

Article

Personal Watercraft Incident Court Decisions: The Plaintiff's Odds?

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Abstract: A personal watercraft (PWC) is a vessel that uses an inboard motor powering a water jet pump as a source of power and is operated by a person sitting, standing, or kneeling. Maneuvering a PWC is different from operating a motor vehicle or boat. An obstacle cannot be avoided by slowing down and turning the watercraft; throttle power is required to turn or maneuver the PWC. The watercraft stops only by drifting or turning sharply. The study examined sixty court decisions published in LexisNexis databases of the United States over the last decade. Cases included individuals injured while operating a PWC as a driver, passenger, or as a result of contact with a watercraft. A content analysis identified items to be used in the study. Crosstab and logistic regression analyses were used to identify demographic information and the characteristics of those who succeeded in a court of law. One-third of the cases were successful; adults, males, and the party who sustained a severe injury were more successful in a court of law with the exception of the statistically significant factors (high risk maneuvers and sharp turns). Among the additional results, we should be aware that insurance companies may not pay; additionally, it is unwise to loan a PWC to a female who has no experience.

Keywords: personal watercraft; jet ski; incident; injury; court decision



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1. Introduction

Personal Watercrafts (PWC's) provide an exciting experience for individuals who enjoy a challenge on the water. It feels like a jet-powered vehicle when skimming over the water surface. With this challenge, PWC's also provide the potential for injury and, on occasion, death. With the emergence of faster personal watercraft and their subsequent popularity, an increase in injuries has occurred [1,2]. Also, the likelihood of injury in water sports is higher than the chance of injury in sport in general. Young adults, particularly males, often use motorized watercraft more like toys than vehicles, performing tricks and traveling at high speeds [3].

The Personal Watercraft Industry, Homeland Security, Coast Guard, and others have systematically studied injury and damage statistics for boating in general, and for personal watercraft. Yet, to our knowledge, none have looked at the results of court decisions or have traced the incidents of success in the courts. Indeed, PWC-related injuries are increasing and related court litigations are also increasing. As such, an activity as popular as the operation of personal watercrafts should have more accessible data with up-to-date research, so that people have more enlightened ideas to regulate PWC. This would be more ideal than sticking to old regulations that account for machines with much less horsepower and capabilities than the ones currently offered.

The purpose of this study was to examine the results of published court decisions, retrieved from LexisNexis Academic Universe, involving personal watercraft participant injuries and deaths over the last decade and to identify the characteristics that supported the party who had the greatest chance of success in a court of law. In addition to state-specific tort law and watercraft requirements, maritime law was also a factor. Even though attorney skills and diligent discovery efforts play a key role in success in the courts, the

results of this research will provide attorneys, risk managers, and administrators with a general idea of the odds of the injured party (usually the plaintiff) winning in a court of law. However, the core of this study is to encourage participation in safe and sustainable water leisure sports in the future based on the causes and consequences of PWC incidents through precedents, rather than the interpretation of the law itself.

1.1. Personal Watercraft

According to the Personal Watercraft Industry Association (PWIA) [4], the official definition of a personal watercraft varies from state to state, but they are generally recognized as “a vessel which uses an inboard motor powering a water jet pump as its primary source of motive power”, and which is “designed to be operated by a person sitting, standing, or kneeling” on the vessel, rather than the conventional manner of sitting or standing in the vessel.

Clayton Jacobson II, with ideas gleaned from the water scooters used in Europe at that time, invented the PWC in the early 1960s, while in 1968, the manufacturer, Bombardier Inc.’s Sea-Doo placed the first model on the market. In the early 1970s, Kawasaki Motors Corp, USA introduced the Jet Ski watercraft, the first commercially successful stand-up PWC. The Wave Runner model created a market shift from the stand-up to the sit-down style in the mid-1980s. As of 2006, there were four major companies selling personal watercrafts in the U.S., Kawasaki’s Jet Ski, Yamaha’s Wave Runner, Bombardier’s Sea-Doo, and Honda’s Aqua Trax [5]. Additionally, the Association stated that the average purchaser of a new PWC was 41 years old; around 85% were male; 72% were married; 69% had owned a powerboat prior to their purchase of a personal watercraft, and 66% had taken some college course work [5]. There are 1.1 million PWC’s registered in the U.S., creating USD 662 million in the U.S. economy; PWC revenue in 2016 grew 7.3%, making it one of the fastest-growing markets in the industry [6].

