters to wear life jackets on powerboats less than 18 feet. Since our size categories are less than 16 feet and between 16 and 21 feet, we can estimate the number of boaters potentially affected by this proposed regulation as well as other size standards (less than 16 ft, less than 18 ft, and less than 21 ft). The under 18 foot numbers were estimated based on 2/5's of the boaters being on boats 16 through 17.9 feet in length and 3/5's of the boaters being on boats 18 feet through 20.9 feet.

If mandatory regulations were instituted for powerboats less than 16 feet, then based on our 2011 observation numbers for adults and leaving out PWCs, 7.5% of the powerboat users would be affected by the new regulation. If the mandatory regulations were instituted for powerboats less than 18 feet, then 25.8% of the adult powerboat users would be affected (again leaving out PWCs). Finally, if the regulation were instituted for powerboats less than 21 feet, then 53.3% of the adult powerboat users would be affected (again leaving out PWCs).

V. CONCLUSIONS FOR LIFE JACKET WEAR RATES - NATIONAL TREND DATA 1999 TO 2011

This report includes observational data collected from 1999 to 2011. Trends in life jacket wear for types of boats and for various age groups were displayed. A summary of key findings are:

1. For all youth combined (17 years or younger), wear rates continued their steady upward climb to their highest levels since the study began in 1999. Since 1999, wear rates for youth have increased from 52.1% to 70.7% this year. In all likelihood this is a reflection of both changing legal mandates at the state and federal level and effects of targeted educational campaigns.

2. The adult life jacket wear rate for all powerboats (excluding PWCs) is at its lowest point (3.8%) in thirteen years of observations, continuing a general downward drift of wear rates since 1999. However, some of this decline can be attributed to a gradual shifting over this same time period in the proportion of powerboats that are larger than 21 feet in length—a category of powerboats that have even lower wear rates than those less than 21 feet.

3. National adult wear rates continue to be higher in boats that are easier to capsize or for which there is mandated wear – PWCs, kayaks, and day sailors. However, powerboats less than 16 feet in length (excluding PWCs) show relatively low wear rates (8.4% in 2011).

4. Wear rates on PWCs for both adults and children are almost universal.

5. Wear/use of inflatable life jackets has nearly doubled in 2007 to 2011 compared to 2002 to 2006. For the most part, this increase does not translate into increases in overall wear rates, but rather is a substitution among wearers for the traditional types of life jackets. The exception to this substitution effect is inflatable use among those on skiffs or cabin sailboats in which the adoption of inflatable life jacket use has contributed to an increase in overall wear levels for these types of boats.

VI. 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 an experienced 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** (less than 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** (less than 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 2004 the USCG requested that JSI breakout the boat size categories from three (less than 16 feet, 16-25 feet and over 26 feet) to four categories (less than 16 feet, 16-20 feet, 21-25 feet and over 26 feet). Observations made in 2004 to 2011 are the only years to record observations using the expanded boat size categories. Finally, in 2007, we added an "intent to fish" category distinct from "pleasure". Intent to fish was indicated when a boat could be observed with obvious fishing gear (fishing rods, trolling motors, etc.) even though at the moment of observation, the boaters were not fishing.

JSI Data Collection Form: 2011 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

35777

POWER BOAT:		PADDLE:	SAIL:	OTHER:
○ Skiff/Utility	○ PWC	○ Kayak	○ Day sailor	○ Inflatable/Raft
○ Runabout/Speedboat	○ Pontoon	○ Canoe	○ Cabin sailboat	○ Houseboat
○ Cabin cruiser		○ Rowboat/Dinghy	○ Sailboard	○ Other

SIZE (ft):	PROPULSION:	OPERATION:	ACTIVITY:	
○ Under 16	○ Outboard	○ Cruising/Motoring	○ Pleasure	○ Fishing
○ 16 - 20.9	○ Sterndrive/Inboard ○ Sail Only	○ Sailing	○ Water skiing	○ Intent to Fish
○ 21 - 25.9	○ Sail and Motor	○ Rowing/Paddling	○ White water	○ Swimming
○ 26 - 45.9	○ Paddles, Oars/Manual ○ Air Thrust	○ Drifting	○ Racing or High Speed	○ Other
○ 46 +	○ Other	○ Anchored		

	GENDER			AGE(years)					PFD			WS
	M	F	?	0-5	6-12	13-17	18-64	65+	Old	New	No	
OP	○	○	○	○	○	○	○	○	○	○	○	Yes
P1	○	○	○	○	○	○	○	○	○	○	○	○
P2	○	○	○	○	○	○	○	○	○	○	○	○
P3	○	○	○	○	○	○	○	○	○	○	○	○
P4	○	○	○	○	○	○	○	○	○	○	○	○
P5	○	○	○	○	○	○	○	○	○	○	○	○
P6	○	○	○	○	○	○	○	○	○	○	○	○
P7	○	○	○	○	○	○	○	○	○	○	○	○
P8	○	○	○	○	○	○	○	○	○	○	○	○
P9	○	○	○	○	○	○	○	○	○	○	○	○

POWER BOAT:		PADDLE:	SAIL:	OTHER:
○ Skiff/Utility	○ PWC	○ Kayak	○ Day sailor	○ Inflatable/Raft
○ Runabout/Speedboat	○ Pontoon	○ Canoe	○ Cabin sailboat	○ Houseboat
○ Cabin cruiser		○ Rowboat/Dinghy	○ Sailboard	○ Other

SIZE (ft):	PROPULSION:	OPERATION:	ACTIVITY:	
○ Under 16	○ Outboard	○ Cruising/Motoring	○ Pleasure	○ Fishing
○ 16 - 20.9	○ Sterndrive/Inboard ○ Sail Only	○ Sailing	○ Water skiing	○ Intent to Fish
○ 21 - 25.9	○ Sail and Motor	○ Rowing/Paddling	○ White water	○ Swimming
○ 26 - 45.9	○ Paddles, Oars/Manual ○ Air Thrust	○ Drifting	○ Racing or High Speed	○ Other
○ 46 +	○ Other	○ Anchored		

	GENDER			AGE(years)					PFD			WS
	M	F	?	0-5	6-12	13-17	18-64	65+	Old	New	No	
OP	○	○	○	○	○	○	○	○	○	○	○	Yes
P1	○	○	○	○	○	○	○	○	○	○	○	○
P2	○	○	○	○	○	○	○	○	○	○	○	○
P3	○	○	○	○	○	○	○	○	○	○	○	○
P4	○	○	○	○	○	○	○	○	○	○	○	○
P5	○	○	○	○	○	○	○	○	○	○	○	○
P6	○	○	○	○	○	○	○	○	○	○	○	○
P7	○	○	○	○	○	○	○	○	○	○	○	○
P8	○	○	○	○	○	○	○	○	○	○	○	○
P9	○	○	○	○	○	○	○	○	○	○	○	○

POWER BOAT:		PADDLE:	SAIL:	OTHER:
○ Skiff/Utility	○ PWC	○ Kayak	○ Day sailor	○ Inflatable/Raft
○ Runabout/Speedboat	○ Pontoon	○ Canoe	○ Cabin sailboat	○ Houseboat
○ Cabin cruiser		○ Rowboat/Dinghy	○ Sailboard	○ Other

SIZE (ft):	PROPULSION:	OPERATION:	ACTIVITY:	
○ Under 16	○ Outboard	○ Cruising/Motoring	○ Pleasure	○ Fishing
○ 16 - 20.9	○ Sterndrive/Inboard ○ Sail Only	○ Sailing	○ Water skiing	○ Intent to Fish
○ 21 - 25.9	○ Sail and Motor	○ Rowing/Paddling	○ White water	○ Swimming
○ 26 - 45.9	○ Paddles, Oars/Manual ○ Air Thrust	○ Drifting	○ Racing or High Speed	○ Other
○ 46 +	○ Other	○ Anchored		

	GENDER			AGE(years)					PFD			WS
	M	F	?	0-5	6-12	13-17	18-64	65+	Old	New	No	
OP	○	○	○	○	○	○	○	○	○	○	○	Yes
P1	○	○	○	○	○	○	○	○	○	○	○	○
P2	○	○	○	○	○	○	○	○	○	○	○	○
P3	○	○	○	○	○	○	○	○	○	○	○	○
P4	○	○	○	○	○	○	○	○	○	○	○	○
P5	○	○	○	○	○	○	○	○	○	○	○	○
P6	○	○	○	○	○	○	○	○	○	○	○	○
P7	○	○	○	○	○	○	○	○	○	○	○	○
P8	○	○	○	○	○	○	○	○	○	○	○	○
P9	○	○	○	○	○	○	○	○	○	○	○	○

PFD Study 2011

CODE State | Site | Block | Group | Phase | Page Number

JSI Data Collection Form: 2011 Site Form

PFD Study 2011 # 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: O Sat. O Sun.

Observation start time: ☐☐ : ☐☐ O AM O PM Observation end time: ☐☐ : ☐☐ O AM O PM

2. Type of Body of Water

O Bay, inlet or sound O River, stream, creek or canal O Other: _____

O Harbor O Lake, pond, or reservoir (not Great Lakes)

O Intercoastal waterway O 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:

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

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

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

VII. INFORMATION ON BOATS & PEOPLE OBSERVED

From 1999 to 2011, JSI has observed a total of 188,409 boats and 529,124 boaters (Figure K). This year, 2011, 14,080 boats carrying 41,192 boaters were observed. Across the thirteen years, the number of boats, and the number of boaters observed have generally increased particularly compared to the early years. 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 thirteen year span.

