

2013 Life Jacket Wear Rate Observation Study

featuring

National Wear Rate Data from 1999 to 2013

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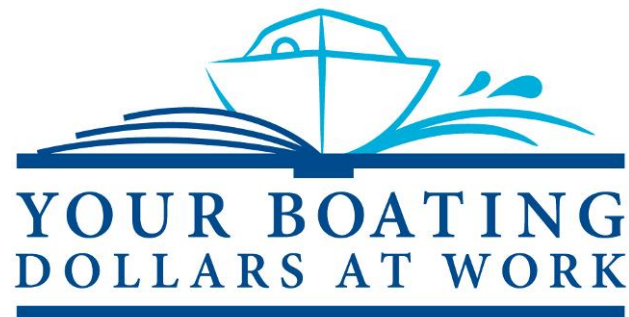
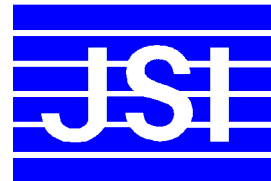
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I. INTRODUCTION

This report provides data and analysis on the 2013 National Life Jacket Wear Rate Observation Study with comparison information from the previous fourteen years' of studies (1999-2012). 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 2012 Recreational Boating Statistics report, published by the United States Coast Guard (USCG), shows that among the 459 drowning deaths in 2012, approximately 83% (379) 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 2013 marked the fifteenth year of life jacket wear rate data collection efforts conducted by JSI Research & Training Institute. 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 fifteen 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 1999-2013 of data collection.

II. NATIONAL CORE DATA RESULTS

Adult Life Jacket Wear Rates on Open Motorboats 2006 to 2013

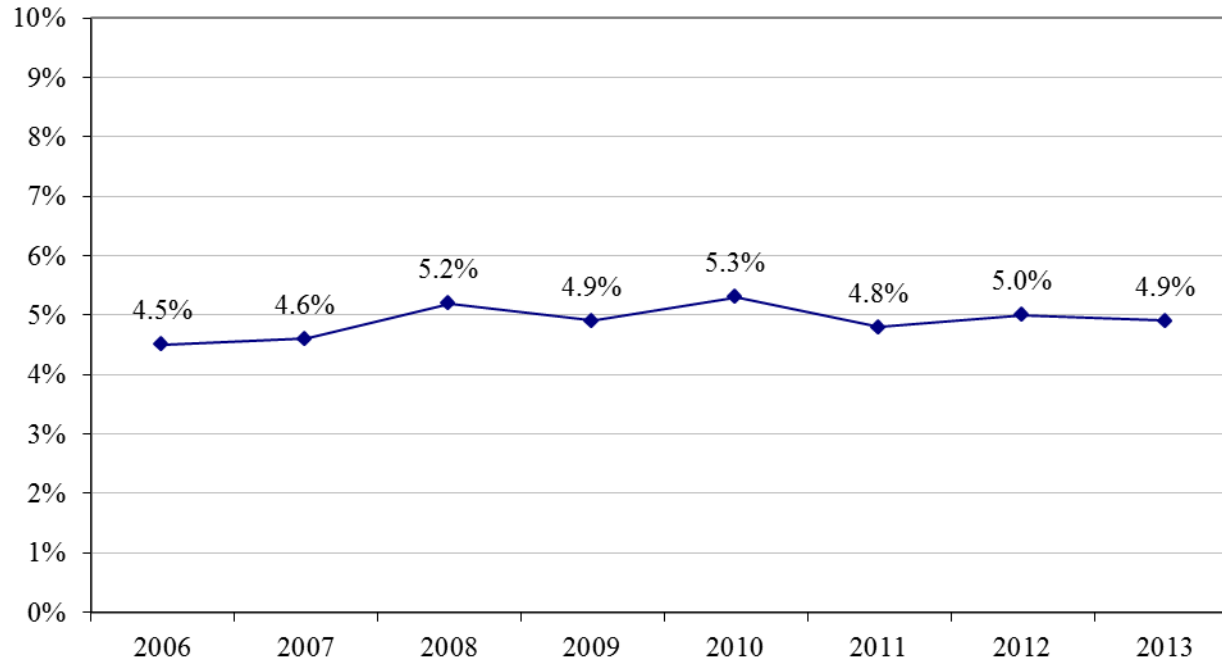
The National Boating Safety Advisory Council (NBSAC) recommended the creation of a strategic plan for the National Recreation Boating Safety Program in 2005. The goals, objectives, and strategies in this Plan can help all partners in boating safety work together to reduce the incidents of preventable 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 (hereafter as “skiffs”) and Runabout/Speedboat (hereafter as “speedboats”) categories that are individually presented later in this report. This objective was put in place beginning in 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 since the wear rates for skiffs are generally greater than those for speedboats. 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 2013 is 4.9%. (See Figure A for a chart showing these trends and also Table 2.2 on page 11.) This rate is down slightly from 2012 which was 5.0%.

Figure A – Adult Wear Rates on Open Motorboats* 2006-2013

(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. Two factors are controlled for in this chart: Age (proportions of 18 to 64 and 65+ adults), and the proportion of Skiffs to Speedboat/Runabouts, which has been set 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.

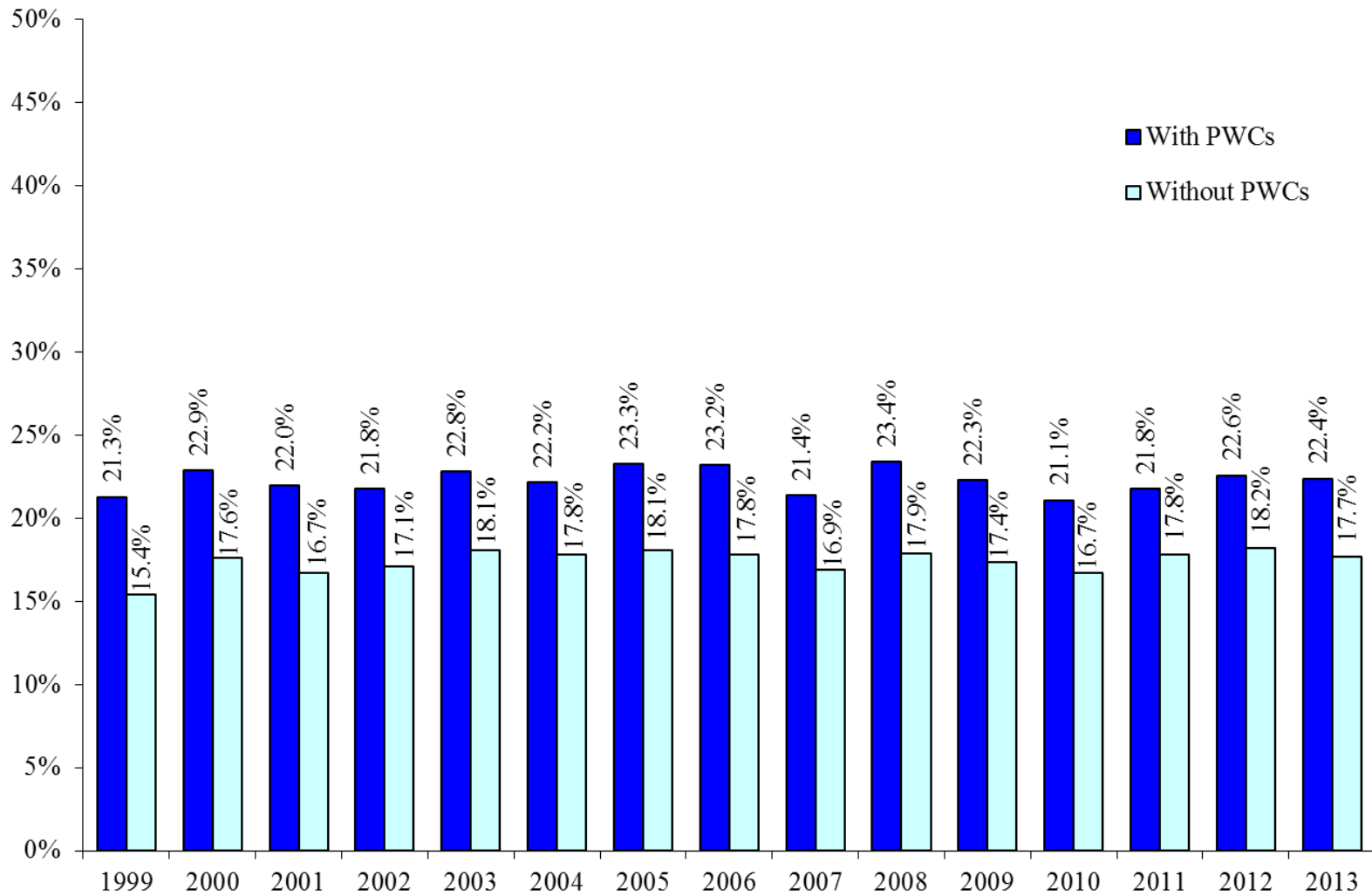
National Life Jacket Wear Rates for ALL Boaters 1999 to 2013

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”. The two sets of data present a clear indication of the impact of PWCs (Personal Watercraft) 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, because life jacket wear is mandated for operators and passengers of PWCs in almost all the states we observe in (exceptions include Alaska for adults and Florida for passengers).

The average life jacket wear rate for all boats and boaters combined for 2013 was 22.4%, a slight decrease from 2012 (22.6%). This indicates a leveling out of what had previously been a three year trend of slightly increasing wear rates.

The 2013 average wear rate excluding PWCs was 17.7% and also represents a small decrease from the three year upward trend from 2010 at 16.7% to 2012 at 18.2%.

Figure B – Life Jacket Wear Rates for ALL Boaters

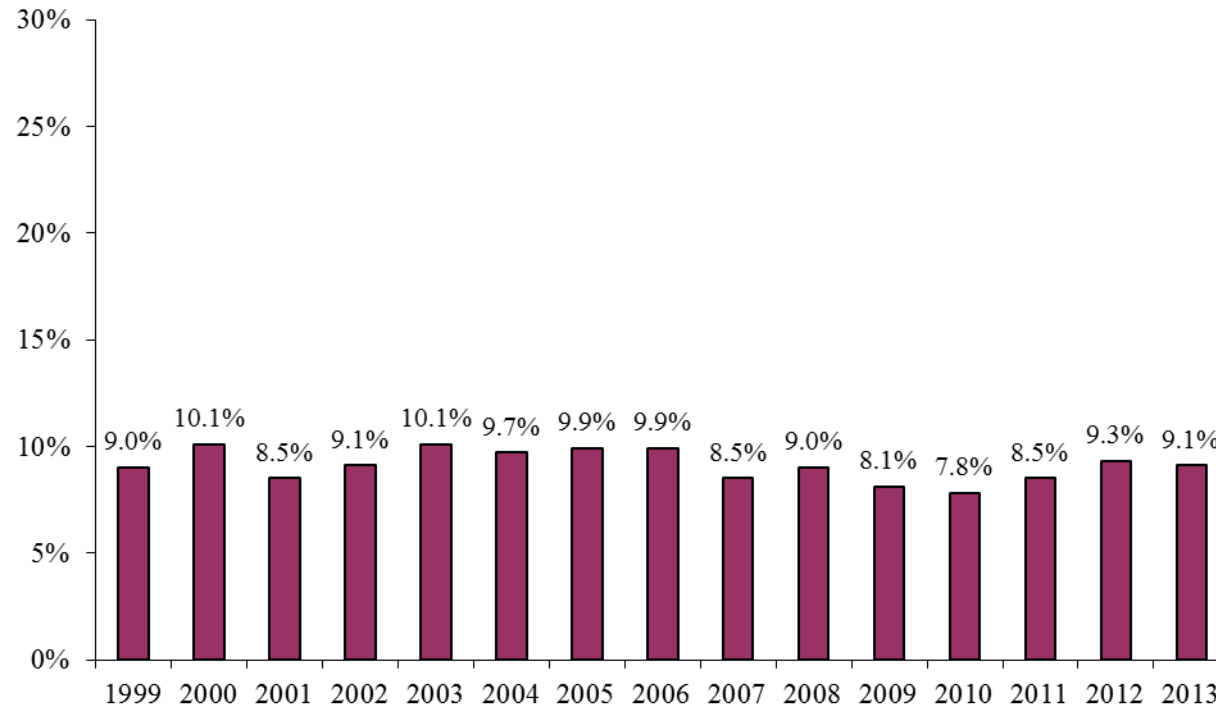


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*Factors controlled for: Age & Boat Type.

National Life Jacket Wear Rates for ADULTS (18 years or older) 1999 to 2013

The national average wear rate for all adults on all boats excluding PWCs in 2013 was 9.1%. This overall adult boater wear rate is a slight decline from the 9.3% wear rate reported in 2012 and mirrors the slight decline reported for all boaters (see Figure C and Table 2.1).

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

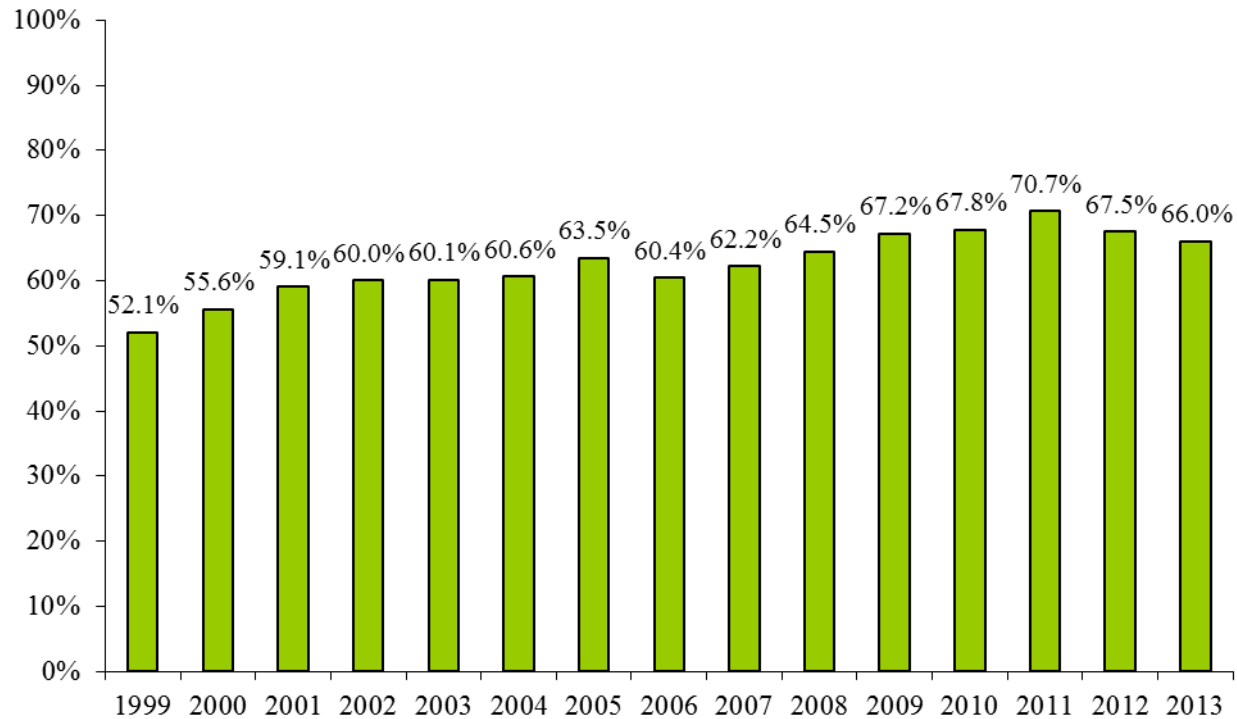


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*Factors controlled for: Age & Boat Type.

National Life Jacket Wear Rates for YOUTH (17 years or younger) 1999 to 2013

Figure D and a part of Table 2.1 show the national wear rate trend for all youth (17 years or younger) on all boats excluding PWCs. These rates are relatively high across the fifteen years of data shown with a general upward trend (the last five years are the five highest rates). The rate for 2013 is 66.0%, down a bit from the highest rate of 70.7% observed in 2011 but still the fifth highest rate since the beginning of the study.

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 Categories 1999 to 2013

Table 2.1 presents wear rates by the different age categories captured in the study.

Youth trends in all age groups showed decreases from the historically highest rates observed in 2011. Compared to last year, rates in 2013 showed small drops for under 6 year olds, and 13-17 year olds, but a slight increase for the 6-12 year olds. For the under 6 year olds rates dropped from 94.7% in 2012 to 93.5% in 2013; for those between 6 and 12 years of age rates increased slightly from 84.9% in 2012 to 85.4% and for teens (ages 13 to 17) rates dropped from 37.6% in 2012 to 34.9% in 2013. The overall youth rate declined from 67.5% in 2012 to 66.0% in 2013.

For adults ages 18 to 64, the 2013 data reflects a leveling off after a three year trend of increasing rates from 7.7% in 2010 to 9.2% in 2012 and now in 2013 a wear rate of 9.1%.

For adults 65 years of age and older, the 2013 data show wear rates of 6.9% down from 11.8% in 2012.

As previously indicated in Figure C and in Table 2.1, when both adult groups are combined (18+ years), there is a small decrease from 9.3% in 2012 to 9.1% in 2013.