The Sports Fitness Industry Association [7] measures sport participation by survey using the following categories. Total participation is 1+ times per year, casual participation is 1–7 times per year and core participation is 8+ times per year. In 2019, total participants in “jet ski” (personal watercraft) in the United States were 5,324,000; 51.9% of core participants were male; 52.9% of core participants lived in households earning USD 100,000+ per year.

Maneuvering a personal watercraft, until recently, was different from operating a motor vehicle or motorboat. In motor vehicles or boats, an obstacle can be avoided by slowing down or using a brake. All operators of personal watercraft in this study could avoid an obstacle only by upholding the speed of the watercraft and turning to avoid the hazard. There were no braking devices. Throttle power was required to turn or maneuver the PWC. The watercraft was stopped only by drifting or turning sharply. This is very important because if the operator is not able to throttle and turn correctly, there is a chance of losing control and falling. In an effort to overcome the above obstacles, Sea-Doo brought its iControl system to market in two crafts in 2010. In this system, the iBR or intelligent brake and reverse system allow the driver to merely bring the vessel to a quick stop [8]. Today, this system exists only in a limited number of PWC’s. This innovation, should it become a common use, may have a significant impact on the reduction in personal watercraft injuries. The court decisions discussed in this study involve personal watercraft manufactured prior to the iControl system.

1.2. Safety

McKnight, Becker, Petit, and McKnight [9] found that the majority of injuries on personal watercrafts occurred as a result of lack of awareness and caution of the operator. Their 2128 cases of PWC beginner drivers’ injuries identified a repeated pattern of lack of attention, resulting in the injury. Of particular interest was that although speed contributed to almost the same rate of accidents, speeds that are too high for road and traffic conditions rather than high speeds are the main cause. Another observation reported by the same authors was that the tendency of operators to move closer to other vessels is seen in many collisions. One reason for this could be that people’s perception of how close they can come

to another watercraft or another person was disproportionate to the realistic proximities that draw the line between a good time, and a possible fatality. McKnight, et al. also reported that “PWC’s are frequently operated by people having little or no experience with boats of any kind and who lack sufficient knowledge or skill to handle the vessel safely. Many are first time rentals” (p. 403).

According to the Recreational Boating Statistics provided by the United States Department of Homeland Security, U.S. Coast Guard, and the Office of Auxiliary Boating Safety [10], 19% of all vessels involved in accidents in 2019 were personal watercraft. Of the 1062 personal watercraft involved in accidents; 660 persons sustained casualties; 46 were deaths, 24 from drowning. The sequence of the major contributing factors is as follows: (1). Operator inexperience; (2). Excessive speed; (3). Improper lookout; (4). Operator inattention; and (5). Navigation rules violation. The minors’ deaths were reported as 6 for ages 0–19 and 40 for ages 20 to 79, and minors’ injuries were reported as 153 for ages 0–19 and 442 for ages 20 to 79. The statistics from the same agency [11] revealed that 19% of all vessels involved in accidents in 2018 were personal watercraft. Of the 676 casualties, 42 were deaths, 11 from drowning. The major contributing factors to injuries and deaths were: (1). Operator inattention; (2). Operator inexperience; (3). Excessive speed; (4). Improper lookout; and (5). Navigational rules violations. The minors’ deaths were reported as 4 for ages 0–19 and 38 for ages 20 to 79, and minors’ injuries were reported as 196 for ages 0–19 and 415 for ages 20 to 79. The statistics from the same agency for 2017 [12] found 18% of all vessels involved in accidents in 2017 were personal watercraft. Of the 670 total casualties, 46 were deaths, 17 from drowning. The major contributing factors were: (1). Operator inexperience; (2). Operator inattention; (3). Improper lookout; (4). Navigational rules violations; and (5). Excessive speed. The percentage of death in personal watercraft ranged from 6 to 9% of all boat deaths from 2010 to 2014. In 2015, the rate was 5%; from 2016 to 2018 it was 7%; and in 2019, it returned to 8% [10].