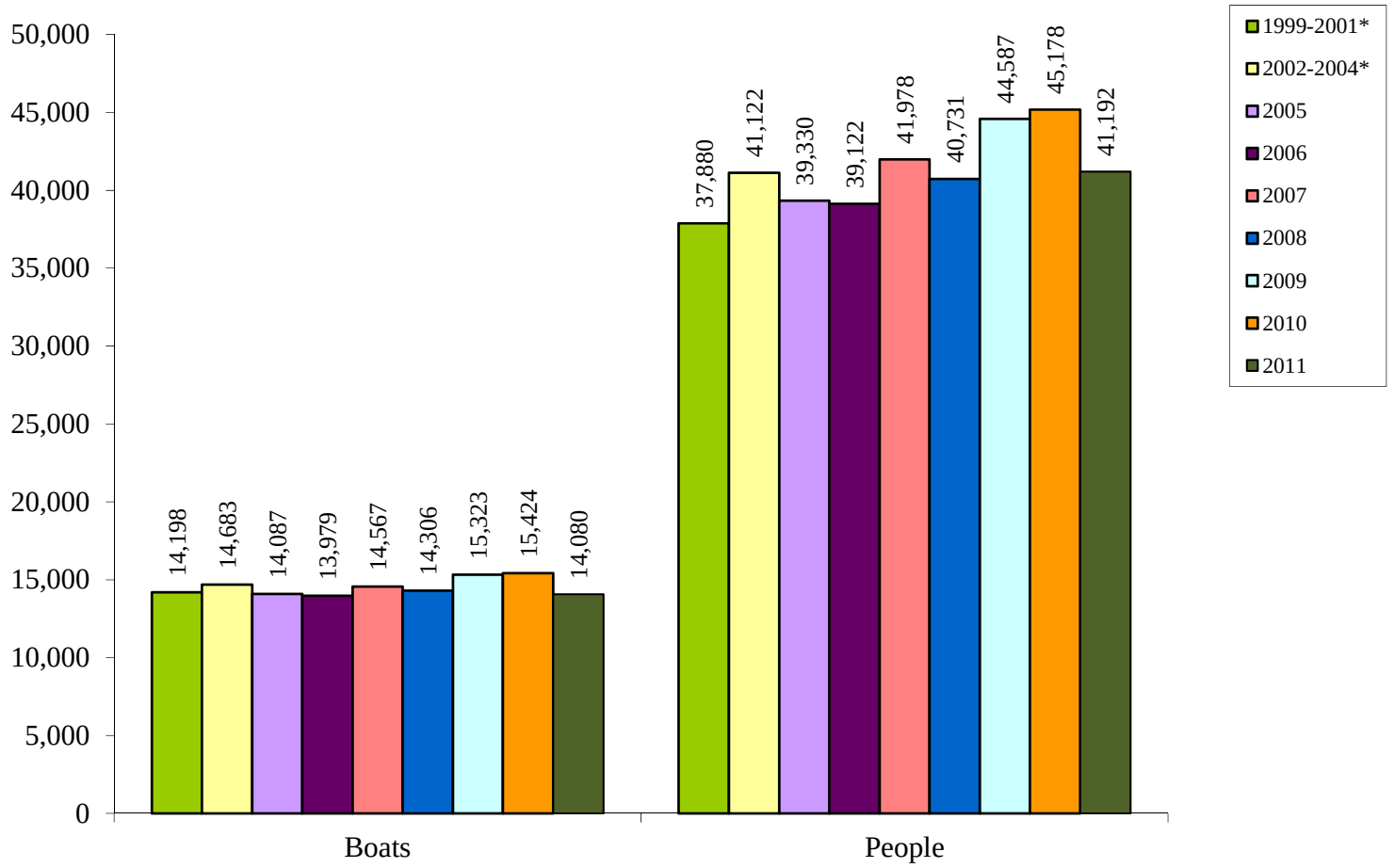
There is one shift that is apparent over the thirteen years that can be seen in Figures M and N. There has been a decrease in boats less than 16 feet in length observed and, as seen in Figure N, since 2004 there has also been a decrease in boats observed between 16 and 21 feet in length. This is matched with increases in boats observed in the 21 to 25 foot category as well as the 26 foot + category.

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 changes in these factors from year to year could account for sizable fluctuations in wear rates at individual sites.

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.

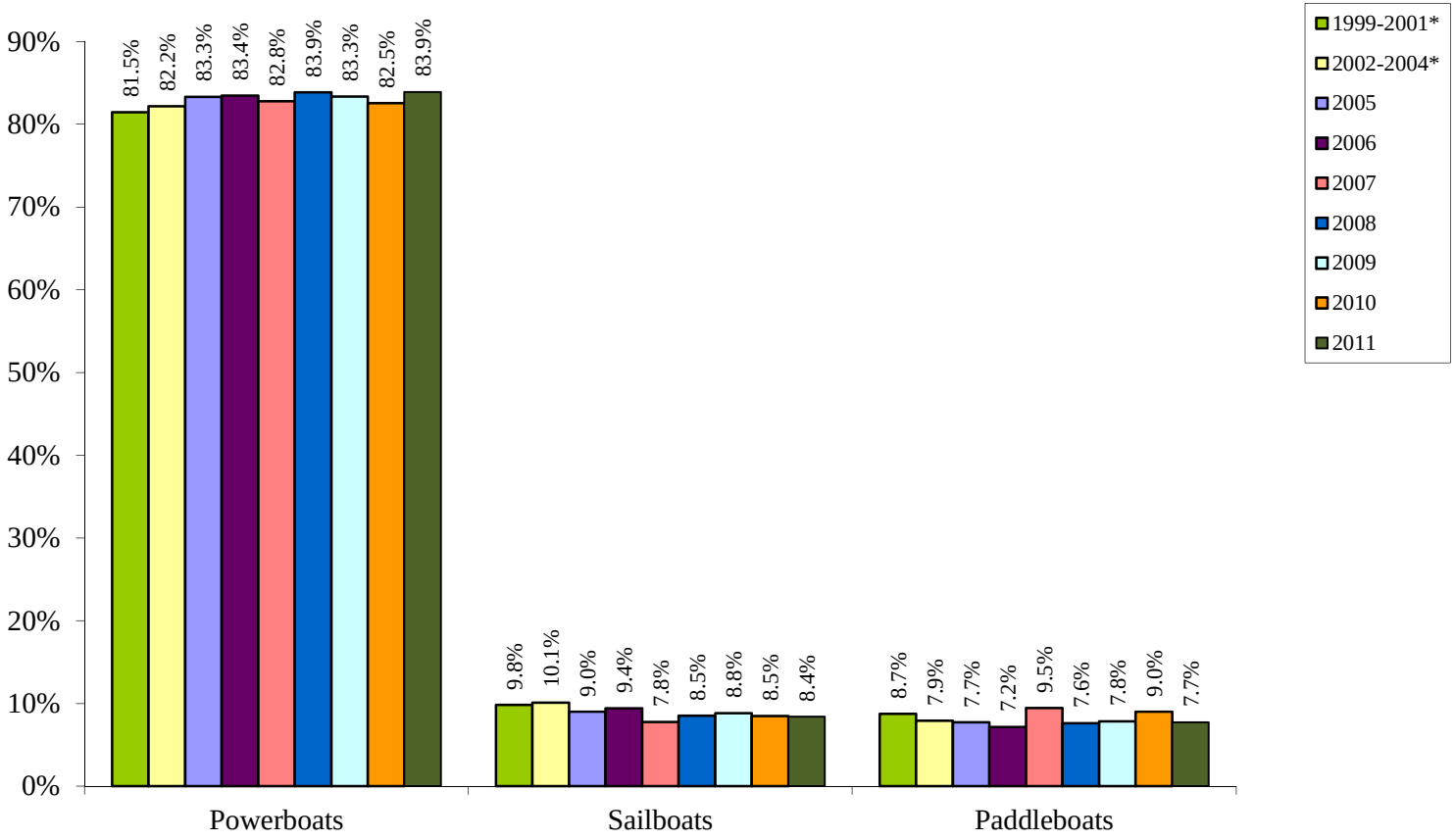
Figure L is constructed differently from previous years. It now compares only speedboats, sailboats, and paddle boats, and excludes "other" types of boats.