Table 2.1 – Life Jacket Wear Rates by Age Excluding Boaters on PWCs*

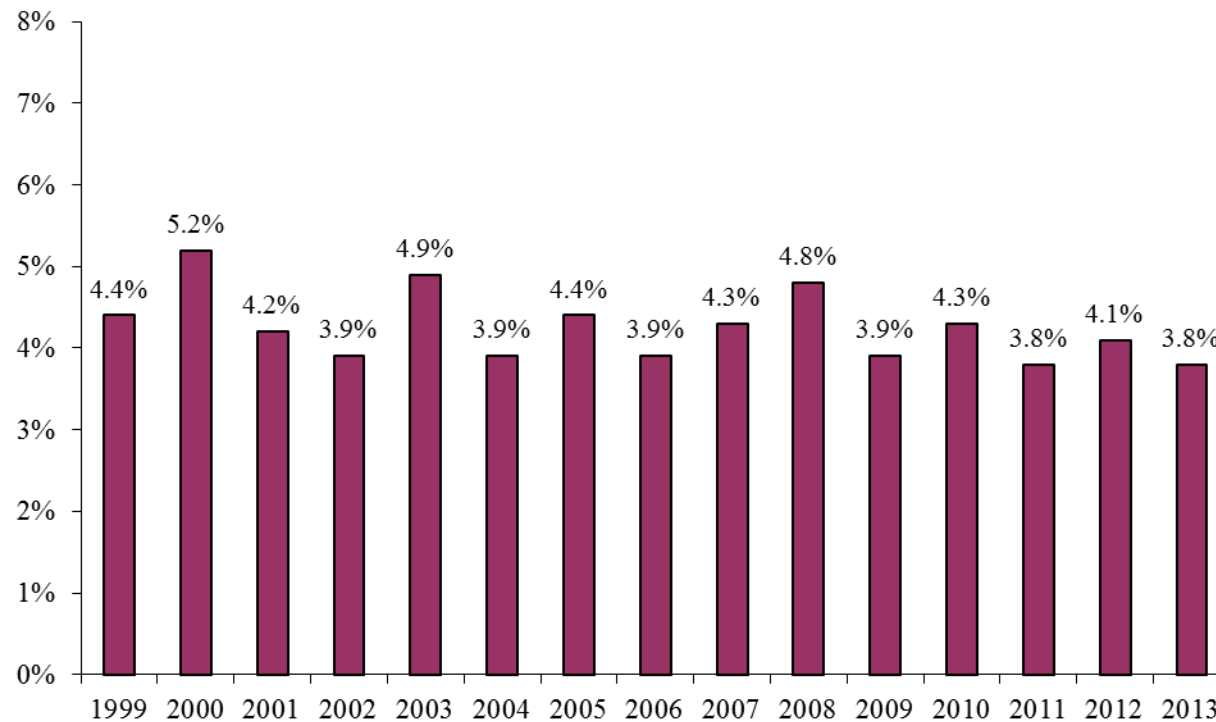
Age	Observation Year														
	1999 % (N's)	2000 % (N's)	2001 % (N's)	2002 % (N's)	2003 % (N's)	2004 % (N's)	2005 % (N's)	2006 % (N's)	2007 % (N's)	2008 % (N's)	2009 % (N's)	2010 % (N's)	2011 % (N's)	2012 % (N's)	2013 % (N's)
0-5 yrs	80.6%	89.1%	91.7%	90.1%	90.3%	94.9%	93.1%	94.4%	92.2%	93.5%	93.6%	94.8%	96.6%	94.7%	93.5%
	(500)	(716)	(703)	(676)	(658)	(743)	(714)	(921)	(930)	(938)	(854)	(811)	(874)	(662)	(789)
6-12 yrs	69.1%	72.1%	76.6%	79.2%	79.7%	81.6%	80.6%	79.1%	84.1%	87.3%	86.5%	89.1%	90.7%	84.9%	85.4%
	(2104)	(2696)	(3122)	(2752)	(2627)	(27411)	(2487)	(2403)	(2819)	(2579)	(2812)	(2809)	(2381)	(2844)	(2494)
13-17 yrs	24.1%	30.5%	31.2%	32.4%	32.0%	29.8%	32.8%	33.5%	31.5%	33.2%	38.9%	35.1%	41.4%	37.6%	34.9%
	(2244)	(2725)	(2893)	(2575)	(2767)	(2572)	(2230)	(2403)	(2652)	(2507)	(2420)	(2127)	(1817)	(2163)	(1933)
0-17 yrs (all youth)	52.1%	55.6%	59.1%	60.0%	60.1%	60.6%	63.5%	60.4%	62.2%	64.5%	67.2%	67.7%	70.7%	67.5%	66.0%
	(4624)	(6094)	(6695)	(5924)	(5970)	(5955)	(5414)	(5713)	(6401)	(6024)	(6086)	(5747)	(5072)	(5669)	(5216)
18-64 yrs	8.8%	10.1%	8.5%	9.2%	10.1%	9.7%	9.9%	10.0%	8.4%	9.1%	8.1%	7.7%	8.5%	9.2%	9.1%
	(24321)	(27100)	(32528)	(31742)	(28551)	(33319)	(30176)	(29591)	(32108)	(30743)	(34632)	(36420)	(33267)	(32298)	(30843)
65+ yrs	12.9%	9.9%	6.9%	6.8%	9.4%	8.3%	11.0%	8.3%	11.7%	6.1%	7.0%	10.7%	7.2%	11.8%	6.9%
	(1147)	(1040)	(1276)	(922)	(1106)	(1331)	(823)	(803)	(881)	(1190)	(1129)	(763)	(951)	(1122)	(1091)
18+ yrs (all adults)	9.0%	10.1%	8.5%	9.1%	10.1%	9.7%	9.9%	9.9%	8.5%	9.0%	8.1%	7.8%	8.5%	9.3%	9.1%
	(25468)	(28140)	(33804)	(32664)	(29657)	(34650)	(30999)	(30394)	(32989)	(31933)	(35761)	(37003)	(34218)	(33420)	(31934)

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 *Factors controlled for: Age & Boat Type.

Powerboats for Adults (18 years or older)

Figure E and Table 2.2 present information for all powerboats for adults. Overall there is a decreasing trend since 1999. The 2013 rate for all powerboats is the lowest it has been (3.8%) in the fifteen years of observations (and tied with the rate observed in 2011). The slowly declining rates over the past decade or so are in part 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 2013 49.4% were 21 feet or greater. Since longer powerboats have lower wear rates than shorter powerboats, this shift in length of boats observed over this time period contributes to the slight downward trend in wear rates for powerboats. Although most of the types of boats in this category show small decreases in wear rates the exceptions are skiffs which show a larger decrease from 7.8% in 2012 to 6.4% in 2013 which is a continuation of a downward trend beginning in 2009. Speedboats, on the other hand, have shown a three year slightly increasing trend from 3.0% in 2011 to 3.5% in 2013. However, we have added a line in the table this year that shows wear rates for speedboat/runabouts removing any who are being towed (since their wear is mandated in most states). Wear rates are lowered anywhere from 0.5% to 1% and moderates the increase over the past 3 years.

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



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*Factors controlled for: Age & Boat Type

Table 2.2 - Life Jacket Wear Rates by Powerboats for Adults*

Boat Type	Observation Year														
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
	% (N's)	% (N's)	% (N's)	% (N's)	% (N's)	% (N's)	% (N's)	% (N's)	% (N's)	% (N's)	% (N's)	% (N's)	% (N's)	% (N's)	% (N's)
All Powerboats	4.4%	5.2%	4.2%	3.9%	4.9%	3.9%	4.4%	3.9%	4.3%	4.8%	3.9%	4.3%	3.8%	4.1%	3.8%
(no PWC's)	(19894)	(22448)	(27864)	(26304)	(24190)	(28285)	(25741)	(25412)	(27623)	(27315)	(29924)	(30894)	(28954)	(27890)	(26786)
Skiff/Utility	10.0%	10.3%	9.7%	5.9%	10.4%	7.9%	7.2%	7.3%	8.5%	9.2%	6.9%	9.7%	8.2%	7.8%	6.4%
(1867)	(1903)	(2469)	(3177)	(4214)	(4429)	(5038)	(4091)	(5340)	(6633)	(7257)	(6634)	(6530)	(6936)	(7231)	
Runabout/Speedboat	4.2%	5.3%	4.5%	4.3%	4.6%	3.9%	4.7%	3.7%	3.6%	4.1%	3.5%	3.2%	3.0%	3.3%	3.5%
(13195)	(14463)	(16985)	(14066)	(13057)	(16633)	(13643)	(14512)	(14414)	(13901)	(14635)	(15093)	(14381)	(13441)	(11686)	
Runabout/Speedboat	3.6%	4.6%	3.9%	3.6%	3.9%	3.2%	3.7%	2.8%	2.9%	3.05	2.5%	2.2%	2.3%	2.3%	2.4%
(Excluding Waterskiiers)	(13096)	(14364)	(16872)	(13969)	(12963)	(16477)	(13480)	14376)	(14313)	(13744)	(14481)	(14947)	(14279)	(13294)	(11554)
Open Motorboats**	5.5%	6.4%	5.6%	4.7%	5.9%	4.8%	5.3%	4.5%	4.6%	5.2%	4.9%	5.3%	4.8%	5.0%	4.9%
(Skiff/Utility+ Runabout/Speedboat)	(15062)	(16366)	(19454)	(17243)	(17271)	(21052)	(18681)	(18603)	(19754)	(20534)	(21892)	(21727)	(20911)	(20377)	(18917)
Cabin Cruiser	1.8%	1.6%	1.2%	1.9%	1.7%	1.0%	1.1%	1.7%	2.0%	1.4%	1.6%	1.5%	1.6%	1.6%	1.0%
(3396)	(4391)	(6222)	(7111)	(5119)	(5242)	(5054)	(4280)	(5353)	(4430)	(5342)	(5900)	(5085)	(4611)	(4719)	
Houseboat	0.0%	0.0%	0.6%	0.8%	0.0%	5.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	0.0%	0.0%
(151)	(216)	(162)	(124)	(328)	(216)	(219)	(112)	(43)	(51)	(31)	(140)	(309)	(18)	(51)	
Pontoon	4.0%	6.2%	1.9%	2.7%	2.9%	2.9%	4.1%	2.4%	2.7%	1.1%	2.1%	1.5%	1.4%	2.3%	1.4%
(1231)	(1458)	(1929)	(1796)	(1610)	(1770)	(1849)	(2276)	(2150)	(2051)	(2436)	(2922)	(2734)	(2624)	(2917)	
PWC	94.2%	97.4%	96.0%	95.8%	94.7%	95.5%	95.3%	97.1%	96.1%	97.6%	97.4%	97.5%	97.7%	96.9%	96.3%
(1899)	(1761)	(2091)	(1798)	(1589)	(1721)	(1858)	(1962)	(1736)	(2009)	(2093)	(1921)	(1524)	(1811)	(1905)	
Powered Inflatable/Raft	15.7%	22.3%	13.5%	27.2%	14.8%	9.0%	1.9%	11.0%	19.1%	17.6%	11.9%	16.7%	14.3%	14.1%	27.2%
(205)	(233)	(259)	(154)	(190)	(211)	(157)	(253)	(366)	(228)	(254)	(345)	(224)	(278)	(233)	

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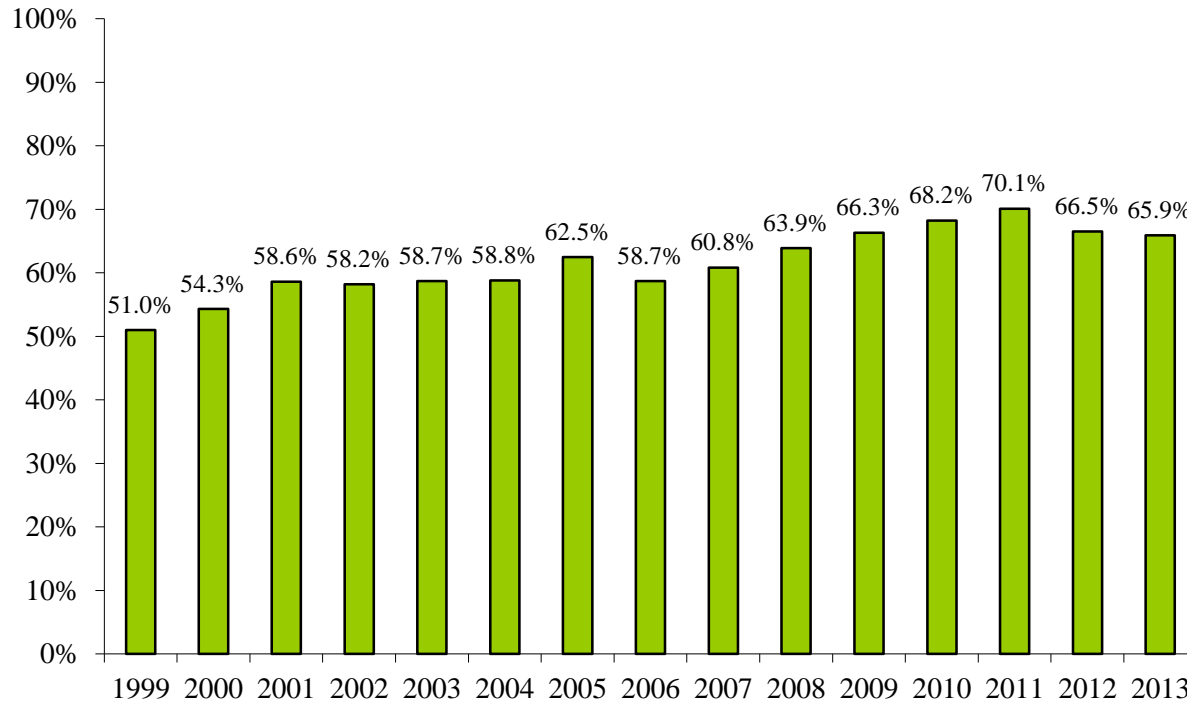
*Factors controlled for: Age & Boat Type.

** The Open Motorboat category is created by grouping "Skiffs" and "Speedboat/Runabouts" together. Factors controlled for in this line of the 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 proportion

Powerboats for Youth (17 years or younger)

Figure F and Table 2.3 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 are generally increasing with the overall rate for powerboats in 2013 being the fifth highest it has been (65.9%), down somewhat from the highest rate in 2011 of 70.1%.

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



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*Factors controlled for: Age & Boat Type.

Table 2.3 – Life Jacket Wear Rates by Powerboats for Youth*

Boat Type	Observation Year														
	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)	2012 % (N's)	2013 % (N's)
All Powerboats	51.0%	54.3%	58.6%	58.2%	58.7%	58.8%	62.5%	58.7%	60.8%	63.9%	66.3%	68.2%	70.1%	66.5%	65.9%
(no PWCs)	(3834)	(5179)	(5717)	(5162)	(5170)	(5191)	(4737)	(5043)	(5583)	(5257)	(5451)	(5090)	(4589)	(4846)	(4546)
Skiff/Utility	52.7%	49.5%	68.2%	54.9%	63.2%	60.7%	63.3%	58.4%	63.1%	68.4%	70.4%	68.1%	75.4%	65.1%	66.3%
	(338)	(369)	(441)	(557)	(768)	(641)	(781)	(661)	(947)	(988)	(1097)	(862)	(929)	(1022)	(936)
Runabout/Speedboat	51.6%	55.2%	58.8%	59.4%	60.0%	60.0%	63.5%	60.9%	61.7%	64.6%	68.2%	69.7%	71.0%	69.9%	69.2%
	(2744)	(3776)	(3987)	(3479)	(3369)	(3574)	(2966)	(3348)	(3517)	(3256)	(3133)	(2943)	(2624)	(2744)	(2482)
Open Motorboats**	51.8%	54.3%	60.1%	58.7%	60.5%	60.1%	63.5%	60.5%	61.9%	65.2%	68.6%	69.5%	71.6%	69.1%	68.7%
(Skiff/Utility+ Runabout/Speedboat)	(3082)	(4145)	(4428)	(4036)	(4137)	(4215)	(3747)	(4009)	(4464)	(4244)	(4230)	(3805)	(3553)	(3766)	(3418)
Cabin Cruiser	42.6%	48.2%	48.3%	50.7%	45.3%	49.6%	54.6%	50.7%	52.0%	51.0%	51.2%	58.8%	61.6%	50.6%	48.9%
	(418)	(587)	(774)	(690)	(659)	(529)	(528)	(501)	(639)	(581)	(644)	(524)	(507)	(465)	(505)
Houseboat	8.7%	12.7%	25.7%	30.3%	17.8%	24.7%	12.9%	28.2%	37.6%	0.0%	25.8%	19.1%	39.9%	6.9%	84.9%
	(46)	(64)	(44)	(30)	(63)	(35)	(38)	(40)	(5)	(1)	(4)	(18)	(19)	(3)	(1)
Pontoon	38.3%	46.3%	54.8%	55.6%	51.8%	48.5%	64.6%	50.3%	64.1%	65.9%	66.2%	68.4%	65.7%	67.3%	66.7%
	(272)	(379)	(455)	(399)	(338)	(394)	(440)	(505)	(414)	(392)	(530)	(716)	(494)	(580)	(598)
PWC	96.0%	99.1%	99.1%	98.8%	98.0%	98.5%	98.3%	99.2%	98.7%	99.4%	98.6%	99.4%	99.1%	98.7%	98.0%
	(551)	(649)	(691)	(502)	(562)	(543)	(652)	(580)	(522)	(664)	(572)	(427)	(376)	(401)	(371)
Powered Inflatable/Raft	59.3%	69.7%	79.5%	72.8%	66.8%	65.8%	71.2%	70.6%	71.1%	79.7%	70.3%	78.2%	73.1%	58.5%	65.4%
	(62)	(68)	(60)	(37)	(36)	(53)	(22)	(28)	(66)	(39)	(47)	(45)	(35)	(35)	(25)

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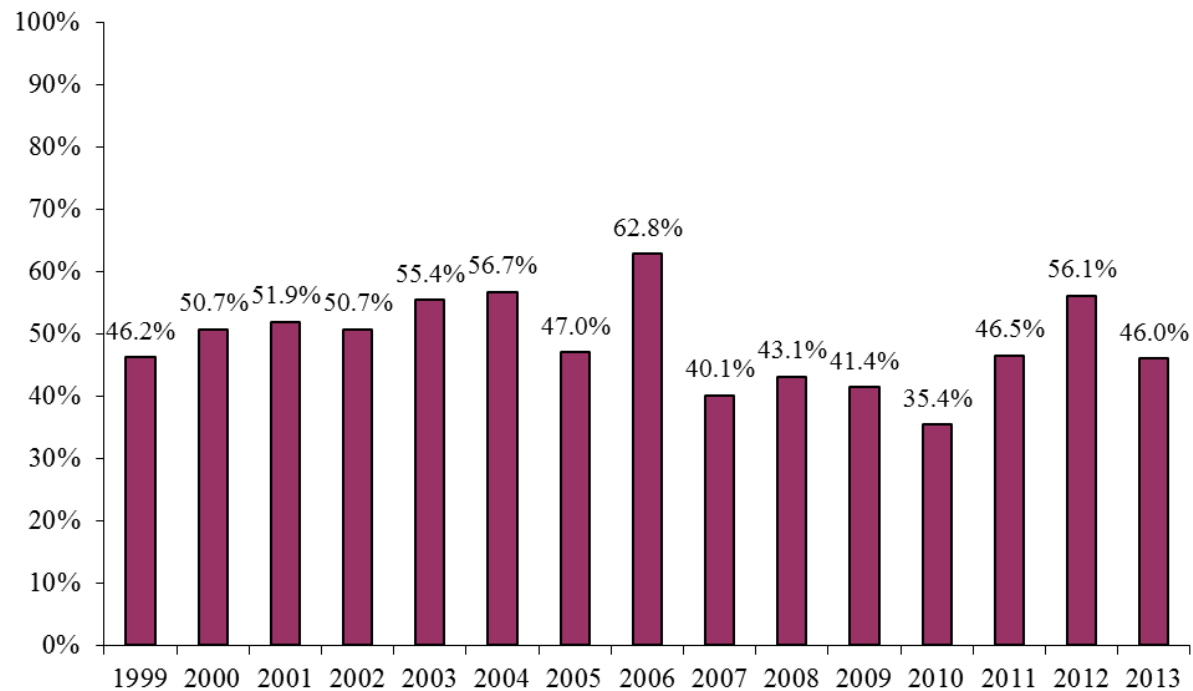
*Factors controlled for: Age & Boat Type.