To be recorded in a boating accident statistic under the Boating Act of 1958 and the United States Coast Guard, the owner of the boat must file a “boating accident report for any incident in which a person dies, a person disappears from the vessel under circumstances that indicate death or injury, a person is injured and requires medical treatment, damage to vessels and other property totals USD 2000 or more, and/or there is a complete loss of any vessel” [13]. The report, in the same proceedings, states that the reason PWC’s have fewer drowning incidents is due to the required use of life jackets. PWC injuries tend to result in blunt trauma, in part, due to the speed of the craft at the time of impact.

Most states require that a person be between 12 and 16 years of age to use a personal watercraft; a few states permit a younger person to use the watercraft under adult supervision. Operators and guests riding in the craft are required to wear life jackets. Since 2009, many states require the operator to have taken a boat safety course. Cut-off switches with attached lanyards are required in a number of jurisdictions. A few states require that the watercraft be operated only between sunrise and sunset [14,15].

In 2019, Florida had 134,830 individual registered personal watercrafts and 3583 rental personal watercrafts. The state had 186 accidents, six fatalities and 169 injuries. Sixty six of the accidents occurred in bays/sounds, 35 in the ocean or gulf, 26 in lakes or ponds, 20 in inlets/passes, 19 in rivers or creeks, 17 in canals/cuts, and 3 in ports or harbors. At the time of the accident the majority of the personal watercrafts (140) were cruising, 43 were changing directions and ten were wake or surf jumping. Most of the incidents were collisions with another vessel or collisions with a fixed object. The primary cause of the incident was no proper look-out/inattention, operator inexperience, and excessive speed [16].

In Tennessee, in 2019, 25 personal watercrafts were involved in accidents. Out of the 25, 10 watercrafts were borrowed. Twenty one persons were injured in Tennessee. The age of the greatest number of vehicle drivers was in the 31 to 35 and 16 to 20 age group, with the age group 21 to 25 as the next highest category. Among the causes of the incidents were careless/reckless operation followed by improper lookout and operator inattention [17].

1.3. Maritime Law

Maritime law in the United States is Article III, Section 2 of the United States Constitution (28 USC 1333). The statute does not provide criteria (a test) for determining admiralty jurisdiction; tests have evolved through case law [18]. For maritime law to exist two factors must be present: the watercraft is considered a vessel and the incident occurred in navigable waters [19]. Another concept specific to maritime law is that the owner is only liable to the defendant for the value of the craft [20,21].

2. Methods

This study used a content analysis to identify the population of published court decisions involving personal watercraft (PWC) participant injuries and deaths over the last decade and to identify the characteristics of those who succeeded in a court of law. The key retrieval words used in the LexisNexis database were: tort or negligence or product liability, personal watercraft, or jet ski. One hundred and two cases were obtained from LexisNexis in August 2020. The cases were further examined for validity; the criteria established for the study were:

1. A case was settled between the last decade;
2. An injury was sustained as a result of an incident involving a personal watercraft or a jet ski. The word jet ski, a trade name, was used as some court decisions failed to use the word personal watercraft;
3. Only decisions in a court of law that were part of the usual Court of Appeals decisions found in LexisNexis federal and state law databases of the United States were analyzed.

Among the court decisions obtained from LexisNexis but rejected under the above criteria were those involving material damage to boats only, boats other than personal watercraft, issues around the repair of boats, and cases remanded for further study. The cases retained for the study were the entire population meeting the LexisNexis retrieval code and the above criteria; they were not a sample. Two researchers, with practical and technical knowledge of personal watercraft, one with a law degree, and both having used or owned a personal watercraft examined the cases for validity. Sixty cases were valid for the study. The two criminal cases involved alcohol-related male deaths, and as the law differs considerably in criminal court decisions, were used only for demographics. Fifty-eight cases constituted the entire population for the study.