Figure K – Number of Boats and People



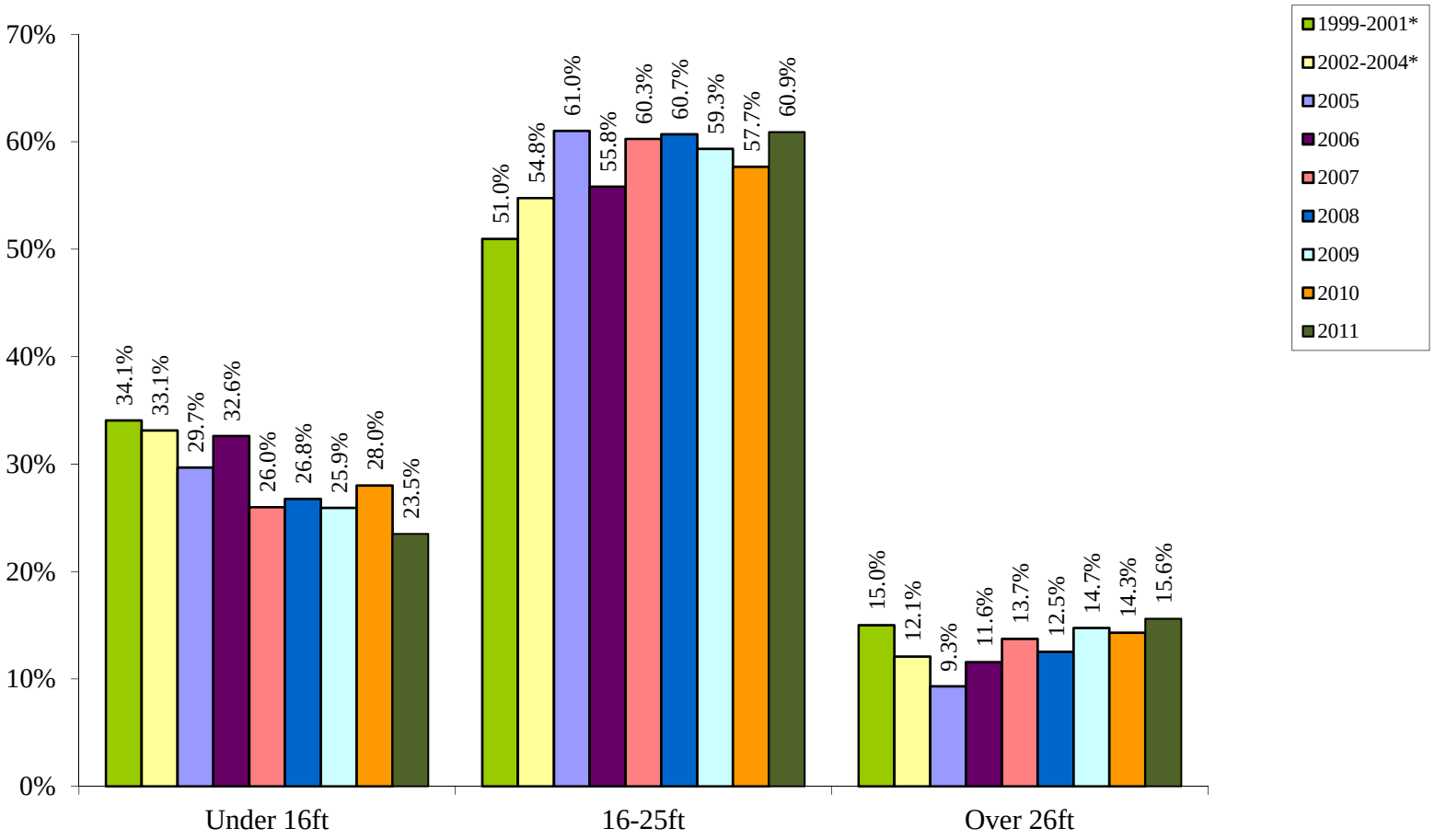
*Three-year average

Figure L – Types of Boats



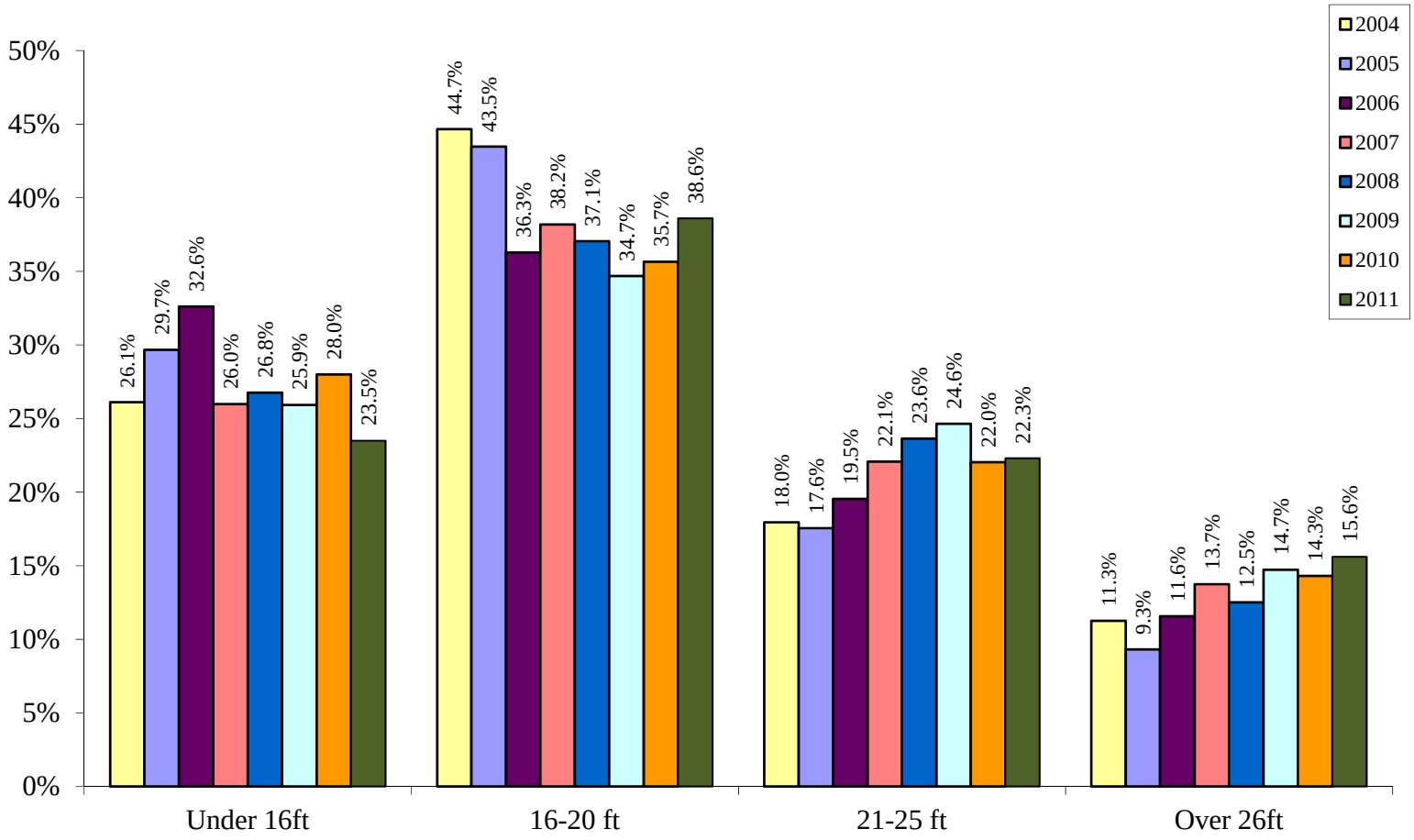
*Three-year average

Figure M – Length of Boats



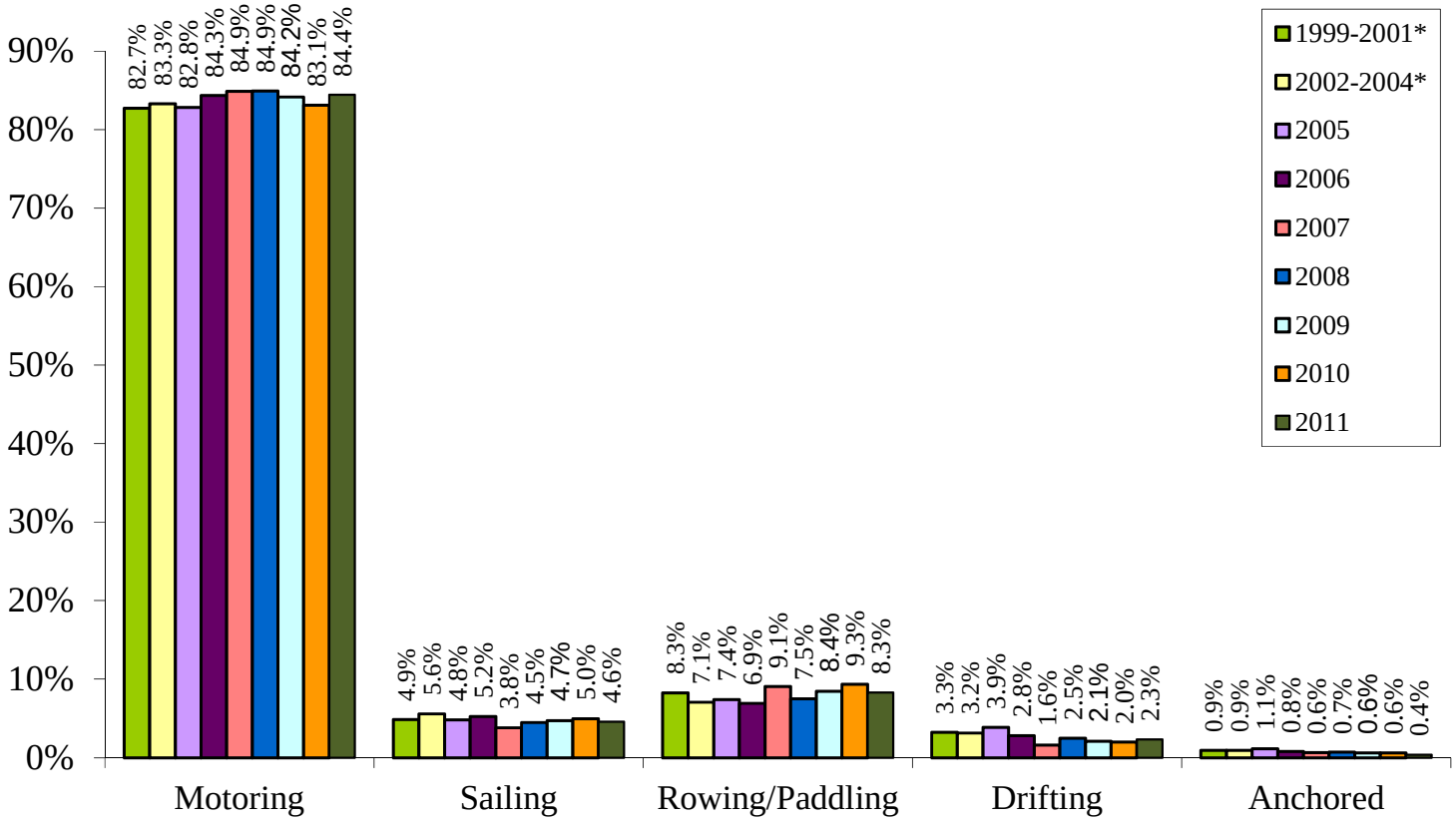
*Three-year average

Figure N – Length of Boats 2004-2011 Data Only