** 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 in addition we control for age of youth as we do for the other boat types in this table.

All Paddlecraft for Adults (18 years or older)

Figure G and Table 2.4 present results for adults in all paddlecraft. The rates for all paddlecraft combined decreased noticeably from last year's rate (56.1% to 46.0%), reversing a trend of increasing wear rates between 2010 (35.4%) and 2012 (56.1%). All types of crafts in this category showed decreases including the most popular types of canoes and kayaks. These changes in rates should be viewed with caution, however, since paddlecraft activity is mostly observed at only a few sites and therefore the overall averages can be highly influenced by local factors such as weather or special events at these sites. In Table 2.4 we have added a row of data for paddle boards first observed in 2010. Although relatively small numbers are observed, the numbers have been growing each year and interestingly so have the wear rates.

Figure G – Adult Wear Rates for ALL Paddlecraft*



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*Factors controlled for: Age & Boat Type.

Table 2.4 – Life Jacket Wear Rates by Paddlecraft for Adults*

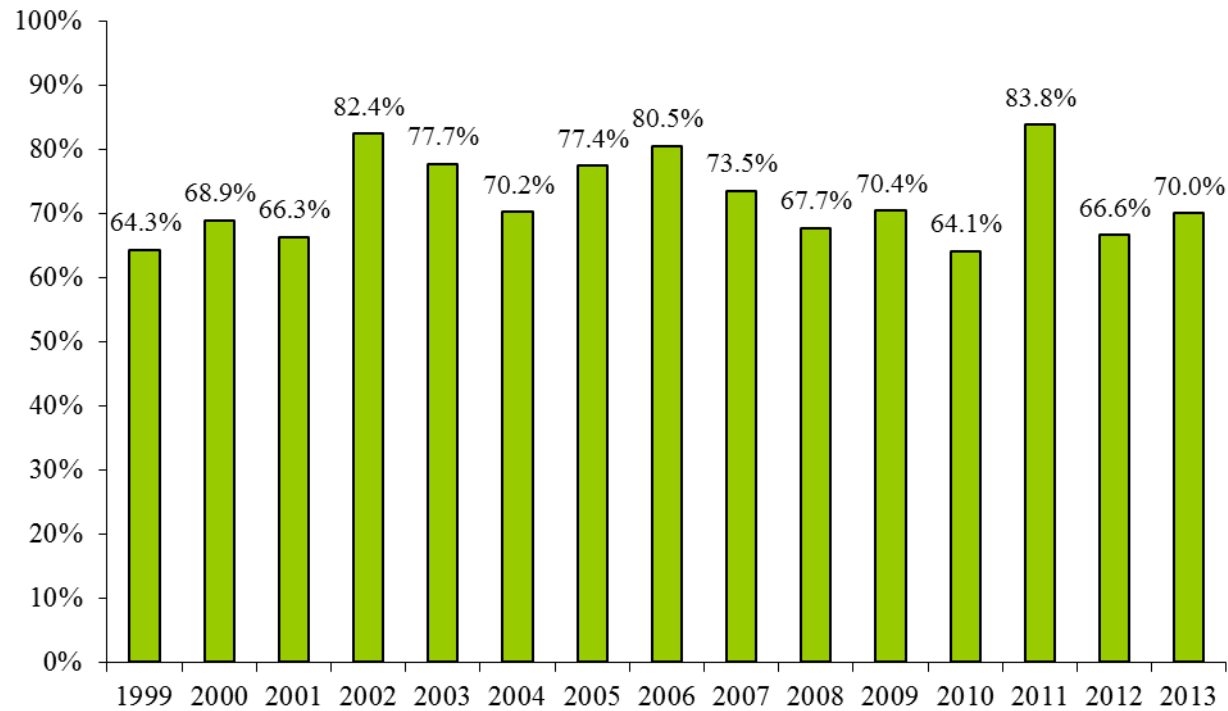
Boat Type	Observation Year														
	1999 % (N's)	2000 % (N's)	2001 % (N's)	2002 % (N's)	2003 % (N's)	2004 % (N's)	2005 % (N's)	2006 % (N's)	2007 % (N's)	2008 % (N's)	2009 % (N's)	2010 % (N's)	2011 % (N's)	2012 % (N's)	2013 % (N's)
All Paddlecraft	46.2%	50.7%	51.9%	50.7%	55.4%	56.7%	47.0%	62.8%	40.1%	43.1%	41.4%	35.4%	46.5%	56.1%	46.0%
(excluding Paddle Boards)	(1676)	(1676)	(1816)	(1864)	(1672)	(1637)	(1616)	(1456)	(2065)	(1523)	(1939)	(2551)	(1608)	(2014)	(1919)
Paddled Inflatable/Raft	71.8%	13.0%	65.1%	65.6%	60.5%	57.8%	76.0%	77.8%	23.9%	38.4%	8.2%	6.9%	10.9%	39.4%	15.8%
	(174)	(198)	(250)	(307)	(290)	(283)	(225)	(308)	(526)	(311)	(340)	(813)	(324)	(485)	(271)
Rowboat/Dinghy	24.4%	37.2%	18.7%	27.3%	22.8%	10.1%	59.2%	26.7%	15.0%	23.0%	35.3%	34.8%	34.3%	60.2%	17.8%
	(82)	(118)	(119)	(193)	(117)	(38)	(71)	(78)	(92)	(65)	(51)	(46)	(87)	(35)	(75)
Canoe	17.7%	33.8%	23.6%	15.4%	30.4%	26.7%	14.8%	29.2%	19.4%	19.7%	25.0%	19.1%	37.4%	32.7%	35.7%
	(809)	(714)	(750)	(701)	(607)	(622)	(679)	(364)	(764)	(481)	(758)	(994)	(386)	(438)	(569)
Kayak	82.7%	85.7%	84.4%	85.7%	81.4%	87.0%	74.1%	77.9%	72.0%	65.5%	72.6%	75.9%	68.6%	74.9%	67.9%
	(611)	(646)	(697)	(663)	(658)	(694)	(675)	(706)	(683)	(648)	(790)	(698)	(811)	(1056)	(1004)
Canoe/Kayak Combined	45.9%	58.6%	53.1%	49.7%	56.8%	58.6%	44.4%	61.2%	44.3%	46.0%	49.1%	47.3%	49.4%	52.8%	50.9%
	(1420)	(1360)	(1447)	(1364)	(1265)	(1316)	(1354)	(1070)	(1447)	(1129)	(1548)	(1692)	(1197)	(1494)	(1573)
Paddle Boards												27.8%	41.7%	52.9%	58.7%
												(54)	(84)	(157)	(264)
All Paddlecraft												35.5%	46.0%	55.0%	45.4%
(including Paddle Boards)												(2605)	(1692)	(2171)	(2183)

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 *Factors controlled for: Age & Boat Type.

All Paddlecraft for Youth (17 years or younger)

Figure H and Table 2.5 present results for youth in paddlecraft. Data in this table should be viewed cautiously because of the relatively small number of youth who use these types of craft. For all paddlecraft combined, wear rates have fluctuated across the years. In 2013, rates were 70.0% which are down from the high rate of 83.8% observed in 2011.

Figure H – Youth Wear Rates for ALL Paddlecraft*



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*Factors controlled for: Age & Boat Type.

Table 2.5 – Life Jacket Wear Rates by Paddlecraft for Youth*

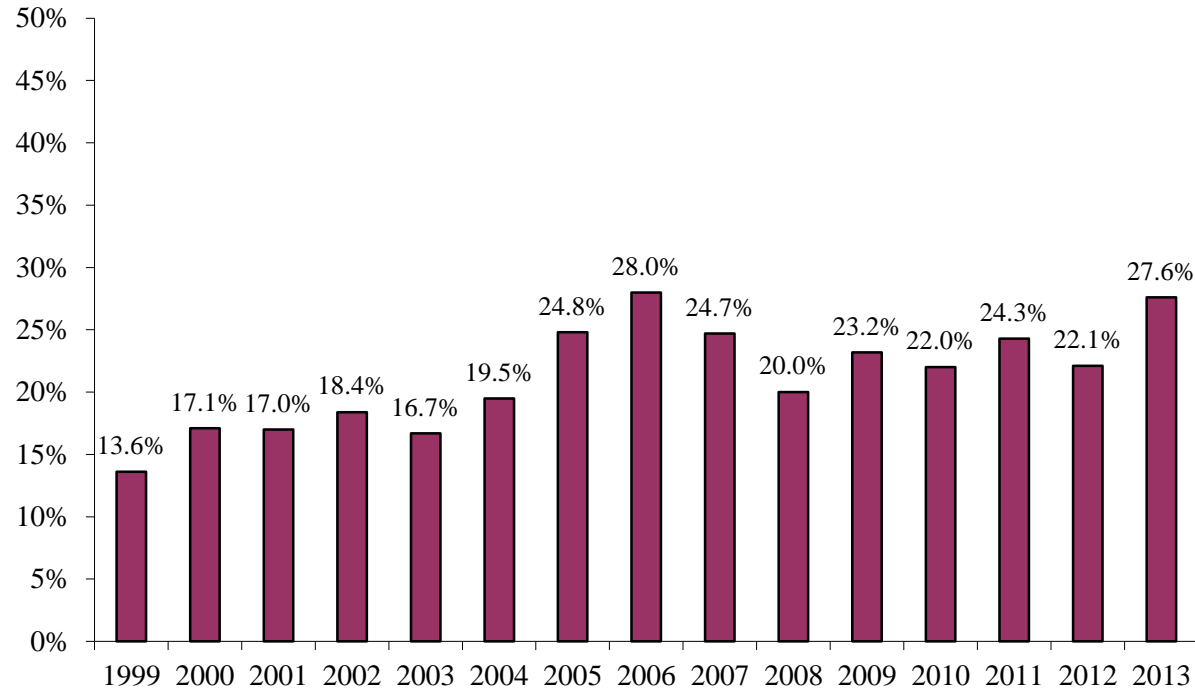
Boat Type	Observation year														
	1999 % (N's)	2000 % (N's)	2001 % (N's)	2002 % (N's)	2003 % (N's)	2004 % (N's)	2005 % (N's)	2006 % (N's)	2007 % (N's)	2008 % (N's)	2009 % (N's)	2010 % (N's)	2011 % (N's)	2012 % (N's)	2013 % (N's)
All Paddlecraft	64.3%	68.9%	66.3%	82.4%	77.7%	70.2%	77.4%	80.5%	73.5%	67.7%	70.4%	64.1%	83.8%	66.6%	70.0%
	(317)	(457)	(457)	(312)	(372)	(360)	(281)	(225)	(520)	(492)	(319)	(419)	(231)	(476)	(371)
Paddled Inflatable/Raft	62.4%	45.8%	52.3%	90.3%	68.9%	68.4%	77.5%	77.9%	58.4%	55.6%	59.0%	41.9%	68.5%	50.2%	55.1%
	(82)	(124)	(153)	(136)	(113)	(118)	(79)	(87)	(244)	(218)	(76)	(139)	(49)	(192)	(98)
Rowboat/Dinghy	11.1%	47.1%	60.3%	54.7%	88.6%	58.0%	77.1%	67.3%	61.0%	77.8%	91.1%	98.0%	94.0%	88.0%	90.6%
	(9)	(15)	(32)	(31)	(21)	(11)	(17)	(26)	(21)	(25)	(9)	(14)	(15)	(10)	(10)
Canoe	57.7%	74.6%	62.4%	71.1%	75.0%	60.3%	69.4%	68.9%	81.0%	78.0%	70.6%	68.0%	95.2%	66.5%	78.0%
	(142)	(222)	(181)	(98)	(130)	(146)	(101)	(49)	(123)	(158)	(132)	(169)	(82)	(89)	(139)
Kayak	83.3%	89.2%	94.3%	83.7%	91.6%	91.2%	88.7%	89.0%	90.1%	83.5%	85.3%	85.4%	89.3%	84.8%	77.0%
	(84)	(96)	(91)	(47)	(108)	(85)	(94)	(63)	(132)	(86)	(102)	(97)	(85)	(185)	(124)
Canoe/Kayak	67.3%	78.9%	73.1%	74.5%	82.9%	71.3%	79.6%	82.2%	85.7%	80.0%	76.0%	75.1%	88.8%	74.6%	77.2%
Combined	(226)	(318)	(272)	(145)	(238)	(231)	(195)	(112)	(255)	(244)	(234)	(266)	(167)	(274)	(263)

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 *Factors controlled for: Age & Boat Type.

Sail Craft for Adults (18 years or older)

Figure I and Table 2.6 document observations of adults in sail craft. For all sail craft combined, there was an increase in wear rates from 22.1% in 2012 to 27.6% in 2013. Both day sailors and cabin sailboats showed increases over last year's rates (54.0% to 67.1% and 12.9% to 17.3% respectively). These rates are the second highest ever observed for sail craft and only slightly below the all time high rate of 28.0% observed in 2006.

Figure I – Adult Wear Rates for ALL Sail Craft*



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*Factors controlled for: Age & Boat Type.

Table 2.6 – Life Jacket Wear Rates by Sail Craft for Adults*

Boat Type	Observation Year														
	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)	2012 % (N's)	2013 % (N's)
All Sail Craft	13.6%	17.1%	17.0%	18.4%	16.7%	19.5%	24.8%	28.0%	24.7%	20.0%	23.2%	22.0%	24.3%	22.1%	27.6%
	(3420)	(3565)	(3843)	(4087)	(3149)	(4149)	(3084)	(3279)	(3217)	(3079)	(3733)	(3336)	(3231)	(3297)	(2840)
Sailboard	16.4%	94.0%	80.6%	83.2%	96.7%	92.9%	53.0%	92.1%	83.7%	94.6%	71.9%	83.2%	100%	93.3%	100%
	(46)	(30)	(15)	(55)	(27)	(40)	(20)	(12)	(18)	(17)	(7)	(29)	(9)	(14)	(10)
Day Sailor	30.7%	35.6%	37.9%	46.7%	38.4%	49.7%	56.4%	59.1%	50.4%	48.3%	61.7%	57.5%	61.3%	54.0%	67.1%
	(739)	(791)	(604)	(1124)	(815)	(984)	(736)	(607)	(397)	(649)	(652)	(731)	(736)	(682)	(469)
Cabin Sailboat	9.1%	11.3%	10.2%	9.5%	10.2%	10.1%	15.4%	19.1%	17.1%	12.0%	13.0%	11.7%	13.4%	12.9%	17.3%
	(2635)	(2744)	(3224)	(2908)	(2307)	(3125)	(2328)	(2660)	(2802)	(2413)	(3074)	(2576)	(2486)	(2601)	(2361)

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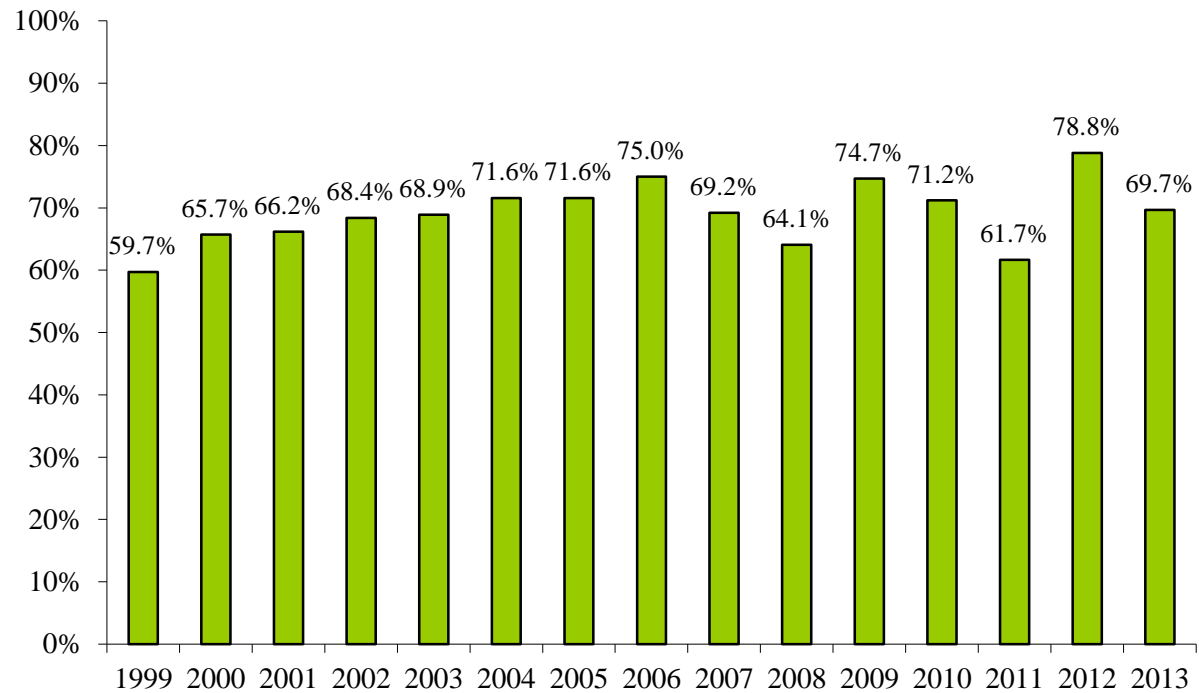
2013 National Observational Life Jacket Wear Rate Study

*Factors controlled for: Age & Boat Type.

Sail Craft for Youth (17 years or younger)

Figure J and Table 2.7 show that, in contrast to adult rates, the national average wear rates on all sail craft for all youth dipped from the historically highest rates observed last year (from 78.8% in 2012 to 69.7% in 2013). However, relatively few youth are found on any type of sail craft and, therefore, fluctuations in rates should be interpreted with caution.

Figure J – Youth Wear Rates for ALL Sail Craft*



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*Factors controlled for: Age & Boat Type.

Table 2.7 – Life Jacket Wear Rates by Sail Craft for Youth*

Boat Type	Observation Year														
	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)	2012 % (N's)	2013 % (N's)
All Sail Craft	59.7%	65.7%	66.2%	68.4%	68.9%	71.6%	71.6%	75.0%	69.2%	64.1%	74.7%	71.2%	61.7%	78.8%	69.7%
	(347)	(329)	(424)	(381)	(323)	(323)	(327)	(371)	(270)	(274)	(305)	(202)	(219)	(313)	(220)
Sailboard	0.0%	100%	66.7%	75.0%	--	92.1%	100%	100%	82.2%	--	--	100%	--	100%	--
	(3)	(7)	(6)	(4)	(0)	(48)	(1)	(4)	(8)	(0)	(0)	(1)	(0)	(1)	(0)
Day Sailor	71.1%	81.6%	92.0%	82.1%	84.3%	87.5%	73.4%	93.2%	86.5%	88.0%	92.5%	85.2%	80.2%	98.2%	91.5%
	(114)	(81)	(85)	(113)	(107)	(83)	(67)	(122)	(54)	(75)	(80)	(86)	(57)	(166)	(36)
Cabin Sailboat	58.3%	61.5%	58.2%	63.5%	60.6%	68.3%	69.4%	65.7%	62.4%	56.4%	66.4%	65.9%	54.9%	60.3%	61.7%
	(230)	(241)	(333)	(264)	(216)	(192)	(259)	(245)	(208)	(196)	(225)	(115)	(162)	(146)	(184)

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 2013 National Observational Life Jacket Wear Rate Study
 *Factors controlled for: Age & Boat Type.