To begin with, a document/content analysis was conducted. Document analysis was used to gain specific facts such as age, sex, and driver while content analysis was employed when the materials examined required interpretation. Babbie [22] described “content analysis as the study of recorded human communications, such as books, websites, paintings and laws” (p. 330). Krippendorff and Bock [23] traces its origin as Dovring’s discovery “when studying the reception of a book of religious hymns in 18th-century Sweden” (p. 1). Hall and Wright [24] recommend that content analysis, a research technique that originated as early as the 1960s be applied to the results of legal court decisions. In June 2006, they completed an analysis of published legal research that had used content analysis. A content analysis was used in sports administration by Clement [25]; Spengler and Connaughton [26]; Otto [27,28]; Young, Fields and Powell [29]; Clement and Otto [30]; Carroll, Connaughton and Spengler [31]; Liao, Sun, Jones and Pokharell [32]; and Fields and Young [33]. Their research analyzed data related to incidents, injuries, court decisions, etc., from leisure activities and sports, and provided implications in risk management perspectives that can protect individuals from any kind of risks and can protect sports organizations from financial liability. The analytic method was unobtrusive and did not alter the subject because what was being analyzed had already been published and/or written about [22].

For the purpose of this study, the factors obtained were from the review of the literature and from personal and general experience with personal watercrafts. Cases were listed by the court decision and identified by case title, state, the injured party, the sex and age of the

injured party, incident, cause of the incident, legal theory, outcome of the decision, owner of the vehicle, and where the incident occurred.

The injured party was represented by three categories: driver, passenger, and other while. The sex and age of the injured party included four categories: adult male, adult female, minor male, and minor female. The type of injury revealed three distinct categories: minor, severe, death and unknown. Among the incidents were: fall from PWC, collision with another PWC, collision with a boat, collision with another object, and other. The cause of the incident included lack of experience, lack of ability to maneuver the PWC, high-risk maneuver, sharp turn, and other. Among other incidents were a driver whose foot was stuck in the vehicle and a detached steering cable. Legal theories were negligence, product liability, and insurance. Negligence includes failure to use reasonable care. In this study, for example, improper lookout and operator inattention, high-risk maneuver, sharp turn, etc. can be the potential factors. Products liability is involved in claims that a plaintiff sues a business organization responsible for the manufacturing of the product. While insurance is not a legal theory, it was the controlling factor in a few decisions. When the purpose of the suit was to obtain or deny insurance coverage for the incident, insurance became the most important factor. As insurance companies wishing to deny coverage were the plaintiffs in some cases, and vehicle owners demanding coverage were plaintiffs in other cases, it appeared best to place insurance decisions in a separate category. The owner of the PWC was a driver, loaned, or leased, and where the incident occurred was a river, lake, ocean, or unclear. For the fifty-eight cases, who won was either the plaintiff or defendant; two cases were criminal litigation and were thus removed from the battery for the regression phase.

Following the content analysis, demographic information was obtained for each of the civil and criminal decisions. Next, a binary logistic regression was selected to examine the fifty-eight civil court decisions. “Logistic regression can be used in cases where the dependent variable is categorical in nature specifically, logistic regression specifies that odds probability of the dependent variable occurring as the values of the independent variables change” [34] (p. 252). Thus, logic regression was selected to estimate the probability of a certain event occurring; in this case, the event was a “finding for the plaintiff.” The output was reported as the odds ratio identified the importance that each factor had on increasing the odds for a “finding for the plaintiff.” The Wald statistic was used to test the significance that each factor had on a “finding for the plaintiff”. A significant factor within each variable was selected as the reference category; usually, it was the largest number of cases. The reference categories were injured party, age, the extent of injury, cause of the incident, legal theory, and vehicle owner.