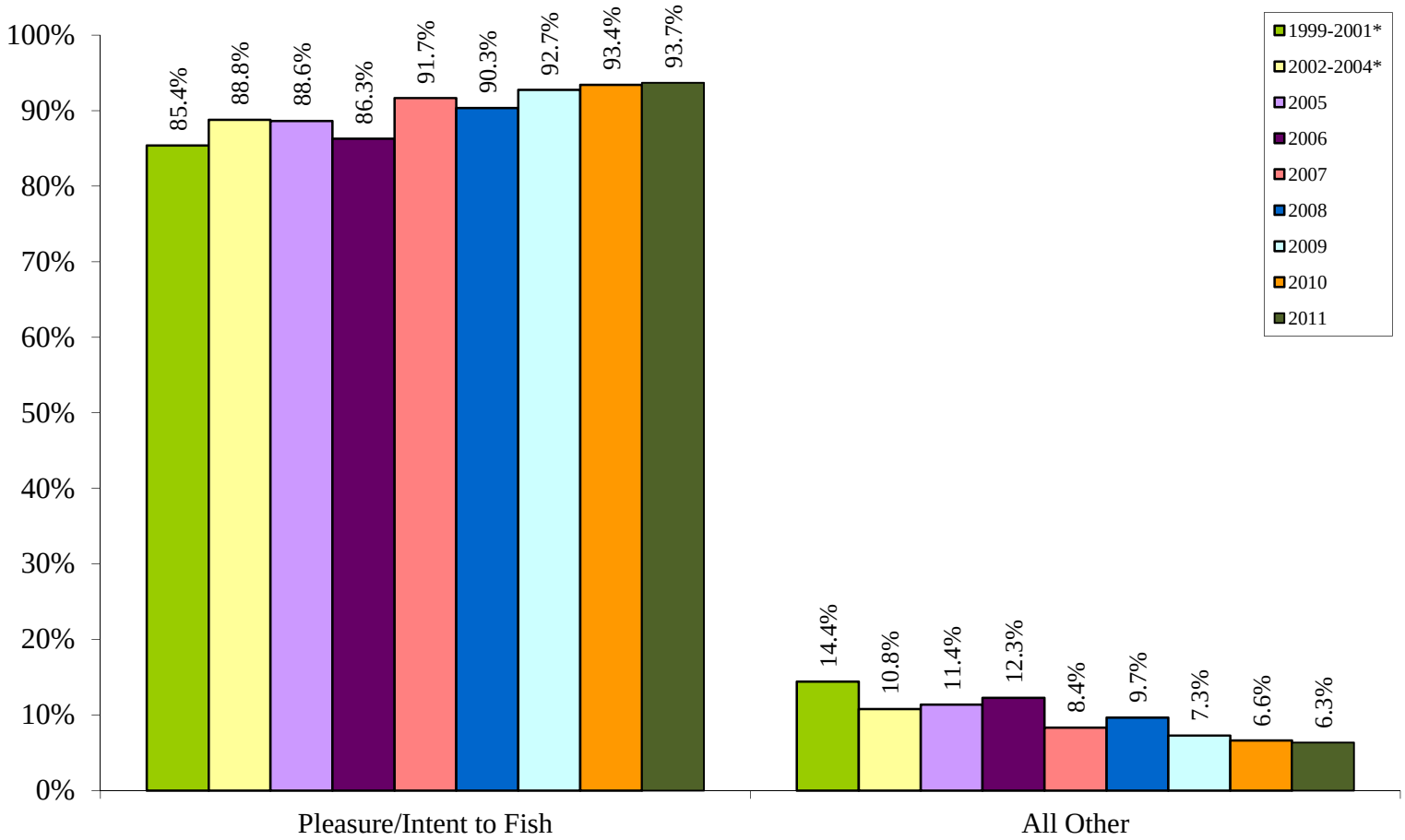
*Three-year average

Figure O – Operation of Boats



*Three-year average

Figure P1 – Activity of Boaters—ALL YEARS*



*Three-year average

Figure P2 – Activity of Boaters 2007-2011 Data

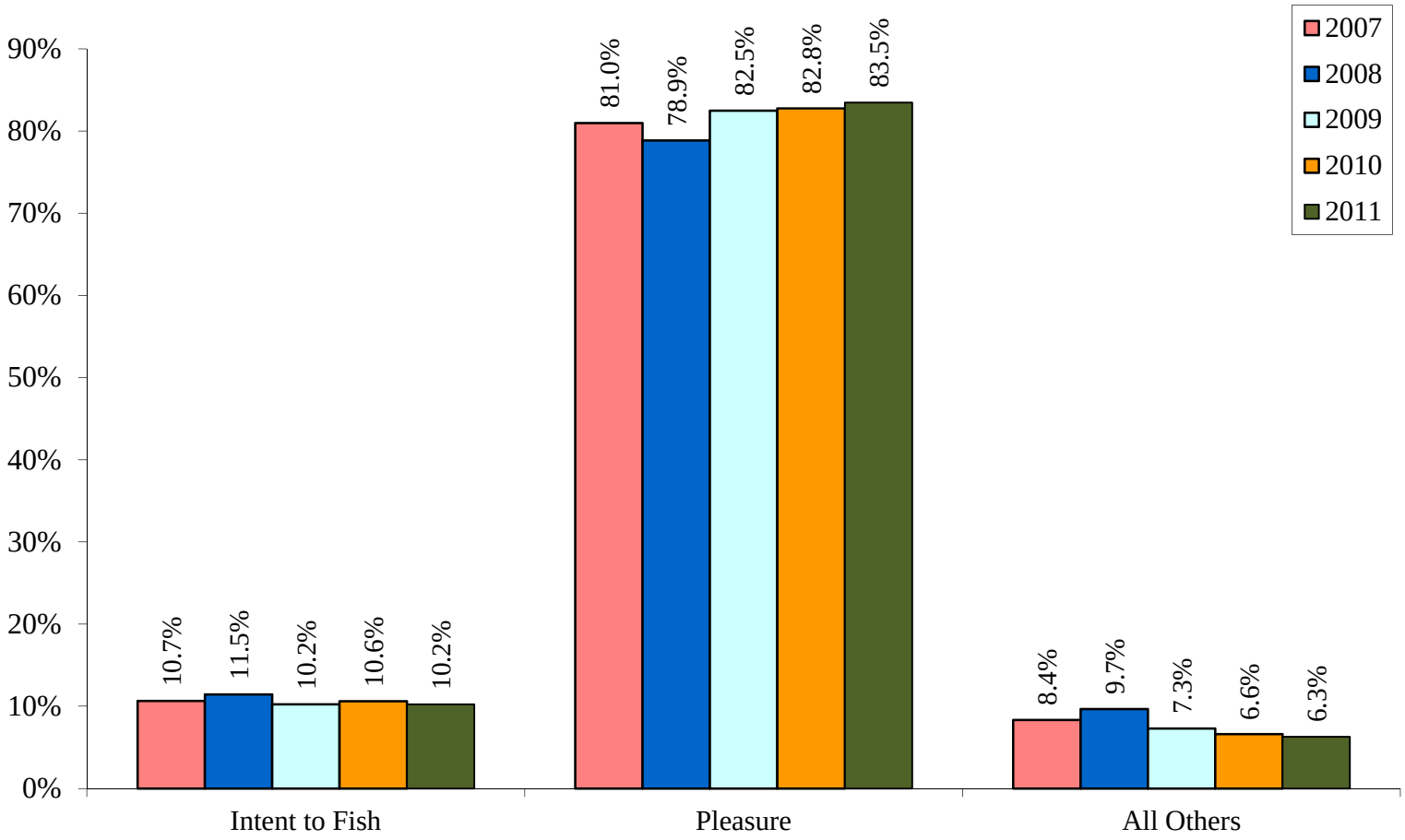
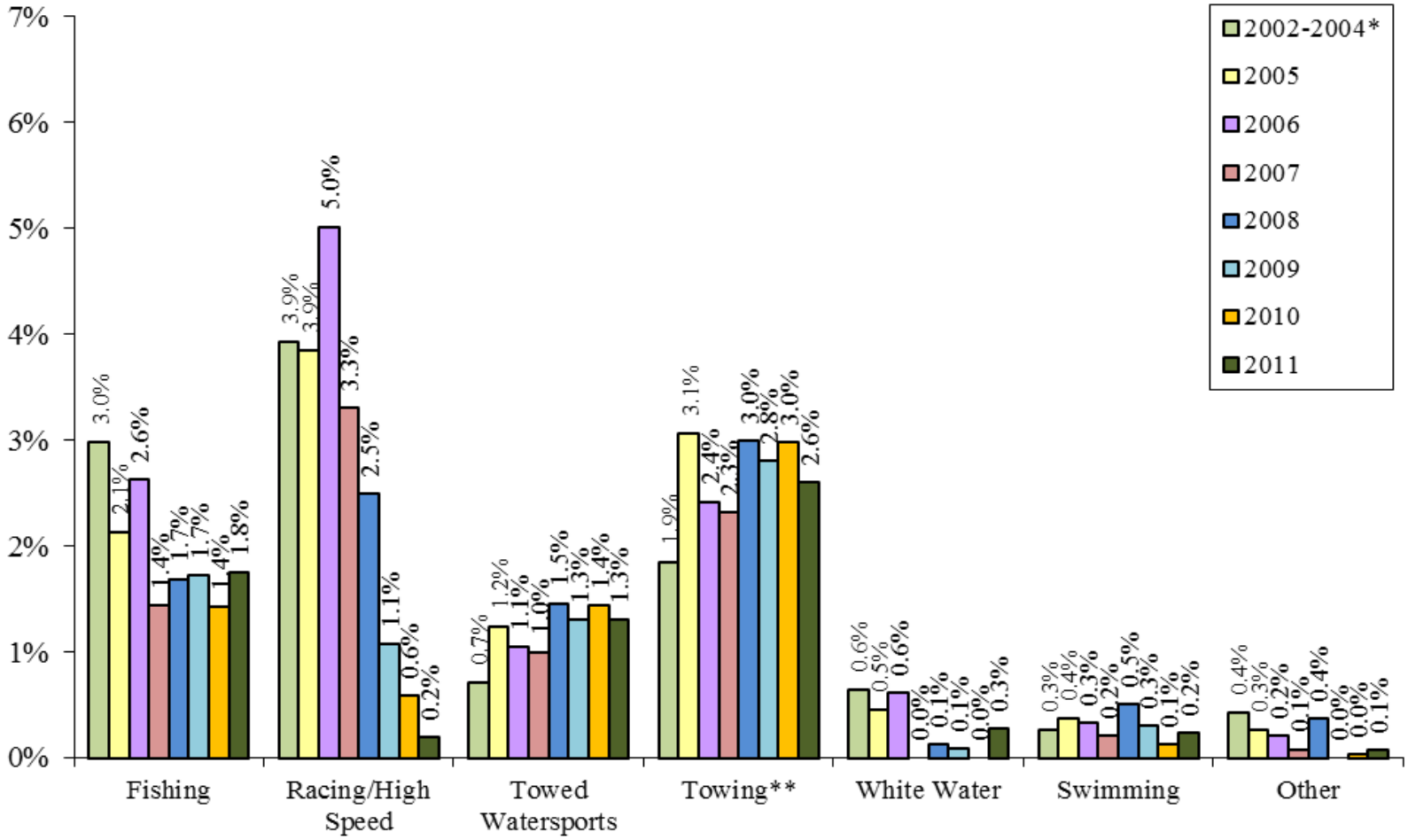