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

Table 2.8 shows the breakdown of adult wear rates by boat size for three general categories of boats: powerboats, sailboats, and paddlecraft. Data are presented only for 2004 to 2012, since 2004 was the first year that observations were divided into two size categories of 16 to 21 feet and 21 to 26 feet, from one category, 16 to 26 feet that was used in prior years.

As might be expected, wear rates and boat size show a dependent relationship: wear rates decrease as size of the boat increases. However, the general level of wear is also highly influenced by the type of craft. Powerboat wear rates range from a ten year average of 8.6% for boats less than 16 feet to 1.5% for boats over 26 feet in length. For sailboats, the ten year average goes from 73.4% for sailboats less than 16 feet to 11.2% for sailboats over 26 feet in length. For paddlecraft, the ten year average for boats less than 16 feet is 50.2% and for boats in the 16 to 21 foot category it is 45.3%.

One interesting point to note (not shown directly in Table 2.8) in the powerboat category: there is a shift in the proportion of boats over 21 feet from 34% in 2004 to 49.4% in 2013. This shift may contribute to a gradual decrease in wear rates among powerboaters across this time period because wear rates are lower on longer powerboats compared to shorter powerboats.

**Table 2.8 – Life Jacket Wear Rates by Boat Type and Size for Adults*
2004 to 2013**

Boat Type and Size	Observation Year										
	2004 % (N's)	2005 % (N's)	2006 % (N's)	2007 % (N's)	2008 % (N's)	2009 % (N's)	2010 % (N's)	2011 % (N's)	2012 % (N's)	2013 % (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)	9.3% (1599)	9.3% (2119)	8.6% (22973)
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)	5.1% (12898)	4.3% (11424)	5.0% (132971)
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% (9389)	2.5% (9364)	2.7% (84043)
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)	2.0% (4004)	2.1% (3874)	1.5% (38939)
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)	74.2% (194)	78.7% (136)	73.4% (2398)
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)	48.6% (379)	66.3% (314)	53.3% (3427)
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)	24.3% (989)	27.6% (736)	21.0% (9742)
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)	8.3% (1735)	13.4% (1654)	11.2% (17659)
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)	57.2% (1647)	43.0% (1532)	50.2% (13293)
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)	47.3% (367)	56.2% (383)	45.3% (4057)

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*Factors controlled for: Age & Boat Type.

III. CHANGES IN INFLATABLE LIFE JACKET USE

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.

Charts K1 and K2, indicate the differences in inflatable use for three periods of time—2002 to 2005; 2006 to 2009 and 2010 to 2013. (This is a change from previous reports in which data were only presented for two groups of years.) Chart K1 shows the absolute percent of all adult boaters (minus PWCs and in-the-water towed boaters) wearing either traditional style or inflatable style life jackets. Chart K2 is limited to only those adult 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 0.5% to 1.0% over the three time periods. At the same time, traditional life jacket wear rates have declined by a larger amount (7.9% decreasing to 7.1%). Even though inflatable use doubled across all boaters, it was not enough of an increase to raise the total rate of life jacket wear. Overall 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.

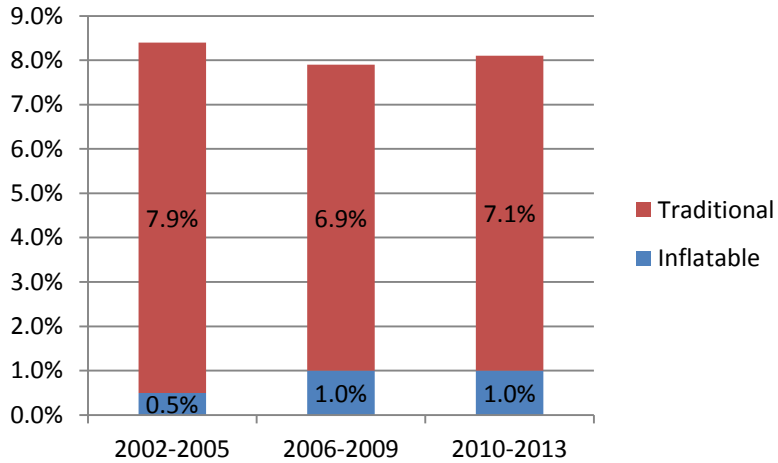
Chart K2 shows more clearly the increase in the proportion of life jacket users choosing an inflatable style. In the 2002-2005 period, 6.0% of the users were wearing inflatables, and this rate increases to 12.3% in the 2010 to 2013 period.

Charts in this section 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 adult users---skiffs, speedboats, cabin sailboats, and cabin cruisers.

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

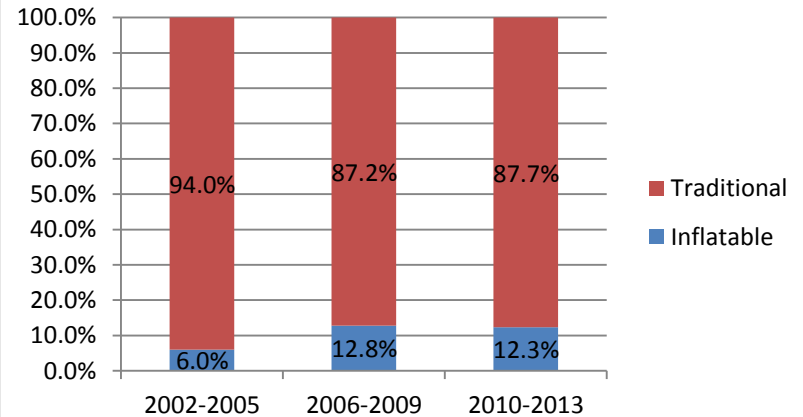
K1. Comparison of Types of Life Jacket Use on All Boats (minus PWCs)

2002-2005, 2006-2009, 2010-2013



K2. Proportional Comparisons of Types of Life Jacket Use on All Boats (minus PWCs) among Life Jacket Users

2002-2005, 2006-2009, 2010-2013

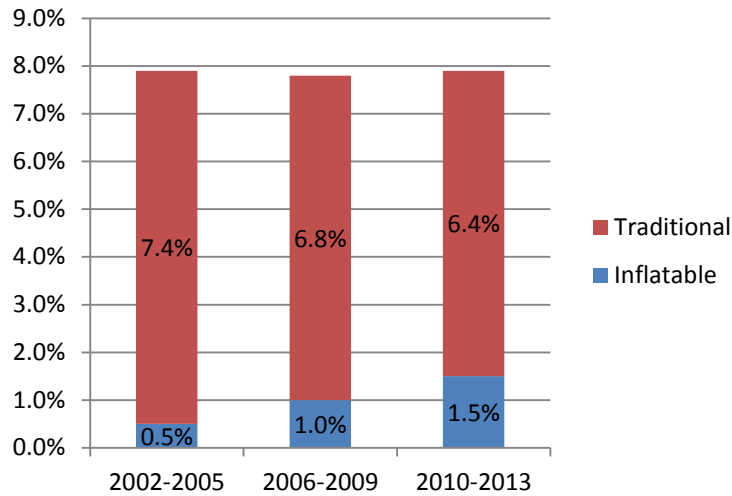


Changes in Inflatable Life Jacket Use for Boaters on Skiffs

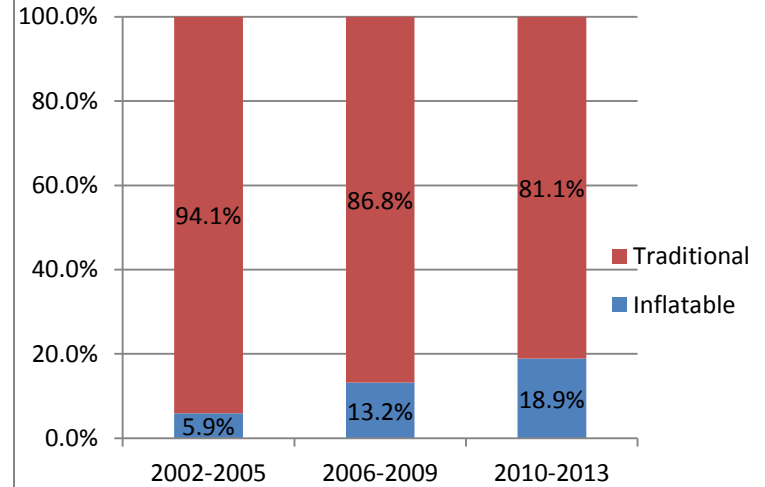
Inflatable and traditional style life jacket use is shown for skiffs in charts K3 and K4. Over the three time periods, the overall rate of use of life jackets stayed nearly the same at 7.9%, 7.8% and 7.9% respectively. However, inflatable life jacket use increased in absolute wear rates from 0.5% to 1.5%, a tripling of use. However, during these time periods there was essentially a matched decrease in traditional life jacket wear, so that the increase of inflatable use was a substitution behavior rather than leading to more life jacket use. Chart K4 shows the relative increase moving from 5.9% of users in the 2002 to 2005 time period to 18.9% of users in the 2010 to 2013 time period.

In Charts K3b and K4b we show data only for skiffs involved in fishing or intent to fish. (Intent to fish was only separated out as a specific activity category in 2007 so only two time periods are shown in these charts.) Since more and more fishing tournaments are requiring life jacket use, we thought it instructive to characterize changes for these types of boaters. In K3b overall wear rates actually declined a bit over these two time periods but use of inflatables increased (1.6% moving to 2.4%). In K4b the relative proportional increase is easier to see with inflatables accounting for 16.6% of use in the earlier period and 27.1% of use in the recent time period.

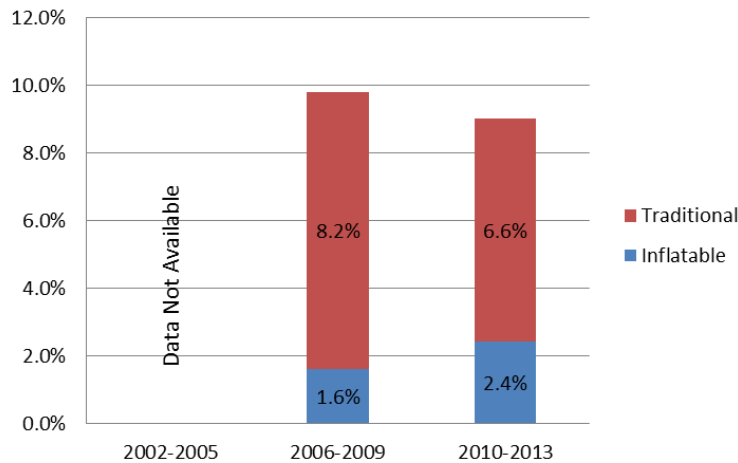
**K3. Comparison of Types of Life Jacket Use on Skiffs
2002-2005, 2006-2009, 2010-2013**



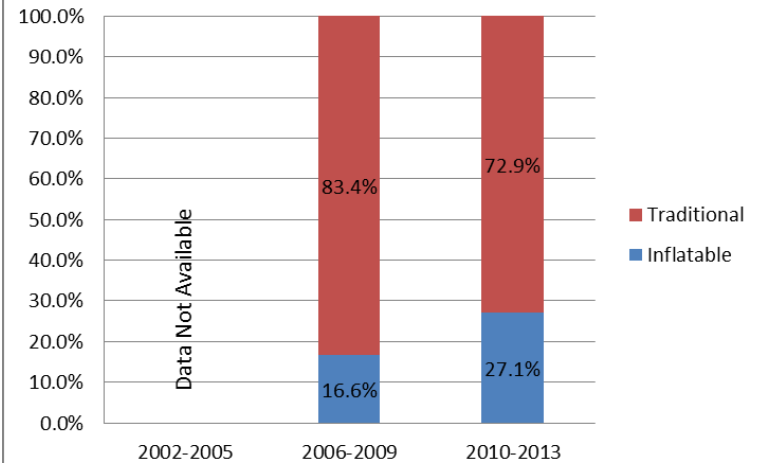
**K4. Proportional Comparisons of Types of Life Jacket Use on Skiffs among Life Jacket Users
2002-2005, 2006-2009, 2010-2013**



**K3b. Comparison of Types of Life Jacket Use on Skiffs
2006-2009, 2010-2013
(only for those involved in fishing or intent to fish)**



**K4b. Proportional Comparison of Types of Life Jacket Use on Skiffs
2006-2009, 2010-2013
(only for those involved in fishing or intent to fish)**

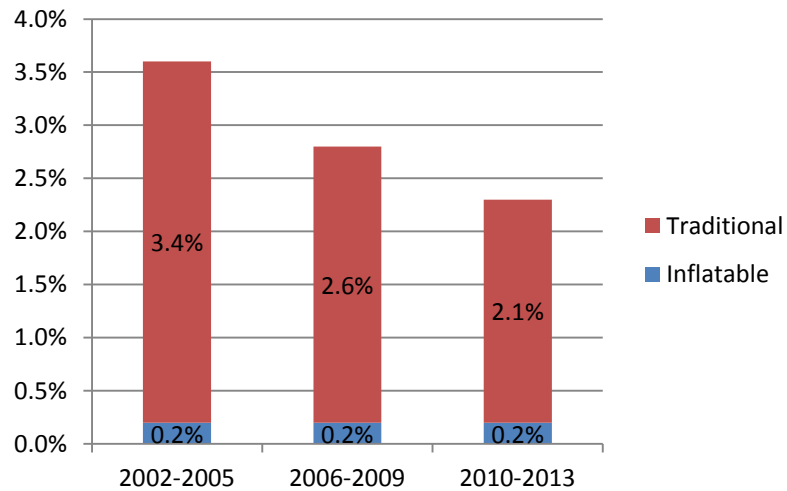


Changes in Inflatable Life Jacket Use for Boaters on Speedboats/Runabouts

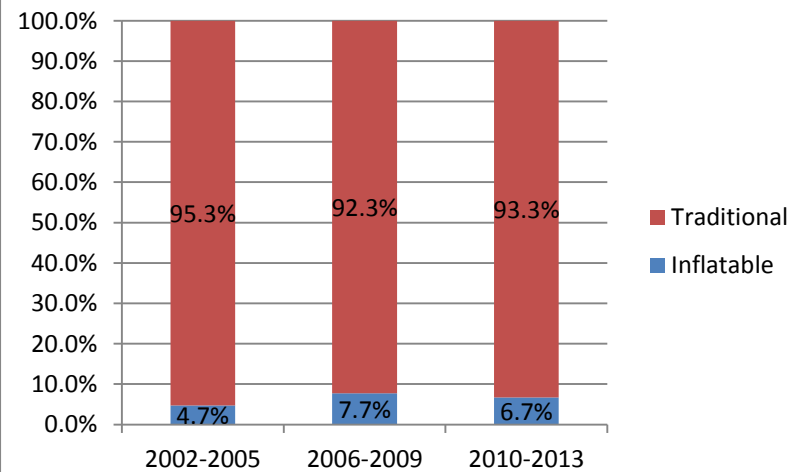
Inflatable and traditional style life jacket use is shown for speedboats/runabouts in charts K5 and K6. Over the three time periods, the rate of use of traditional life jackets actually decreases from 3.4% to 2.1% (as discussed earlier, some of this is due to a proportional shifting of boaters to larger sized craft). Inflatable life jacket use stayed the same in these three periods with an absolute wear rate of 0.2%.

Chart K6 shows the relative increase moving from 4.7% of users in the 2002 to 2005 time period to 7.7% of users in the 2006 to 2009 time period and then 6.7% of users in the 2010 to 2013 period. This again is evidence of substitution changes rather than encouraging new users.

K5. Comparison of Types of Life Jacket Use on Speedboats/Runabouts 2002-2005, 2006-2009, 2010-2013



K6. Proportional Comparisons of Types of Life Jacket Use on Speedboats/Runabouts among Life Jacket Users 2002-2005, 2006-2009, 2010-2013

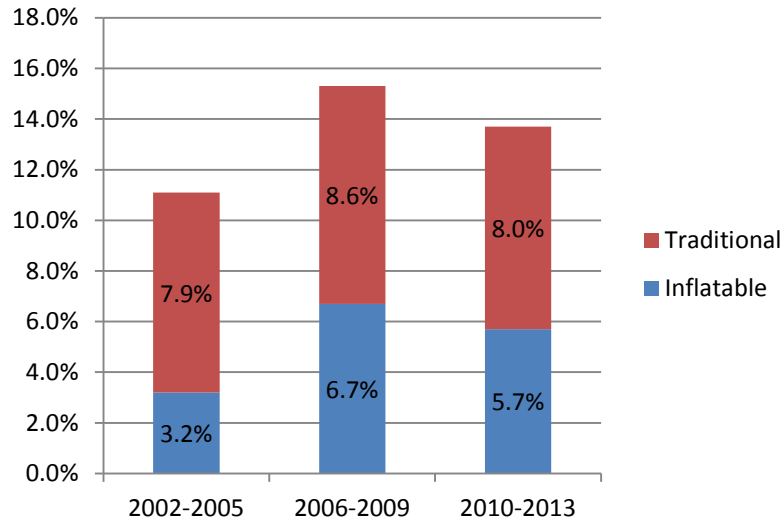


Changes in Inflatable Life Jacket Use for Boaters on Cabin Sailboats

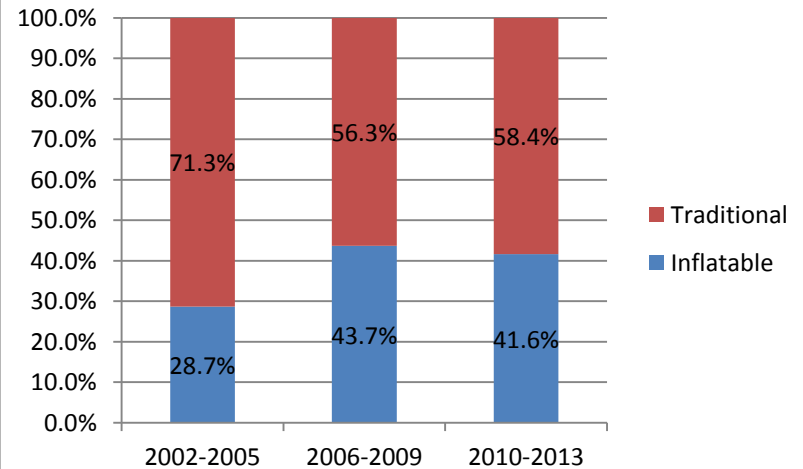
Inflatable and traditional style life jacket use is shown for cabin sailboats in charts K7 and K8. Over the three time periods, the rate of use of any life jacket increases from 11.1% to 15.3% and then falls back to 13.7%. Inflatable life jacket use increased substantially from 3.2% to 6.7% and then 5.7%.

Chart K8 shows the relative increase moving from 28.7% of users in the 2002 to 2005 time period to 43.7% of users in the 2006 to 2009 time period and then 41.6% in the 2010 to 2013 time period. For this type of craft, it seems that increasing use of inflatable life jackets accounts for some of the increase in the overall wear rates.

K7. Comparison of Types of Life Jacket Use on Cabin Sailboats 2002-2005, 2006-2009, 2010-2013



K8. Proportional Comparisons of Types of Life Jacket Use on Cabin Sailboats among Life Jacket Users 2002-2005, 2006-2009, 2010-2013

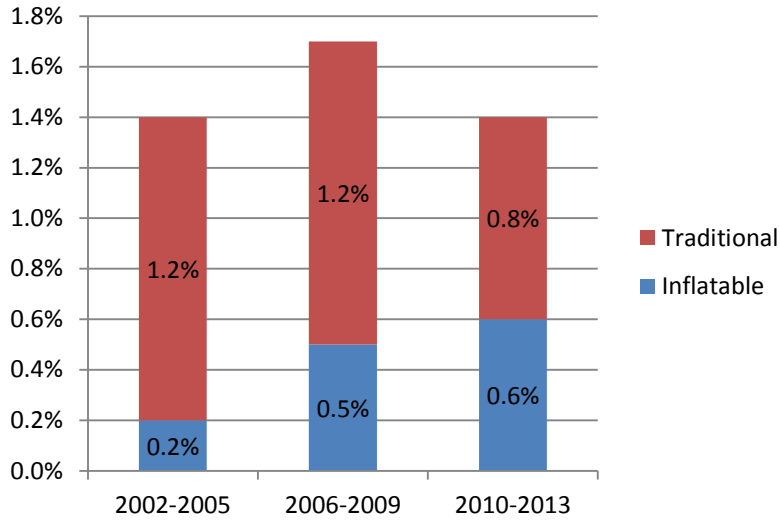


Changes in Inflatable Life Jacket Use for Boaters on Cabin Cruisers

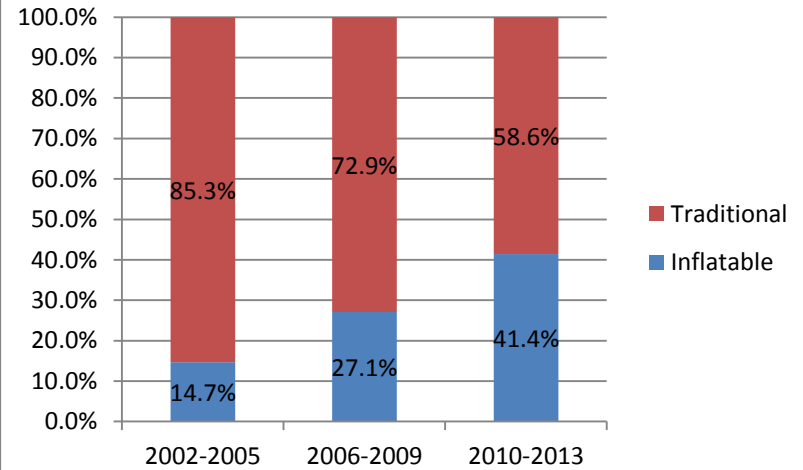
Inflatable and traditional style life jacket use is shown for cabin cruisers in charts K9 and K10. Over the three time periods, the rate of use of any life jacket essentially stayed the same (1.4% to 1.7% to 1.4%) and relatively low. However, inflatable life jacket use increased from 0.2% to 0.6%.

Chart K10 shows the relative increase moving from 14.7% of users in the 2002 to 2005 time period to 27.1% of users in the 2006 to 2009 time period and then moving to 41.4% of users in 2010 to 2013. This is clearly an indication of a substitution effect, but one that is a substantial movement.

**K9. Comparison of Types of Life Jacket Use on Cabin Cruisers
2002-2005, 2006-2009, 2010-2013**



**K10. Proportional Comparisons of Types of Life Jacket Use on Cabin Cruisers among Life Jacket Users
2002-2005, 2006-2009, 2010-2013**



IV. CONCLUSIONS FOR LIFE JACKET WEAR RATES - NATIONAL TREND DATA 1999 TO 2013

This report includes observational data collected from 1999 to 2013. 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 have generally climbed since the study began in 1999. Wear rates for youth have increased from 52.1% (1999) to 66.0% (2013). 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. 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. Powerboats between 16 and 21 feet in length continue to show relatively low wear rates (4.3% in 2013). This is the lowest rate it has been in the past 15 years. This type of craft and size category is the most popular for boaters to use with 40% of boaters found in this category.
3. Sail craft wear rates continue to climb for both day sailors and cabin sailboats. This year (2013) showed wear rates that were only slightly below the historical highest wear rates observed.
4. Wear rates on PWCs for both adults and children are almost universal.
5. In circumstances where mandatory regulations currently exist, wear rates are substantially greater than for those boaters involved in similar activities but for which there are no mandatory regulations.

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, during the same period of time (July and August). 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 40% 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 U.S. Power Squadrons, 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, one change made in 2004 and one change made in 2007. 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, sailboat, 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 or a towing sport, observers indicated which **boaters were skiing** (or being towed) 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 14 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: 2013 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"/> Stern drive/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 <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	<input type="radio"/> High Speed		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"/> Stern drive/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 <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	<input type="radio"/> High Speed		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"/> Stern drive/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 <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	<input type="radio"/> High Speed		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 2013

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State	Site	Block	Group	Phase	Page Number

20321



JSI Data Collection Form: 2013 Site Form

PFD Study 2013 ID

of Belt Pack PFD's # of Boats Observed 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 P M Observation end time: : AM P M

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

VIII. INFORMATION ON BOATS & PEOPLE OBSERVED

From 1999 to 2013, JSI has observed a total of 216,667 boats and 609,977 boaters (Figure L1). This year, 2013, 14,044 boats carrying 39,462 boaters were observed. Across the fifteen years, the number of boats, and the number of boaters observed in the later years have generally been greater than in the earlier years. However, the proportions of the different types of boats, operation and activity of boats, as well as the age and gender of the boaters observed has remained fairly consistent (see Figures L2 through R2). This indicates not only that the sites chosen yielded diversity in the boats and boaters observed each year, but also that diversity has remained relatively consistent across the years. These figures demonstrate that the degree of representativeness of the sample of recreational boaters and their boating habits remained relatively constant across this fifteen year span.

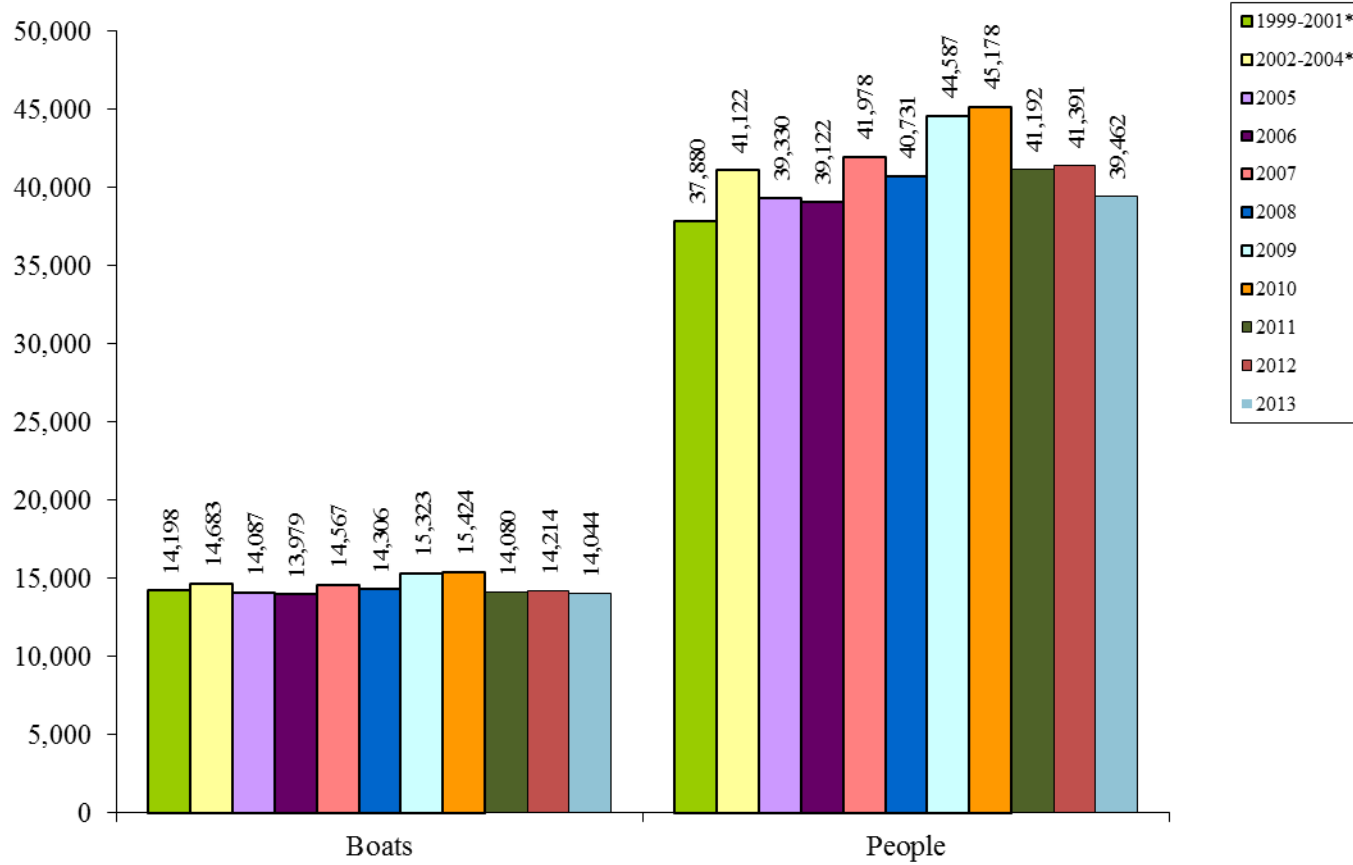
There is one shift that is apparent over the fifteen years that can be seen in Figures M and N. There has been a decrease in boats less than 16 feet in length observed and, as seen in Figure N, since 2004 there has also been a decrease in boats observed between 16 and 21 feet in length. This is matched 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 conditions 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 prior to 2011. The percentages now exclude (like the 2011 report) 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 (before 2011).

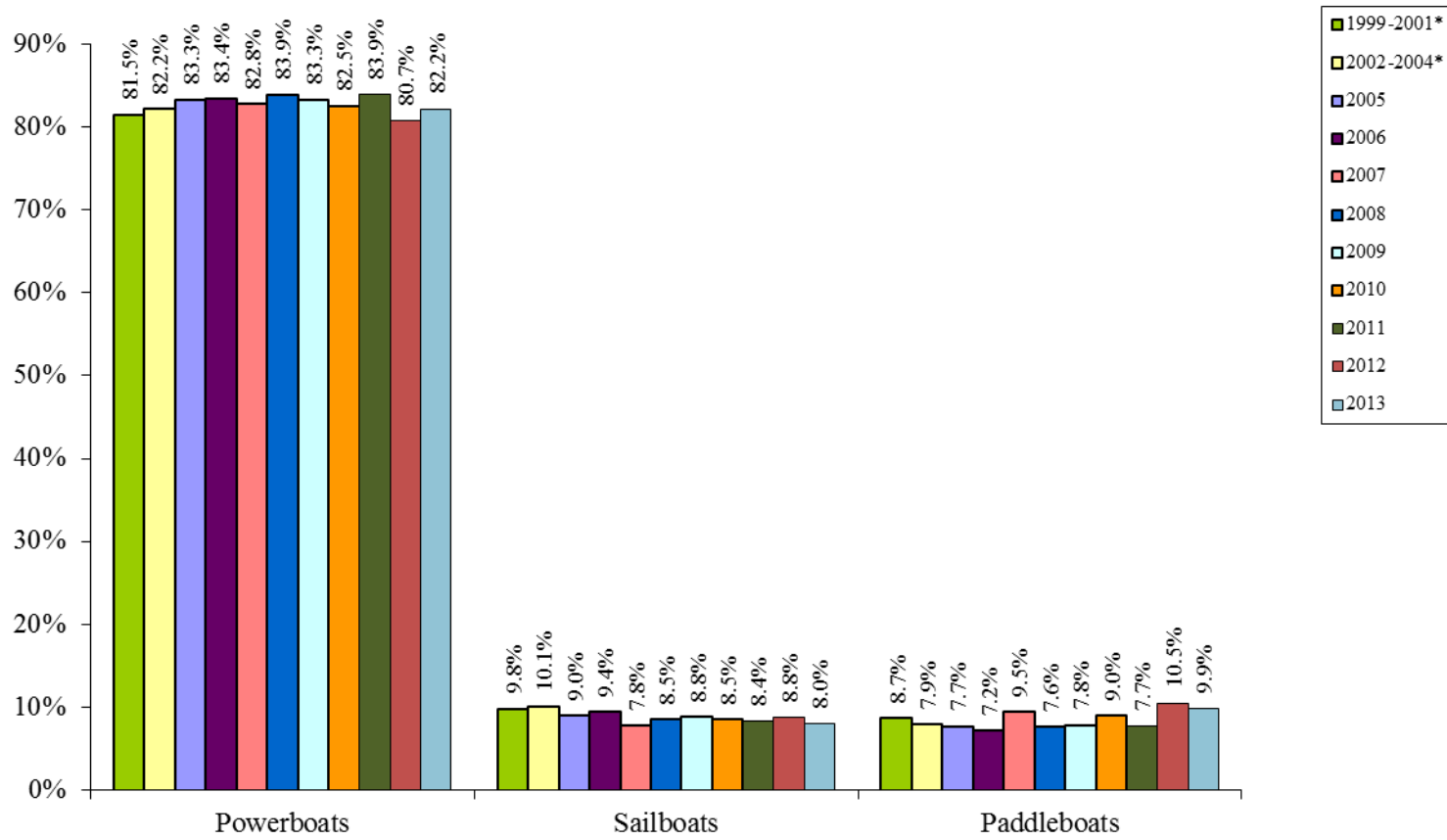
Figure L2 is constructed differently from previous years. It now compares only speedboats, sailboats, and paddle boats, and excludes "other" types of boats.