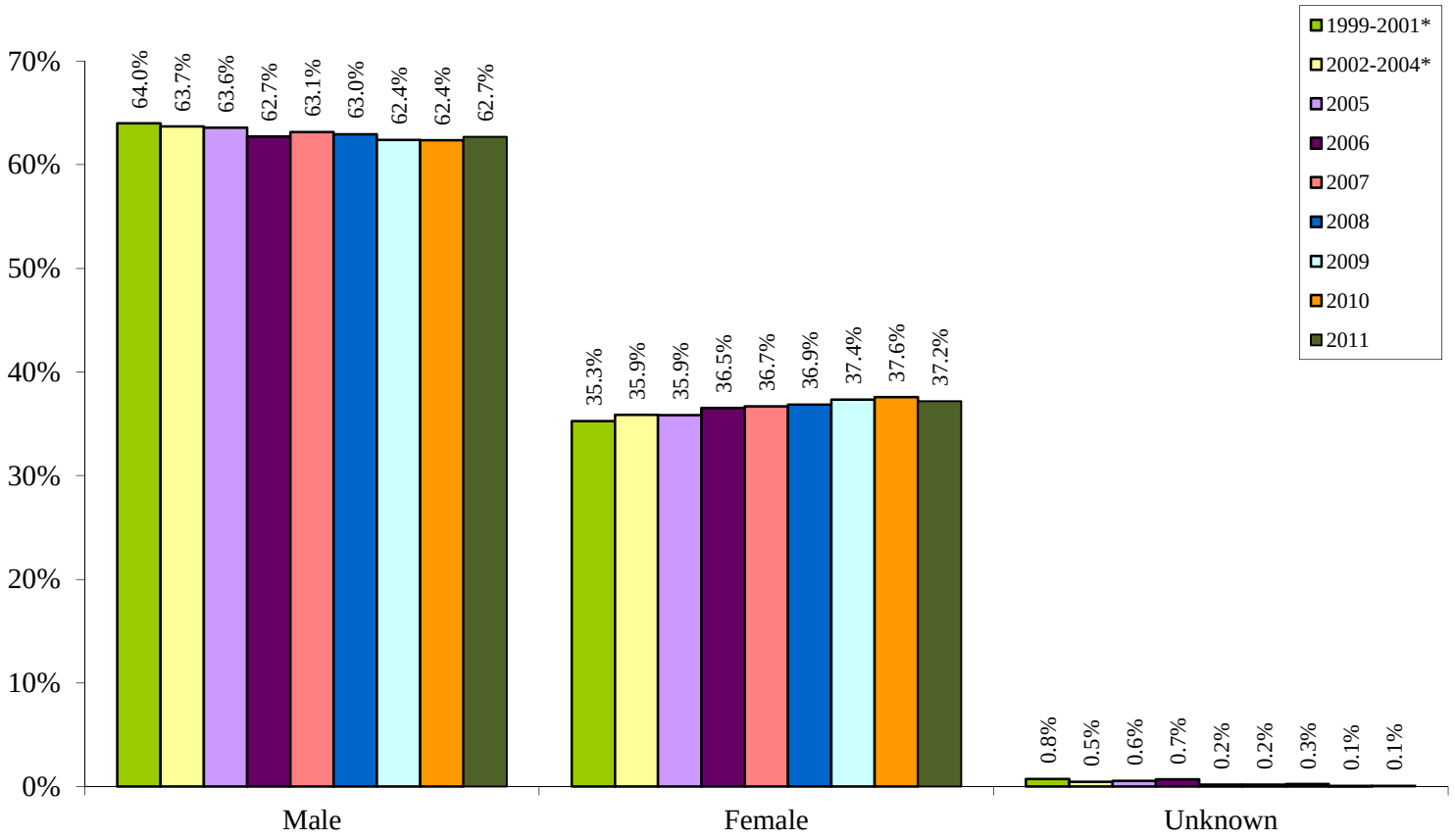
Figure P3 – Activity of Boaters
Detailed Breakdown of ALL OTHER Category from Figure P1



*Three-year average

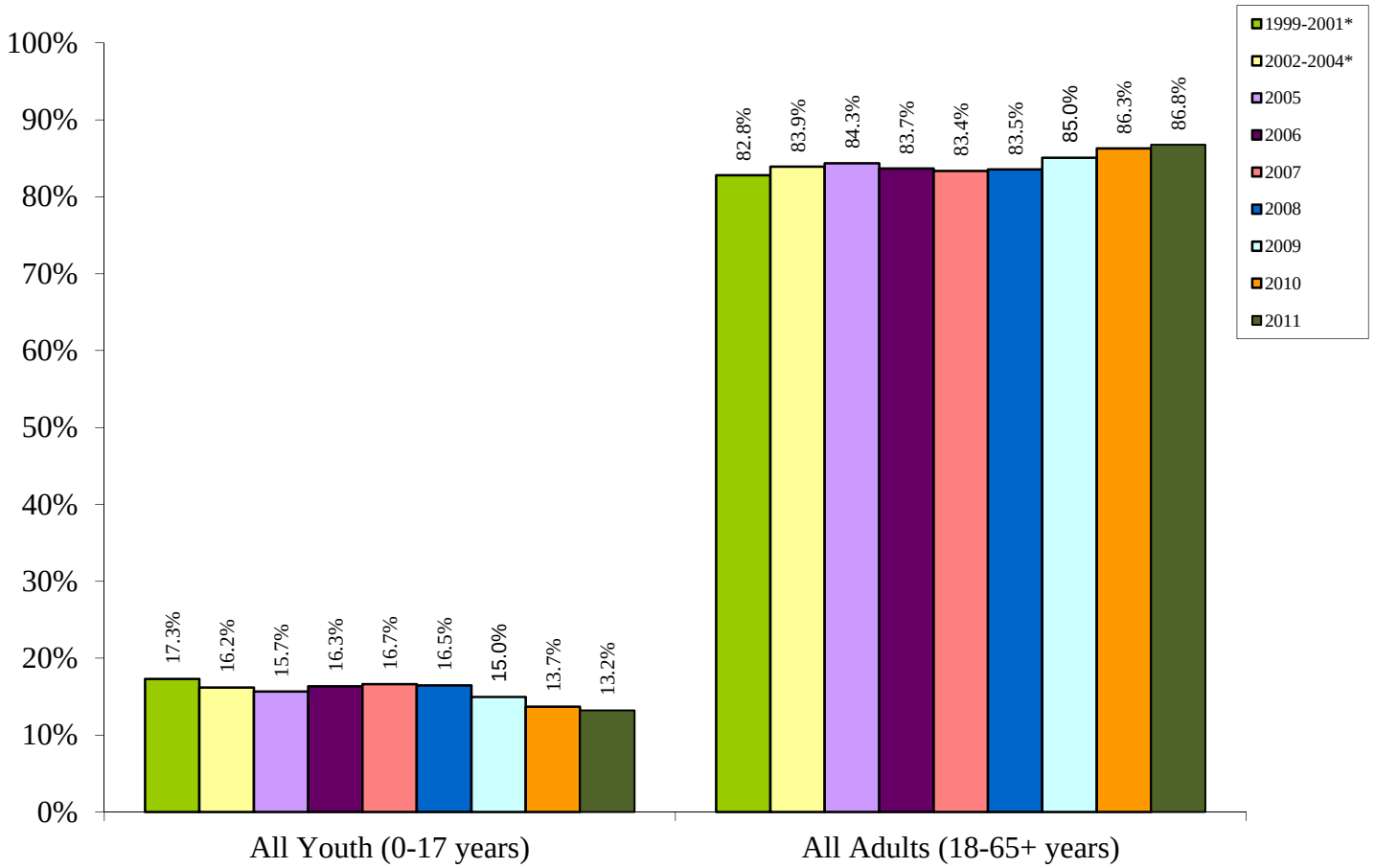
**The activity "Towing" indicates that these boaters were passengers in a boat towing water-skiers or other towing activities. Likewise, "Towed Watersports" includes all towing sports and is reserved for the boaters in the water being towed. The label was changed in April 2010.