Figure L1 – Number of Boats and People



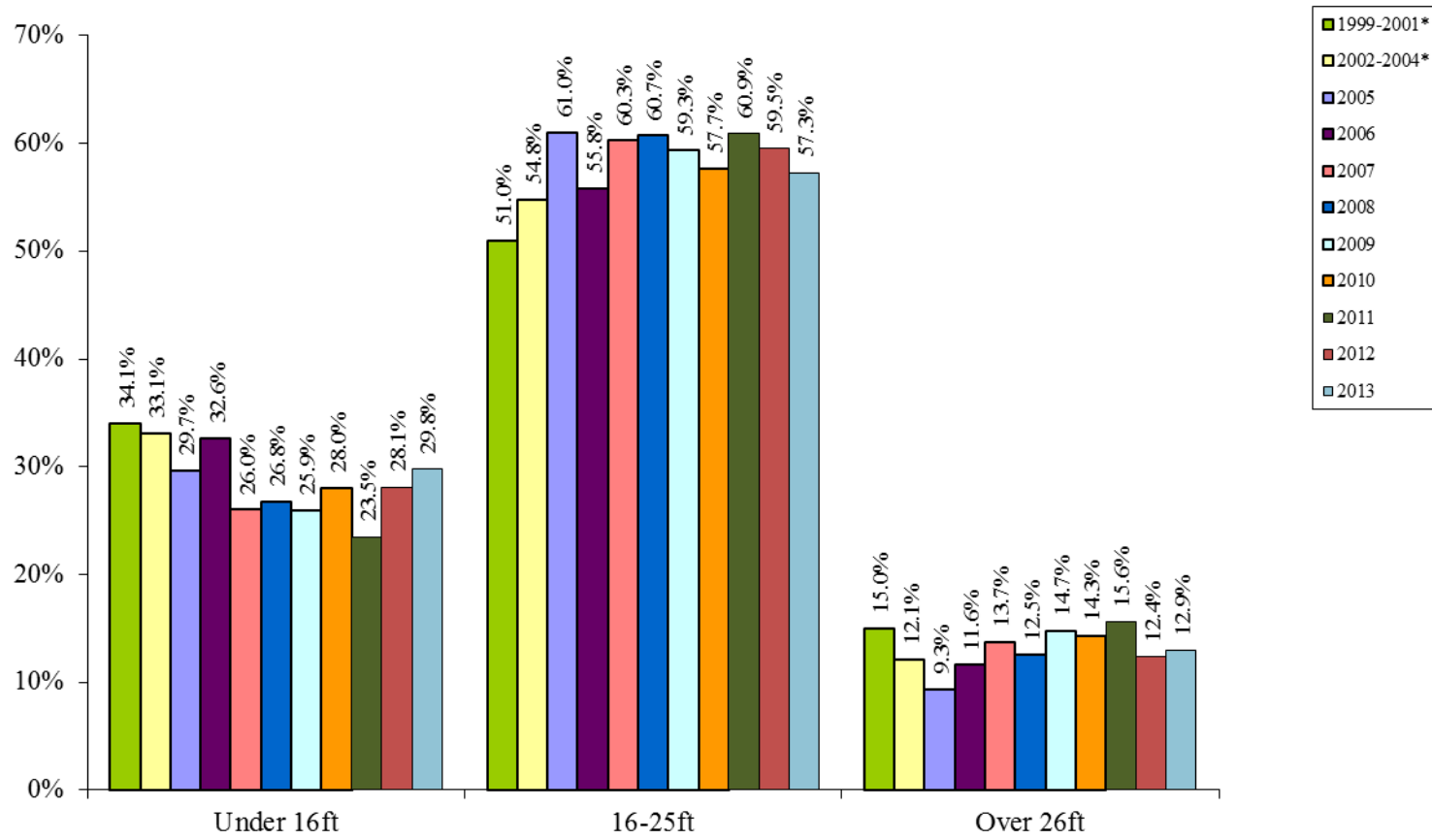
*Three-year average

Figure L2 – Types of Boats



*Three-year average

Figure M – Length of Boats



*Three-year average

Figure N – Length of Boats 2004-2013 Data Only

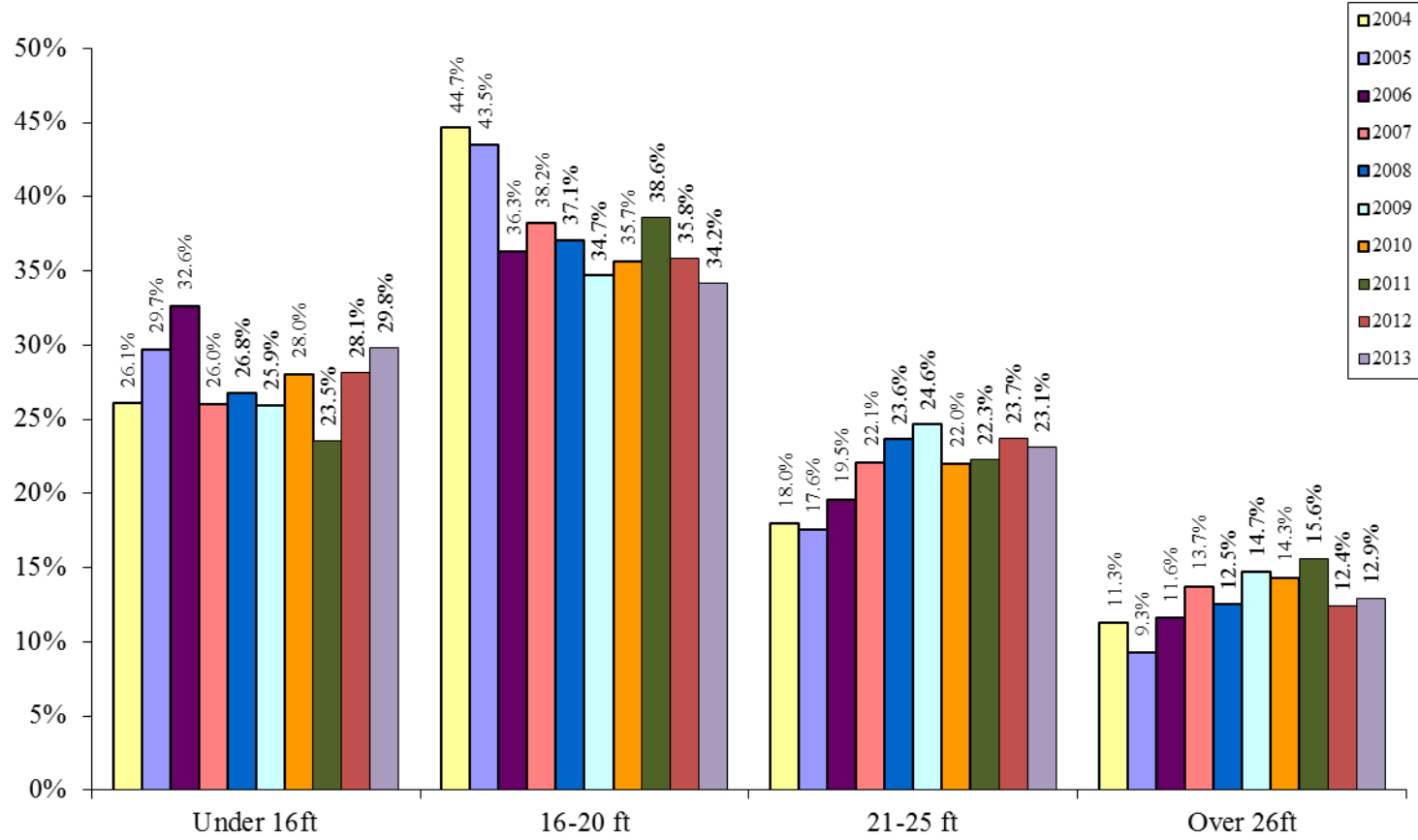
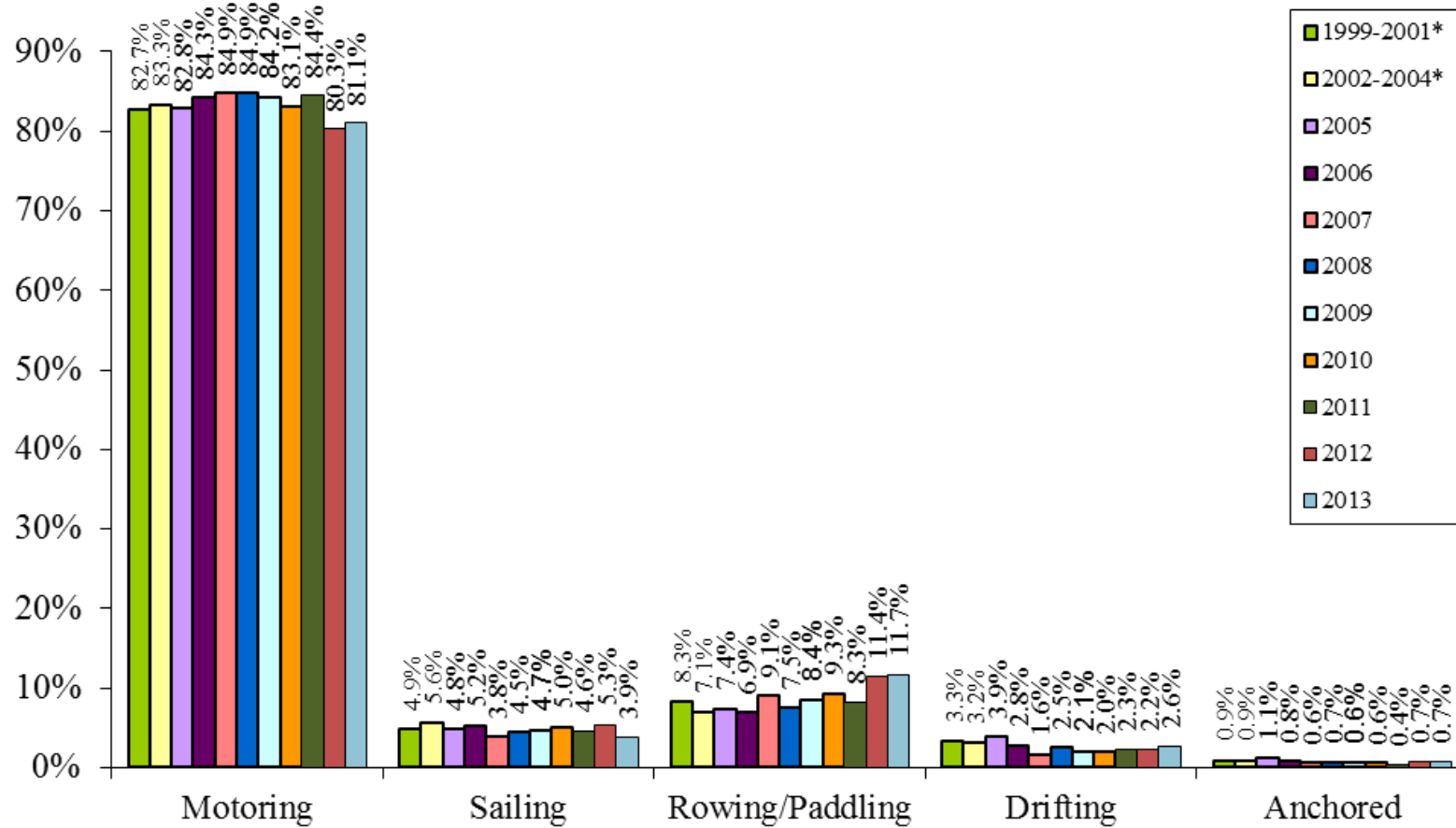
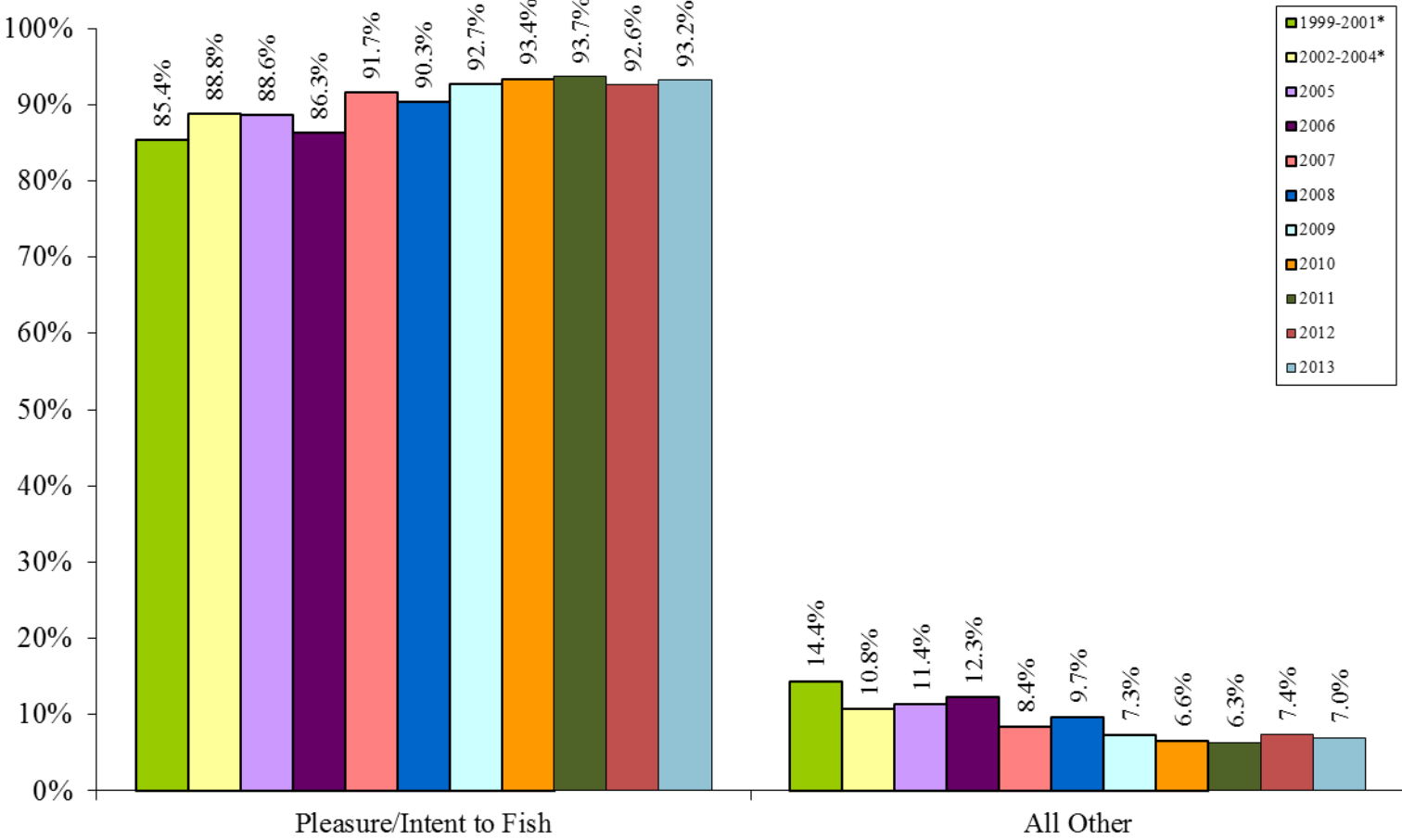


Figure O – Operation of Boats



*Three-year average

Figure P1 – Activity of Boaters—ALL YEARS*



*Three-year average

Figure P2 – Activity of Boaters 2007-2013 Data

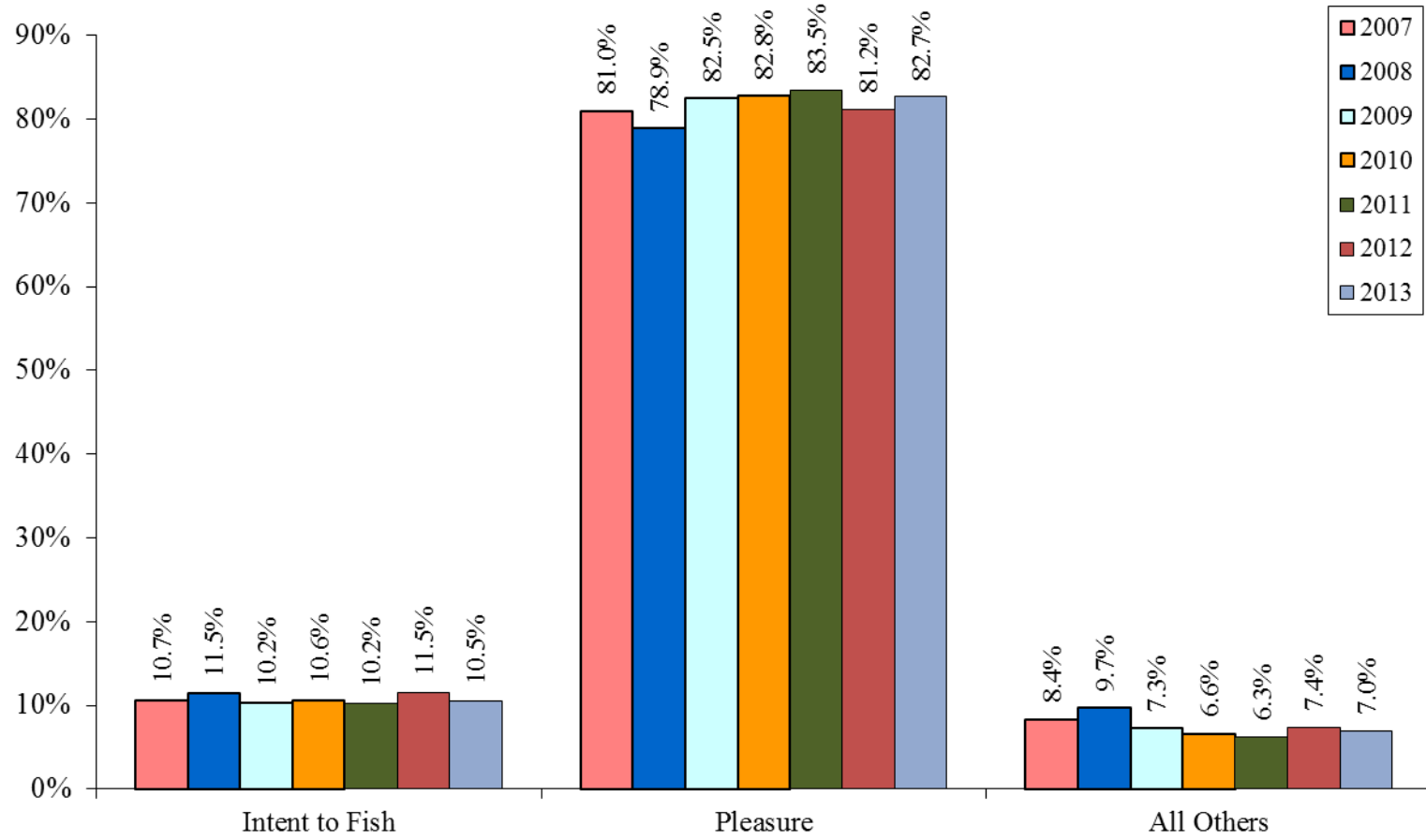
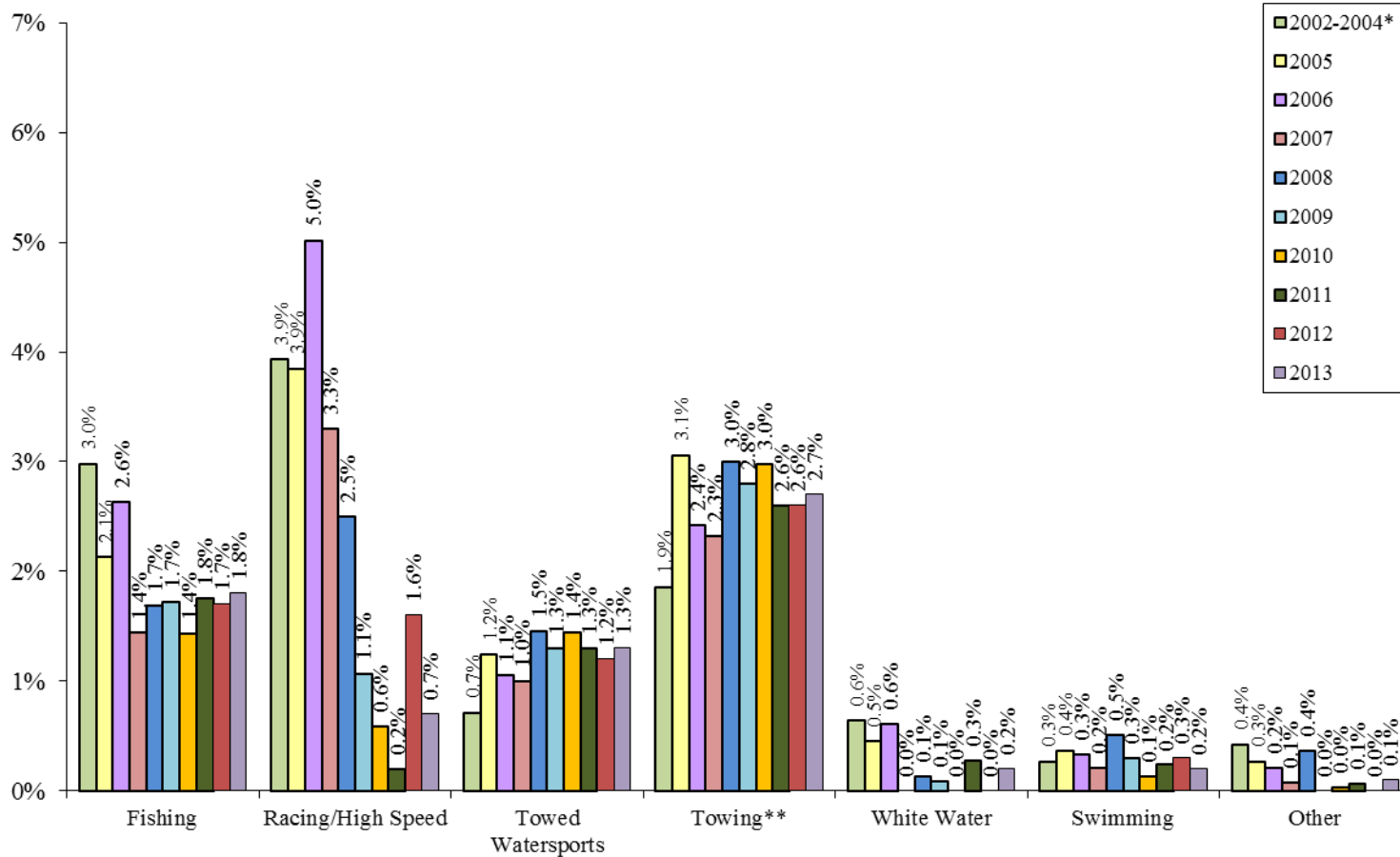


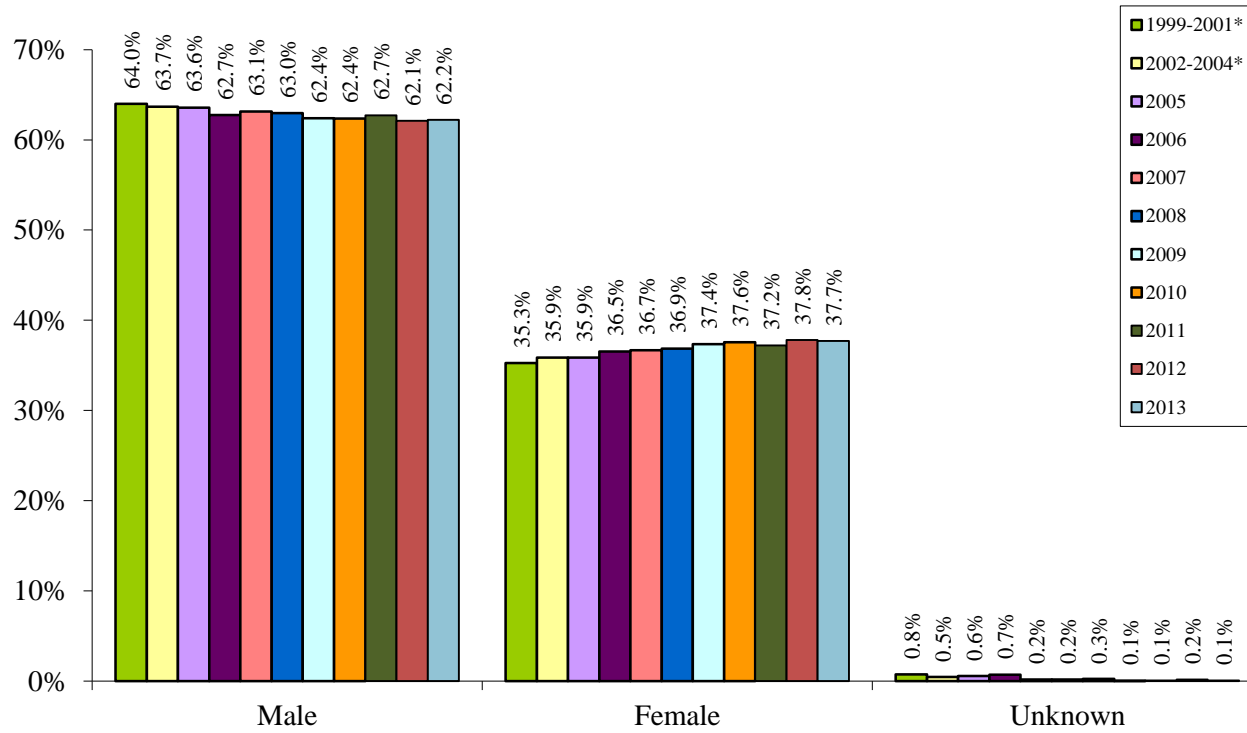
Figure P3 – Activity of Boaters 2002-2013
Detailed Breakdown of ALL OTHER Category from Figure P1



*Three-year average

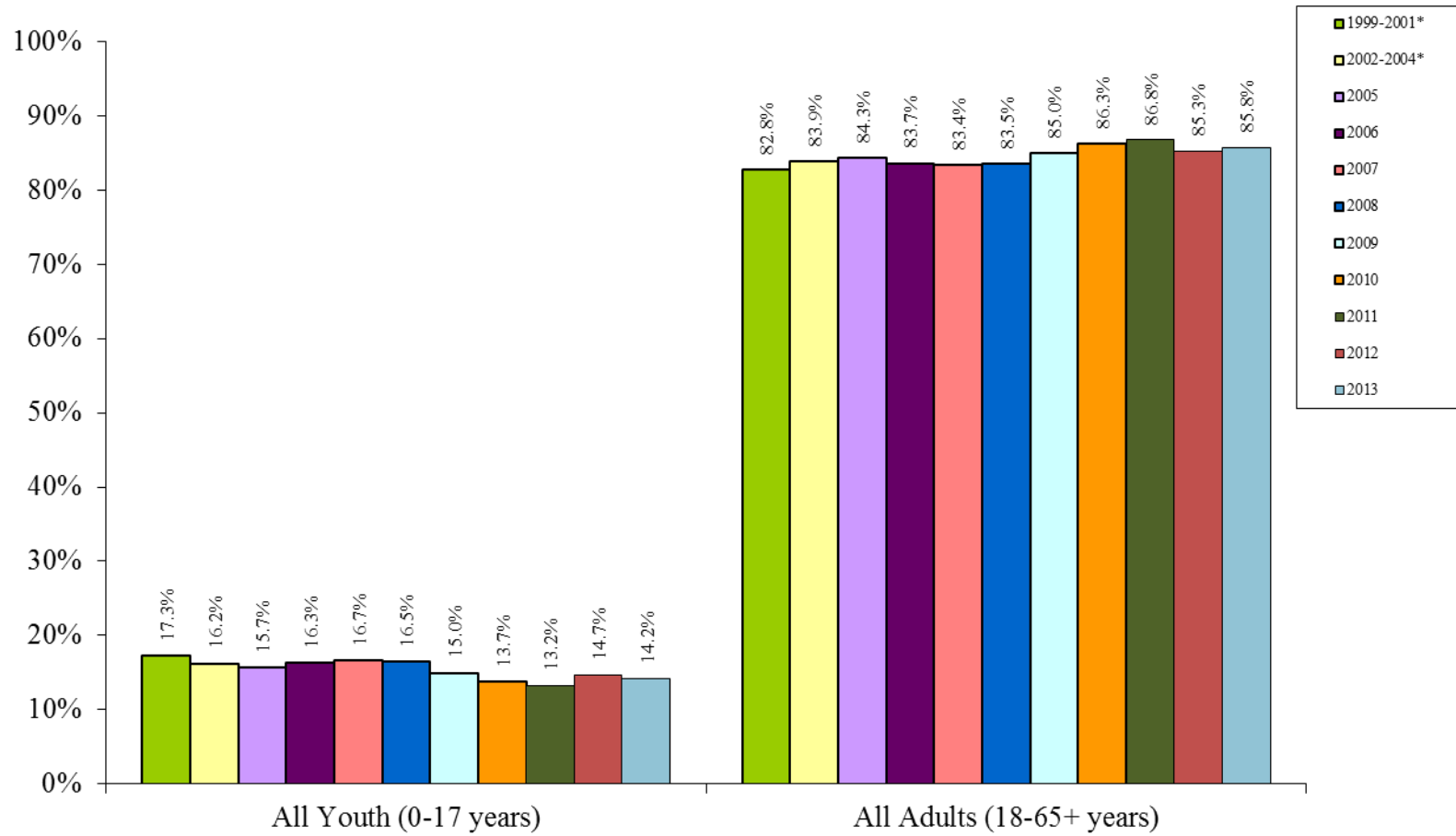
**The activity “Towing” indicates that these boaters were passengers in a boat towing water-skiers or other towing activities. Likewise, “Towed Watersports” includes all towing sports and is reserved for the boaters in the water being towed. The label was changed in April 2010.