Figure Q – Gender of Boaters



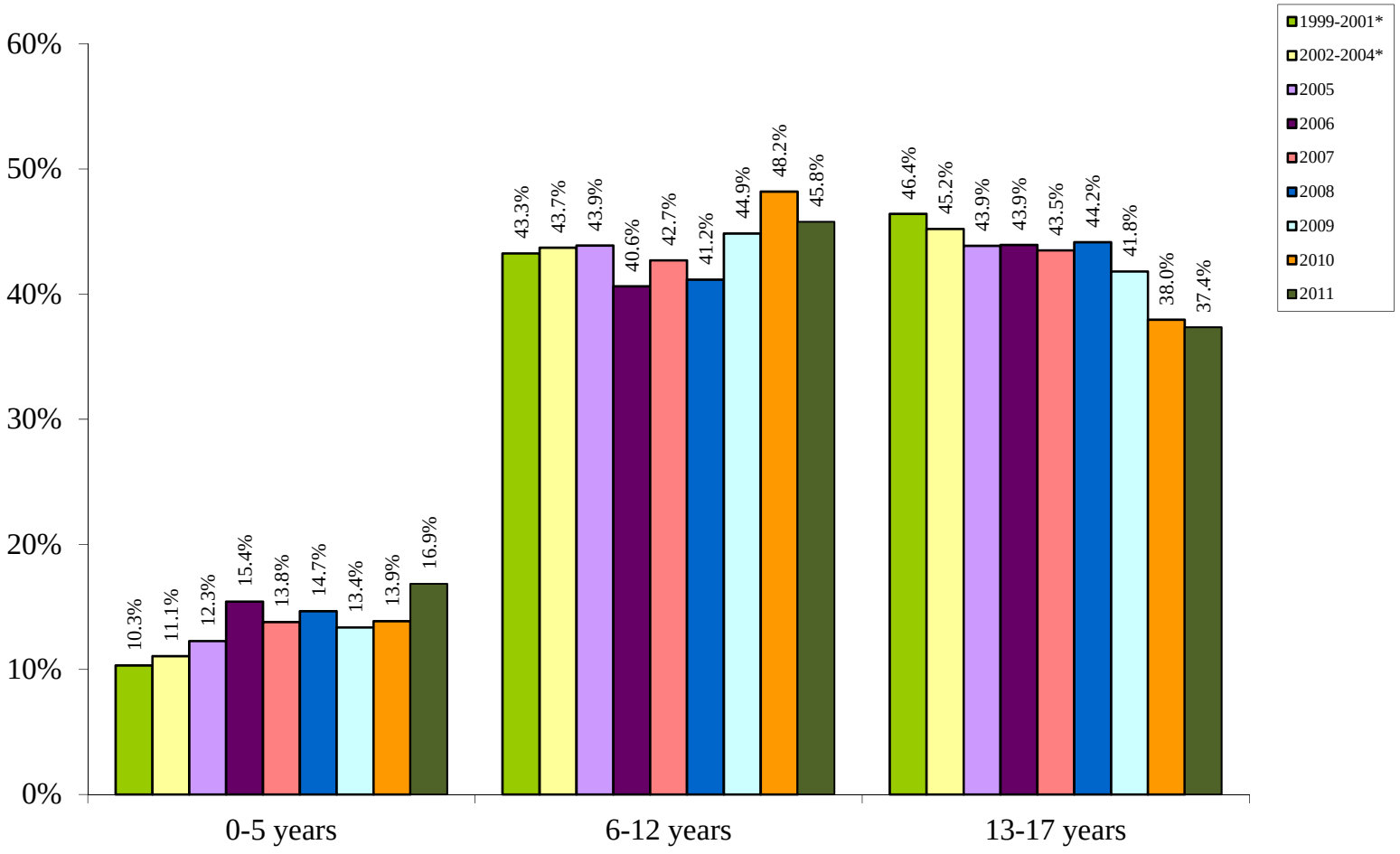
*Three-year average

Figure R1 – Age of Boaters



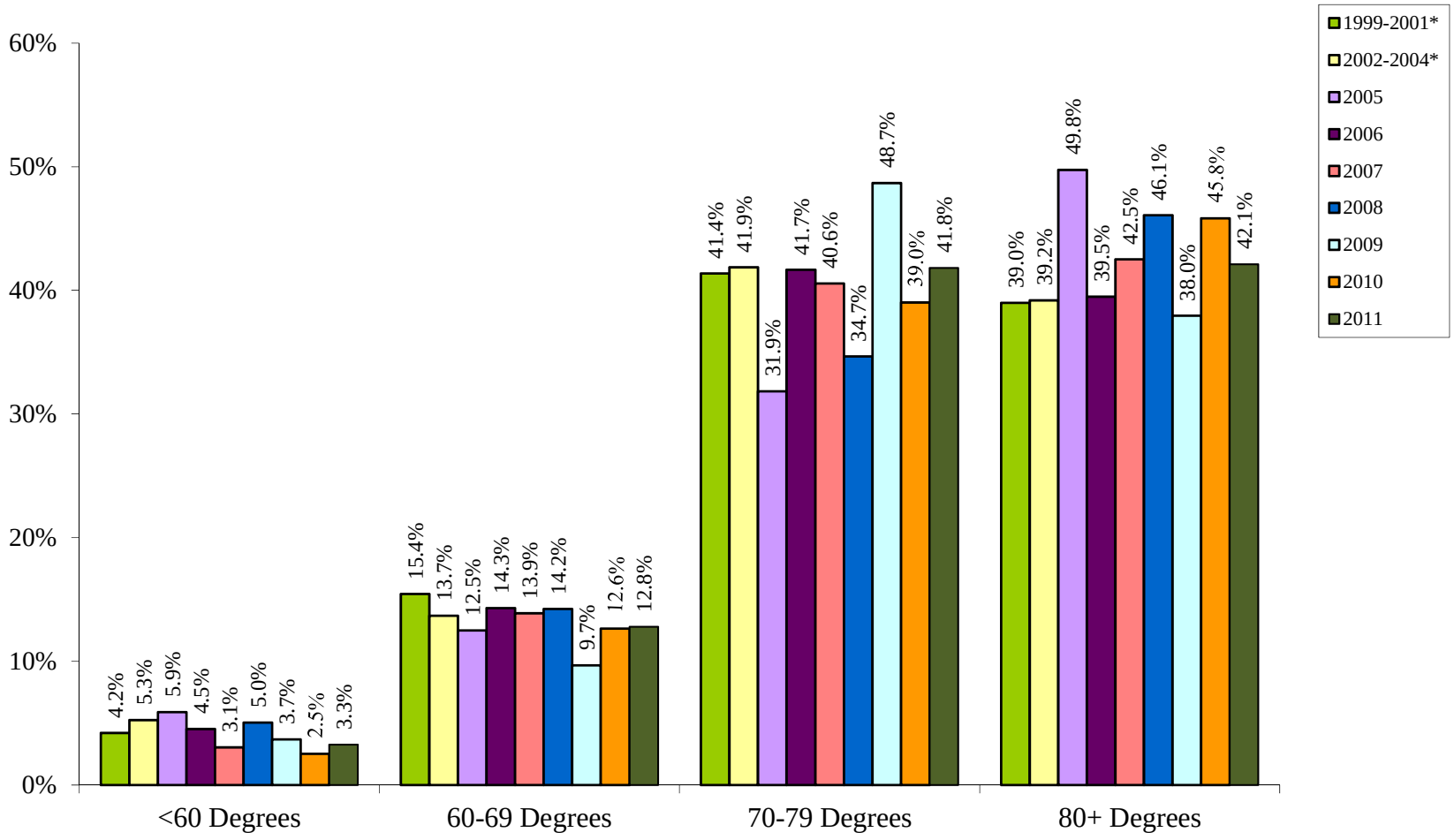
*Three-year average

Figure R2 – Age of Youth Boaters



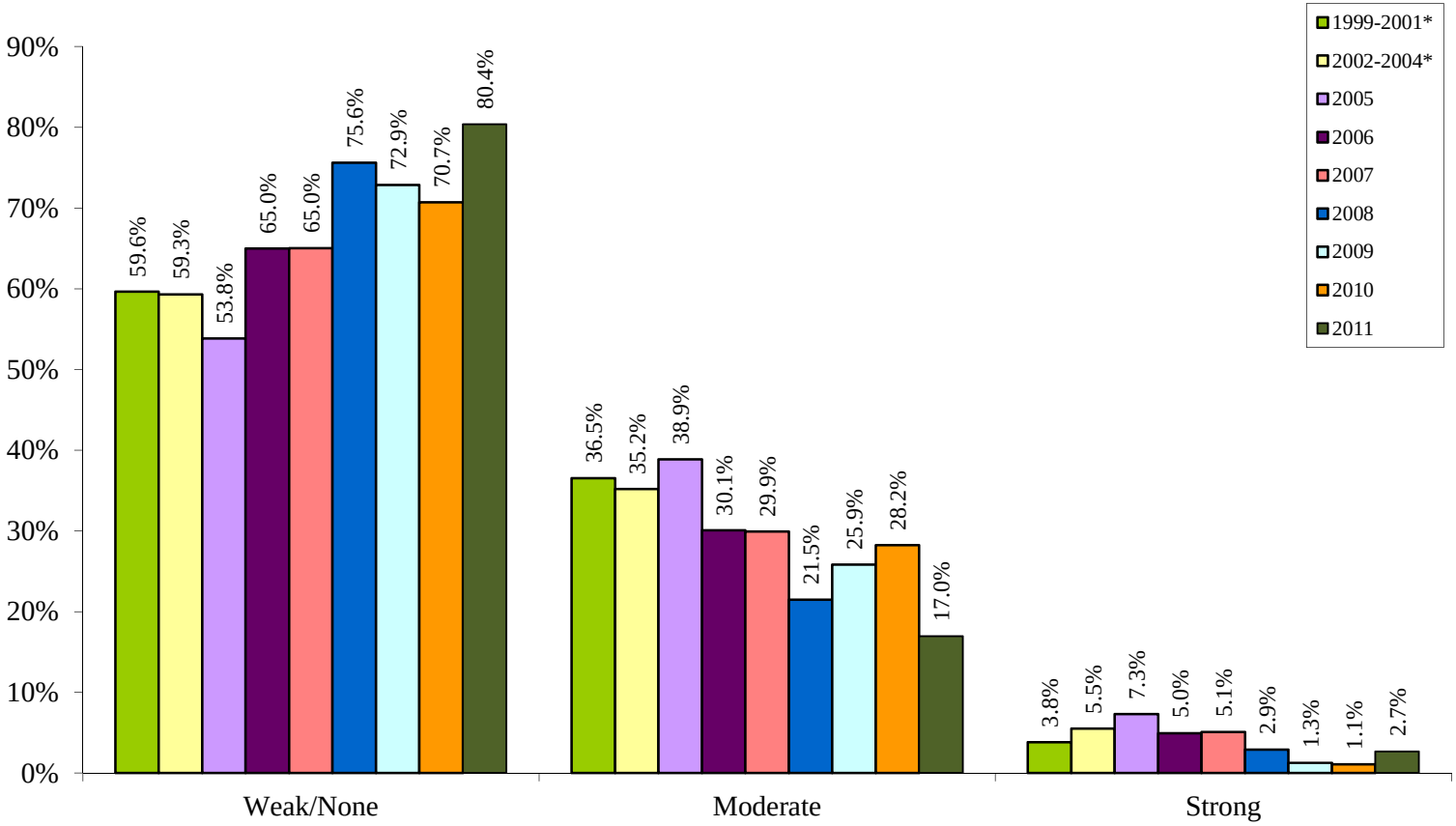
*Three-year average

Figure S – Water Temperature in which all Boaters were Observed



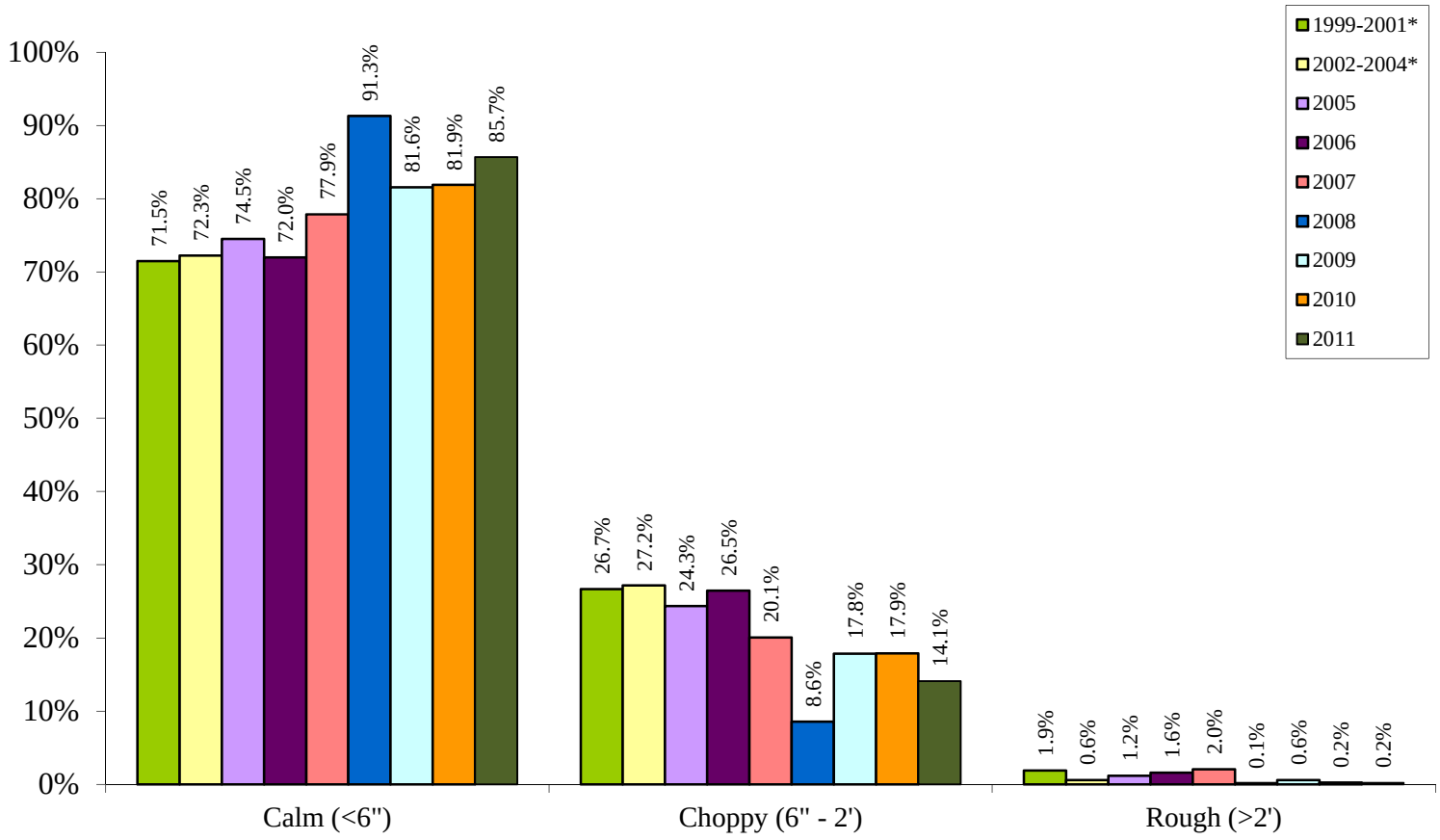
*Three-year average

Figure T – Water Current in which all Boaters were Observed



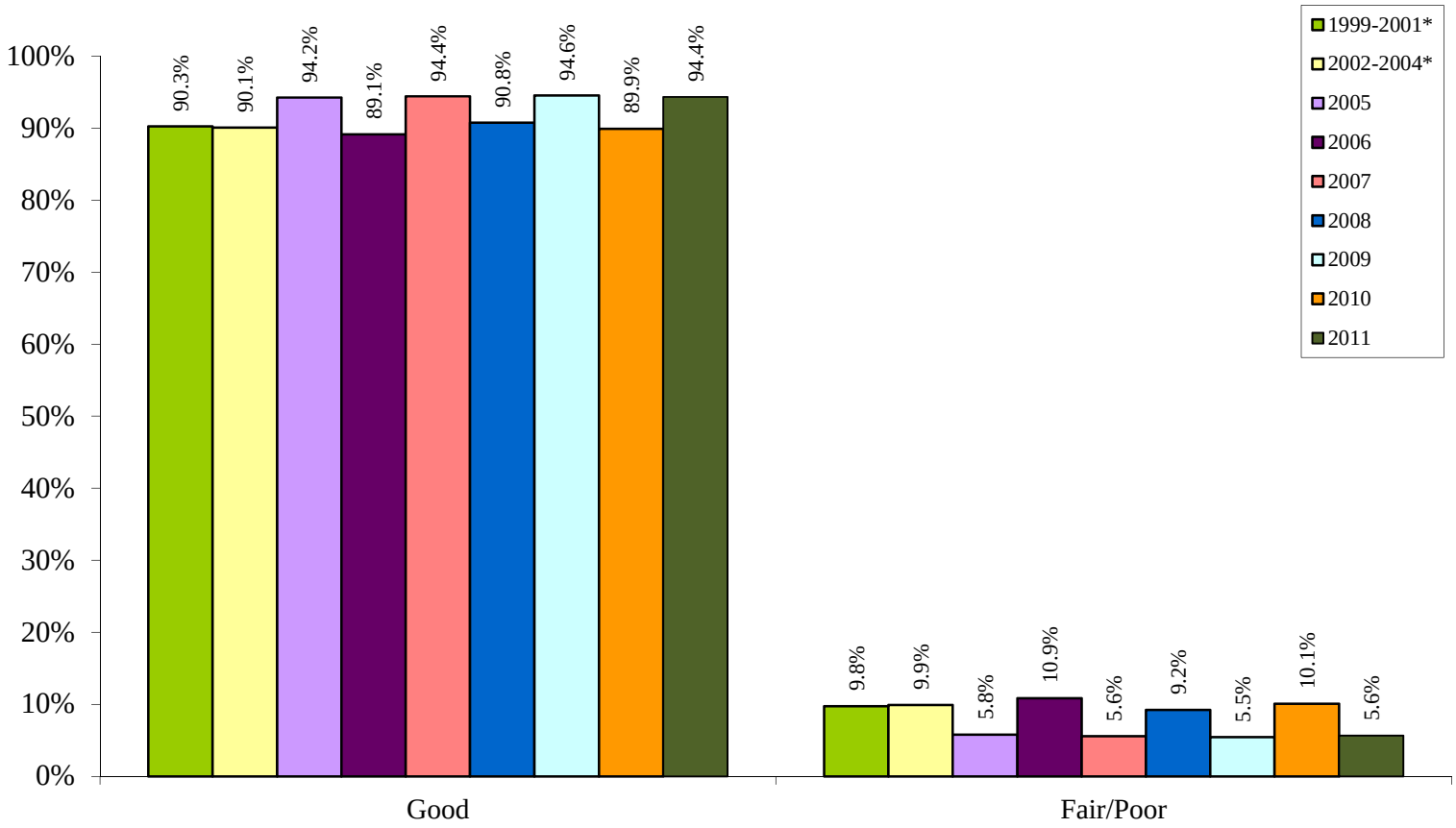
*Three-year average

Figure U – Wave Height in which all Boaters were Observed



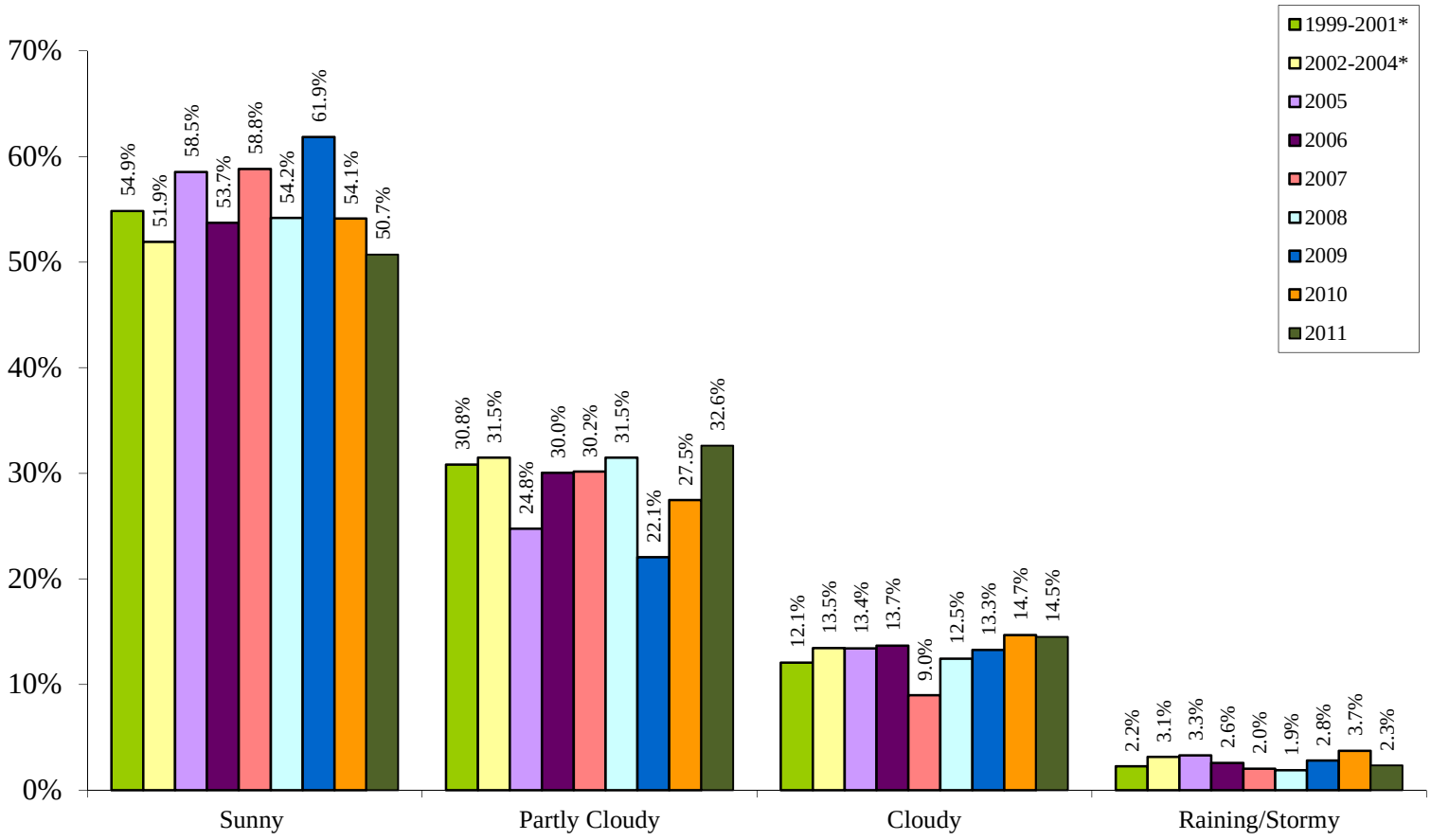
*Three-year average