Figure Q – Gender of Boaters



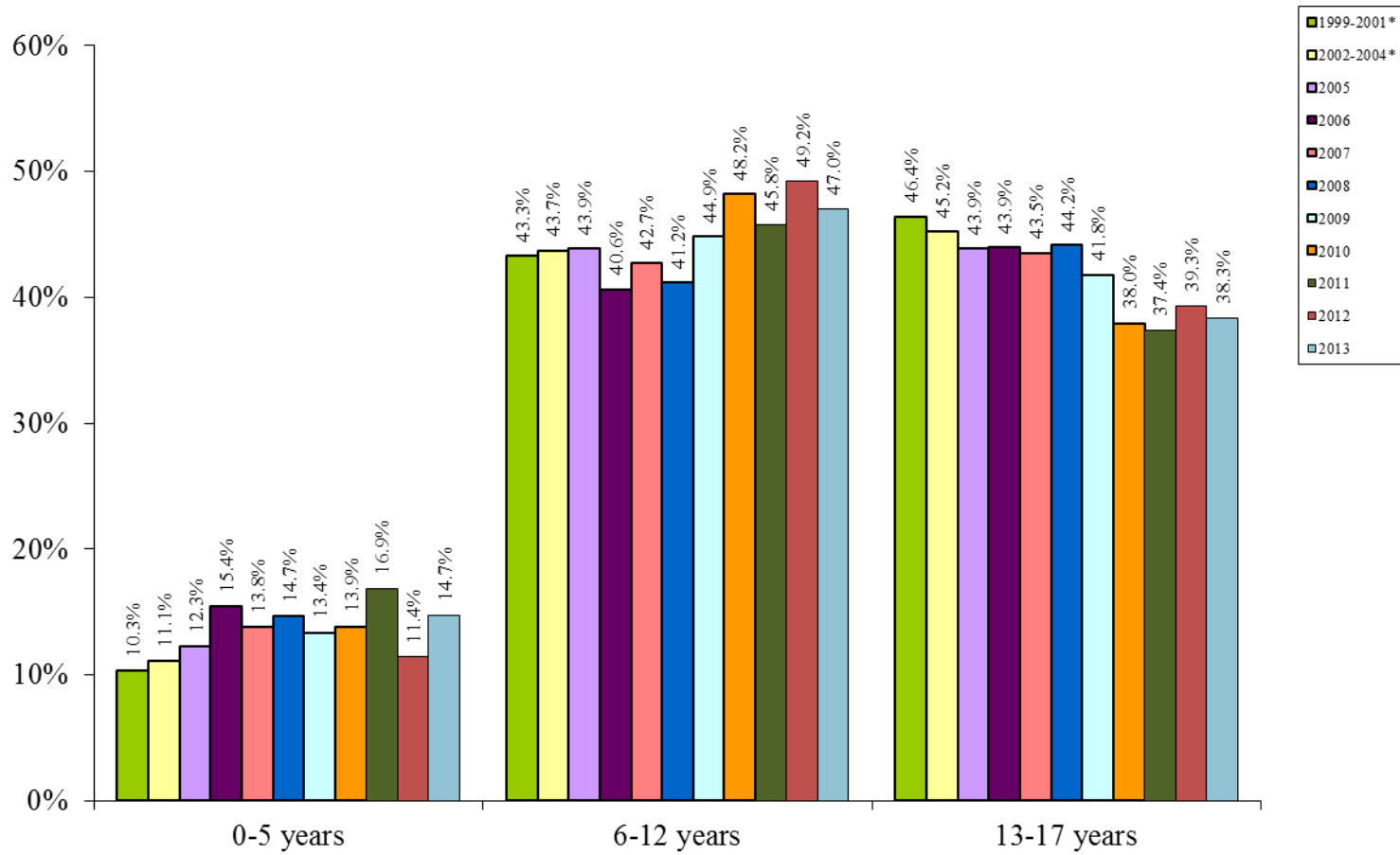
*Three-year average

Figure R1 – Age of Boaters



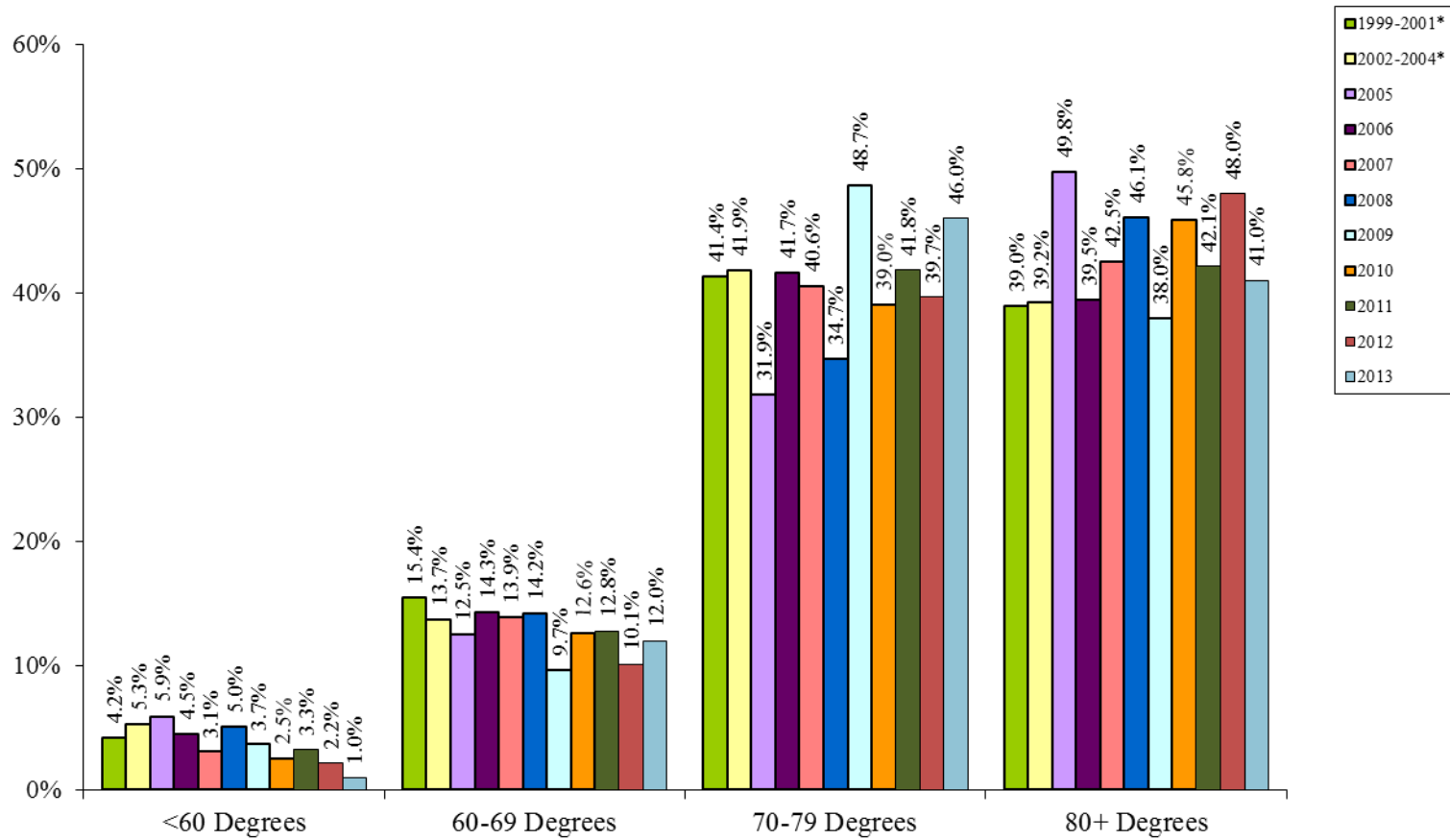
*Three-year average

Figure R2 – Age of Youth Boaters



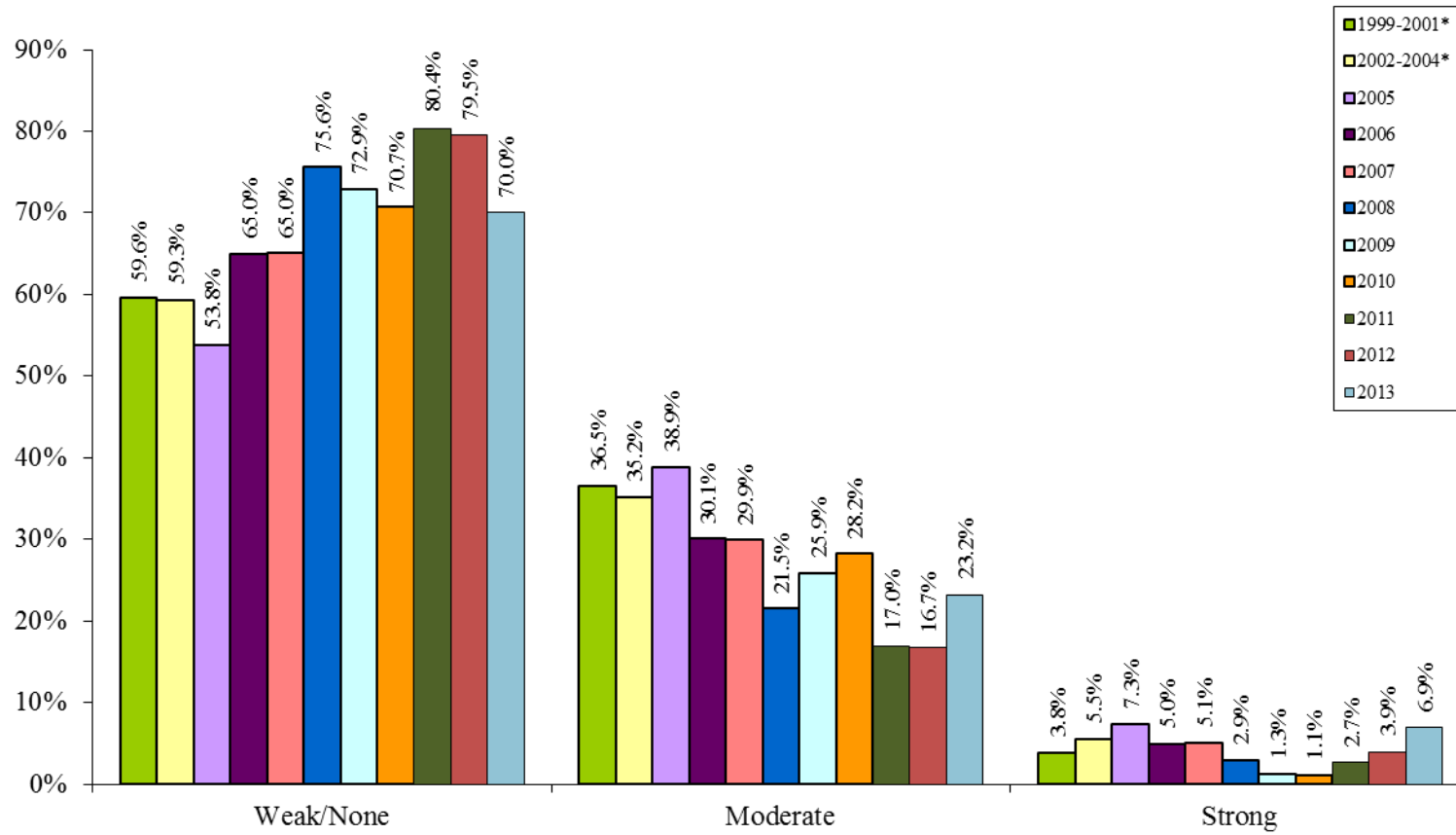
*Three-year average

Figure S – Water Temperature in which ALL Boaters were Observed



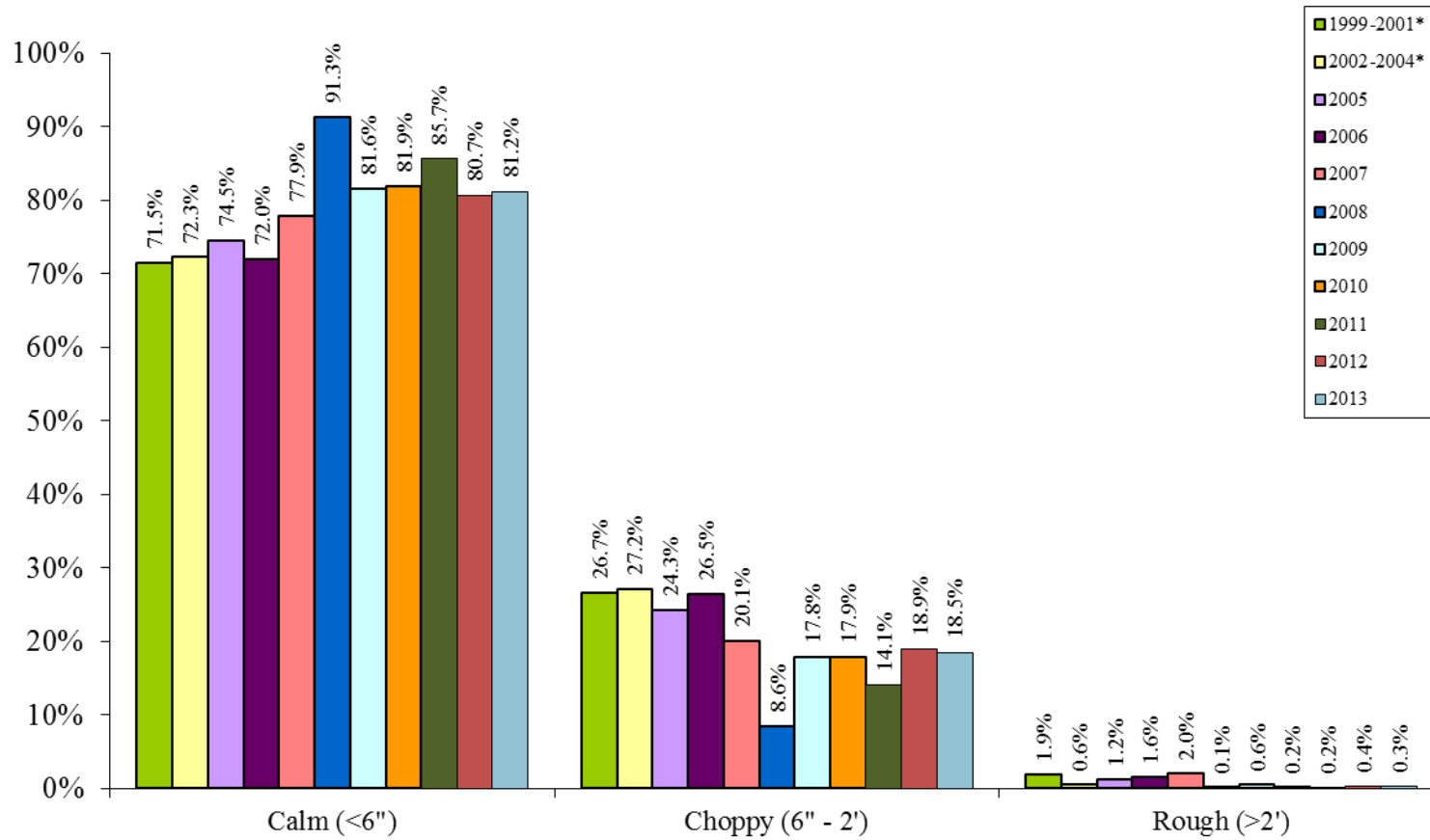
*Three-year average

Figure T – Water Current in which ALL Boaters were Observed



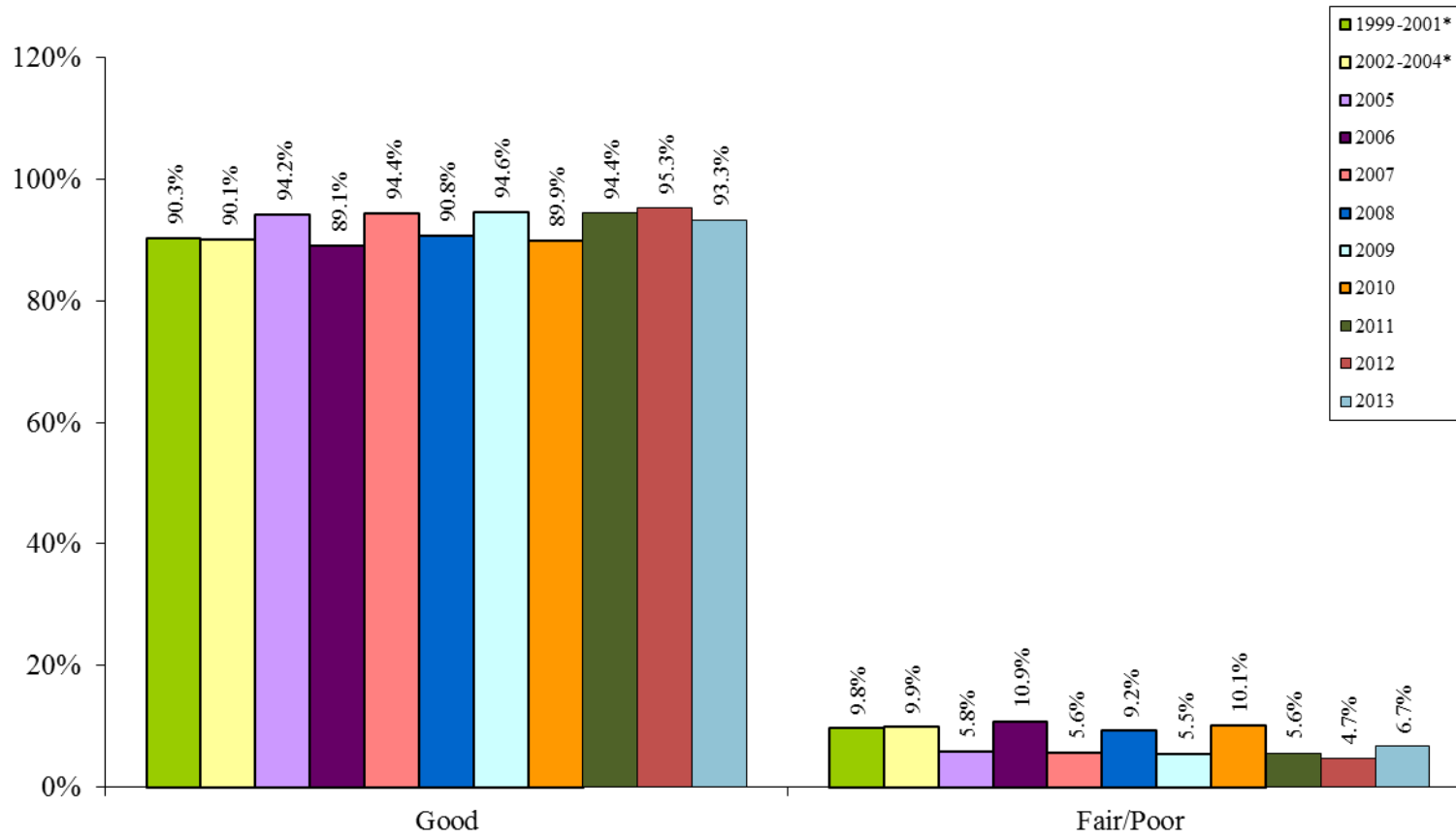
*Three-year average

Figure U – Wave Height in which ALL Boaters were Observed



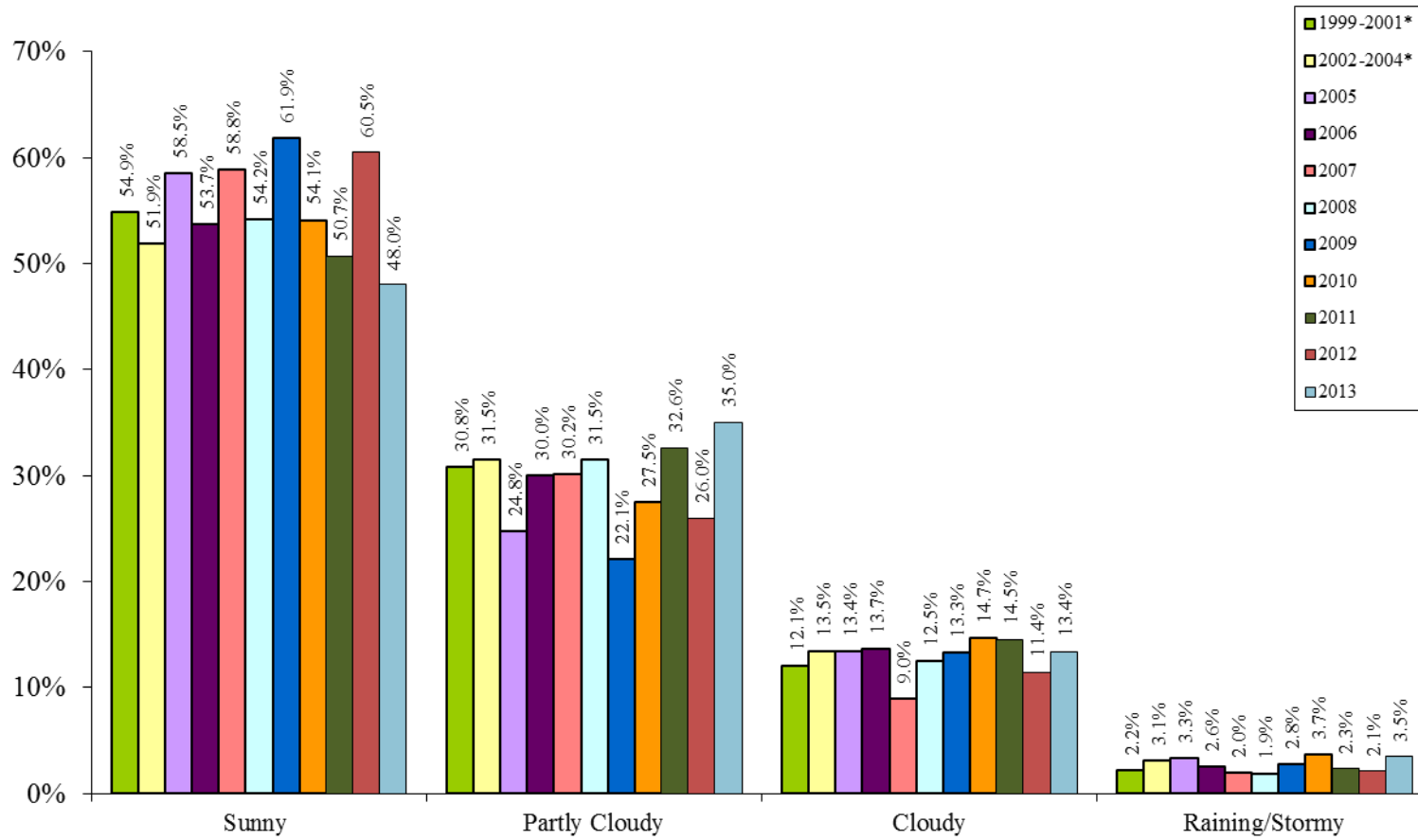
*Three-year average

Figure V – Visibility in which ALL Boaters were Observed



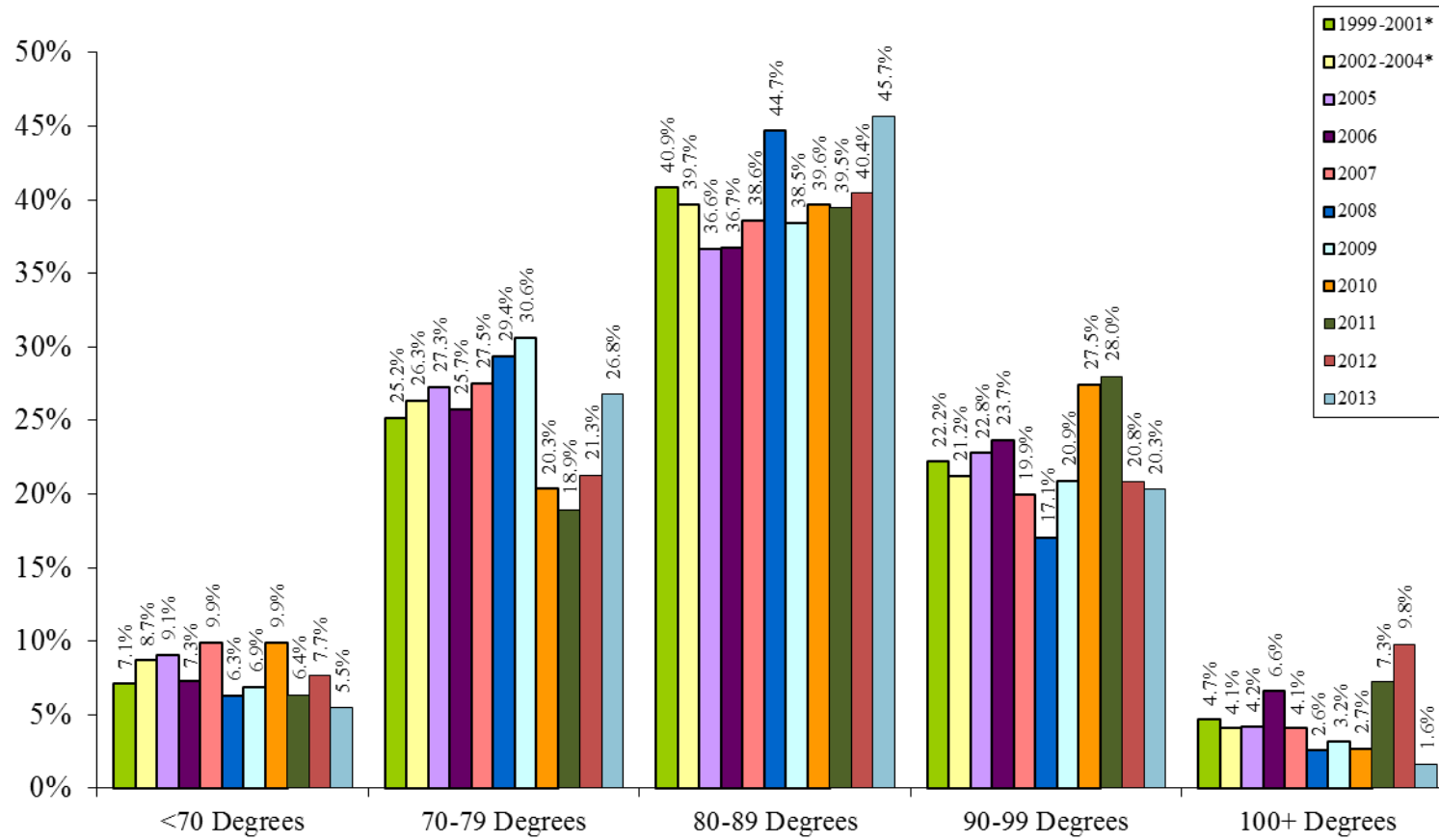
*Three-year average

Figure W – Weather in which ALL Boaters were Observed



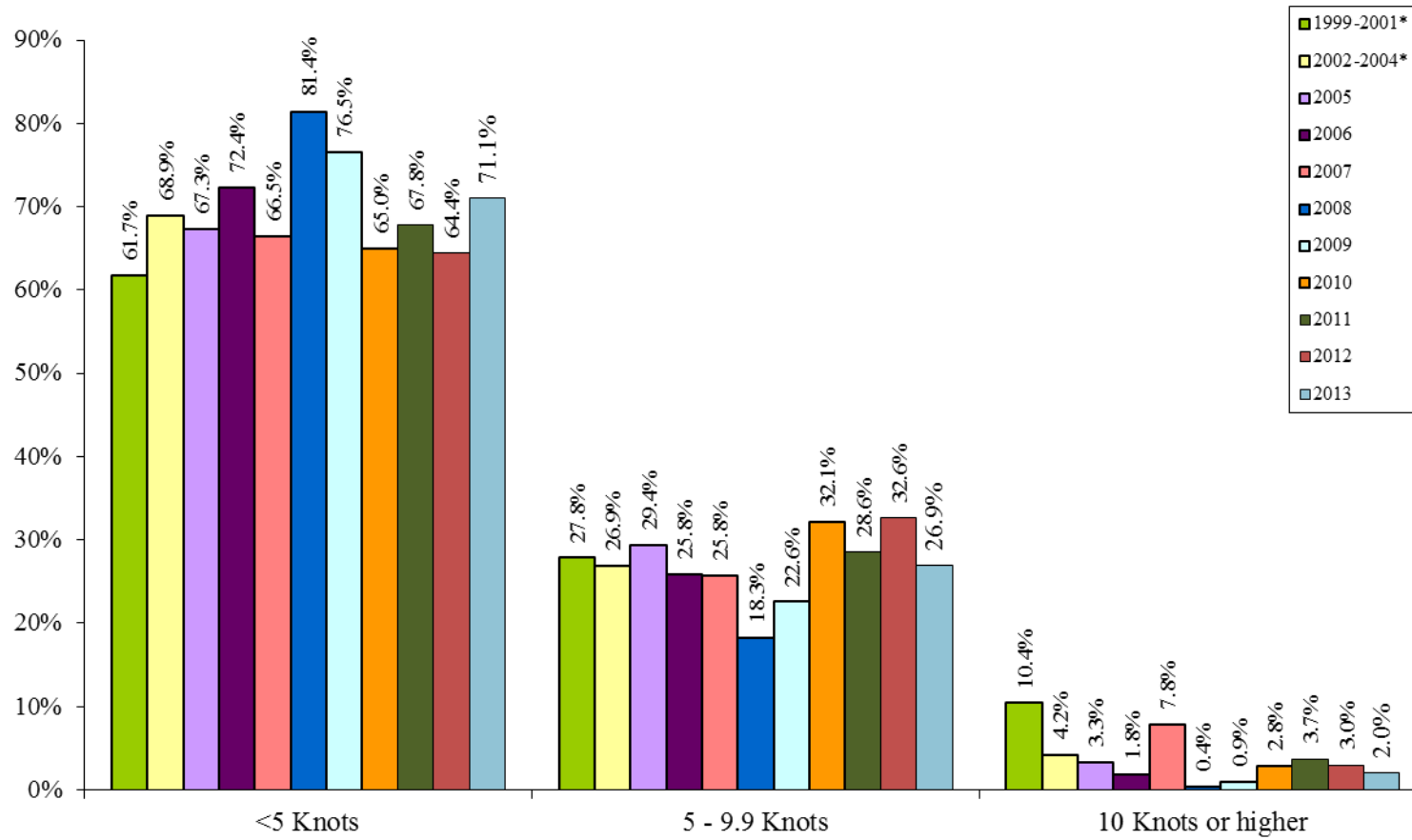
*Three-year average

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