Figure V – Visibility in which all Boaters were Observed



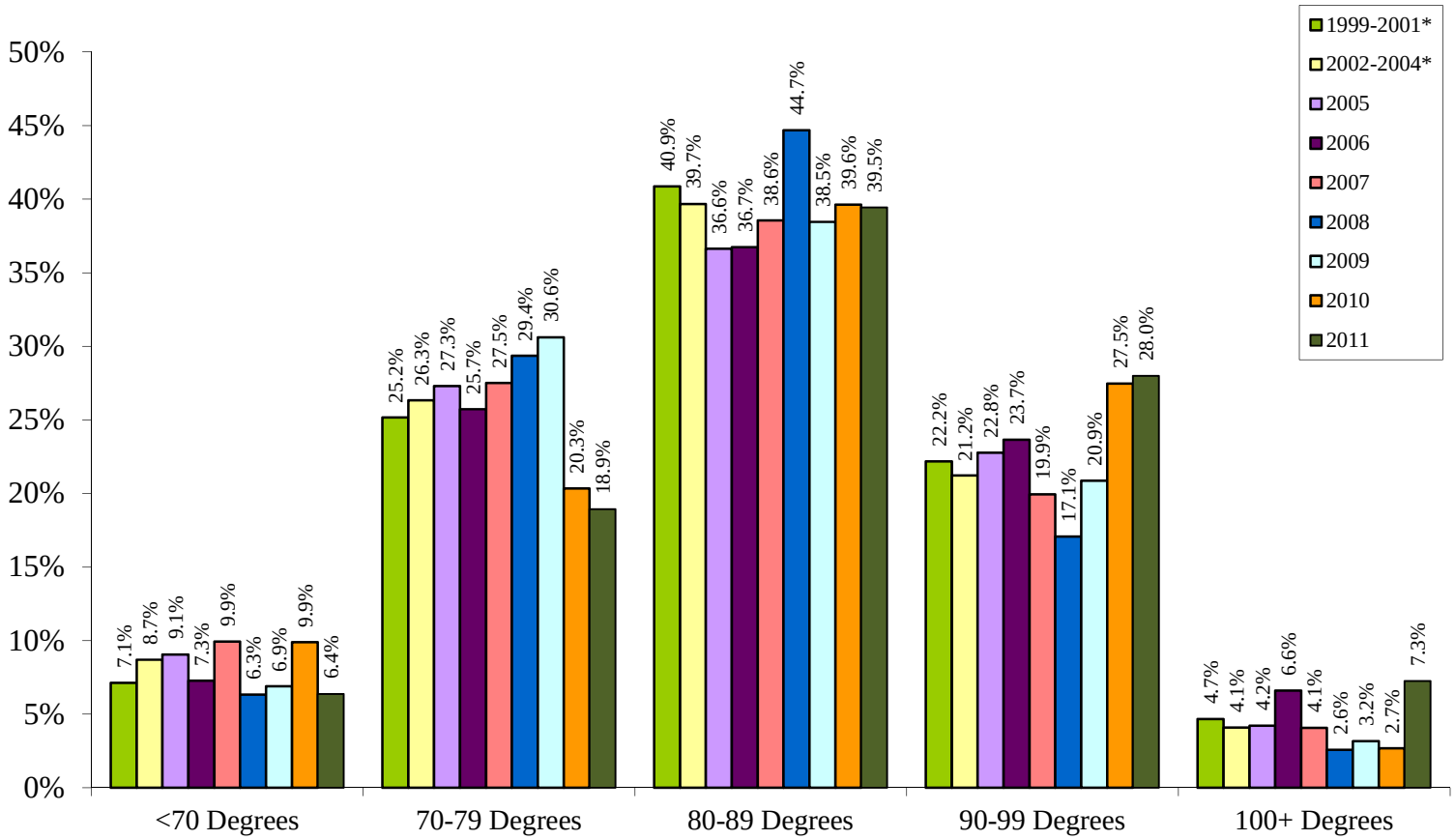
*Three-year average

Figure W – Weather in which all Boaters were Observed



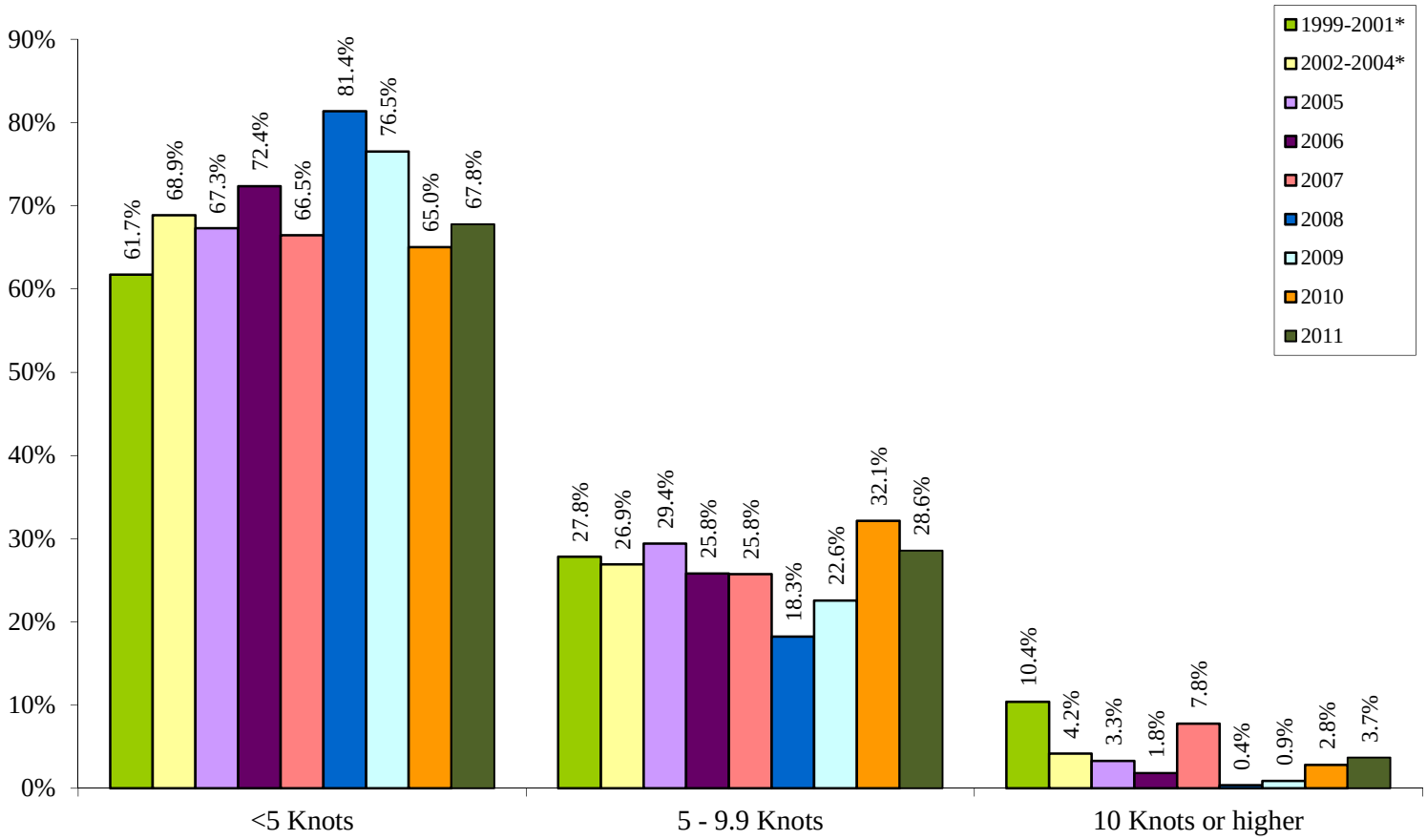
*Three-year average

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 Size for Types of Boats, 2004 - 2011

Boat Size	Skiff		Runabout		Cabin Cruiser		Pontoon		Inflatable	
	%	(N's)	%	(N's)	%	(N's)	%	(N's)	%	(N's)
Powerboats										
<16 ft.	28.0%	(12855)	3.9%	(4574)	0.0%	(0)	0.1%	(11)	89.1%	(1,815)
16-20.9 ft.	56.0%	(25,731)	64.9%	(76,040)	1.2%	(485)	34.0%	(6,180)	10.5%	(213)
21-25.9 ft.	14.7%	(6,737)	27.3%	(31,961)	40.0%	(16,074)	57.9%	(10,508)	0.5%	(10)
26+ ft.	1.3%	(618)	3.9%	(4,597)	58.8%	(24,110)	8.1%	(1,464)	0.0%	(0)

Boat Size	Sailboard		Day Sailor		Cabin Sailboat	
	%	(N's)	%	(N's)	%	(N's)
Sailboats						
<16 ft.	100.0%	(142)	35.1%	(1,926)	0.0%	(0)
16-20.9 ft.	0.0%	(0)	42.9%	(2,354)	1.8%	(380)
21-25.9 ft.	0.0%	(0)	19.6%	(1,075)	32.3%	(6,942)
26+ ft.	0.0%	(0)	2.4%	(132)	65.9%	(14,138)

Boat Size	Inflatable		Rowboat/Dinghy		Canoe		Kayak	
	%	(N's)	%	(N's)	%	(N's)	%	(N's)
Paddle Boats								
<16 ft.	96.0%	(3,006)	85.8%	(434)	40.6%	(2,049)	81.1%	(4,625)
16-20.9 ft.	4.0%	(124)	14.2%	(72)	40.5%	(2,045)	18.7%	(1,066)
21-25.9 ft					8.9%	(448)	0.2%	(10)
26+ ft					10.1%	(510)	0.0%	(0)