3. Results

An analysis of all published court decisions involving personal watercraft injuries and death over the last decade as identified by LexisNexis in August 2020 and meeting the validity criteria was examined. Four states, accounting for 40% out of the 60 cases, had the largest numbers of personal watercraft (PWC) injury court decisions: Florida (9), California (6), New York (5), and Kentucky (4). Eighteen states had one or two incidents. Thirty-five (58%) of the individuals injured were male; 25 (42%) were female. Sixty-two percent (37) of the victims were adults, while 38% (23) were minors. Forty-one (68%) of the persons were severely injured; 12 (20%) died (Table 1). Forty (67%) of the PWC incidents were involved in a collision with a PWC, boat or other while a fall from a PWC accounted for seven (12%) of the total incidents (Table 2). Thirty-two percent (19) of the incidents were caused by high-risk maneuvers and sharp turns; 28% (17) were from lack of experience and lack of maneuverability (Table 3). Forty, (67%) of the incidents occurred inland; 15 (25%) were in the ocean (Table 4). Thirty-eight percent of the drivers of the personal watercraft were owners, 45% had borrowed the watercraft, and 17% had leased a craft. Eighteen (30%) of the cases resulted in a “finding for the plaintiff”; 40 (67%) in a “finding not for the plaintiff”; and 2 (3%) were criminal cases.

Table 1. Extend of injury, sex and age of injured party.

Categorized Variable	Frequency	Percentage	Sex		Age	
			Male (%)	Female (%)	Adult (%)	Minor (%)
Minor	3	5.0%	3 (8.6%)	0 (0.0%)	3 (8.1%)	0 (0.0%)
Severe	41	68.3%	23 (65.7%)	18 (72.0%)	27 (73.0%)	14 (60.9%)
Death	12	20.0%	7 (20.0%)	5 (20.0%)	4 (10.8%)	8 (34.8%)
Unknown	4	6.7%	2 (5.7%)	2 (8.0%)	3 (8.1%)	1 (4.3%)
TOTALS	60	100.0%	35 (100%)	25 (100%)	37 (100%)	23 (100%)

Table 2. Incident, sex and age of injured party.

Categorized Variable	Frequency	Percentage	Sex		Age	
			Male (%)	Female (%)	Adult (%)	Minor (%)
Collision w/PWC	20	33.3%	11 (31.4%)	9 (36.0%)	10 (27.0%)	10 (43.5%)
Fall from PWC	7	11.7%	4 (11.4%)	3 (12.0%)	7 (18.9%)	0 (0.0%)
Collision w/Boat	12	20.0%	6 (17.1%)	6 (24.0%)	8 (21.6%)	4 (17.4%)
Collision w/Other	8	13.3%	3 (8.6%)	5 (20.0%)	3 (8.1%)	5 (21.7%)
Other	13	21.7%	11 (31.4%)	2 (8.0%)	9 (24.3%)	4 (17.4%)
TOTALS	60	100.0%	35 (100%)	25 (100%)	37 (100%)	23 (100%)

Table 3. Cause of incident, sex and age of injured party.

Categorized Variable	Frequency	Percentage	Sex		Age	
			Male (%)	Female (%)	Adult (%)	Minor (%)
Lack of Experience	11	18.3%	3 (8.6%)	8 (32.0%)	4 (10.8%)	7 (30.4%)
Lack of Maneuver	6	10.0%	5 (14.3%)	1 (4.0%)	4 (10.8%)	2 (8.7%)
High Risk Maneuver	8	13.3%	6 (17.1%)	2 (8.0%)	7 (18.9%)	1 (4.3%)
Sharp Turn	11	18.3%	7 (20.0%)	4 (16.0%)	7 (18.9%)	4 (17.4%)
Other	24	40.0%	14 (40.0%)	10 (40.0%)	15 (40.5%)	9 (39.1%)
TOTALS	60	100.0%	35 (100%)	25 (100%)	37 (100%)	23 (100%)

Table 4. Incident location, sex and age of injured party.

Categorized Variable	Frequency	Percentage	Sex		Age	
			Male (%)	Female (%)	Adult (%)	Minor (%)
Inland	40	66.7%	23 (65.7%)	17 (68.0%)	24 (64.9%)	16 (69.6%)
Ocean	15	25.0%	9 (25.7%)	6 (24.0%)	9 (24.3%)	6 (26.1%)
Unclear	5	8.3%	3 (8.6%)	2 (8.0%)	4 (10.8%)	1 (4.3%)
TOTALS	60	100.0%	35 (100%)	25 (100%)	37 (100%)	23 (100%)

Table 1 analyzes the relationship between the extent of the injury and the sex and age of the injured party. The categorized variables were obtained from the literature, such as The Personal Watercraft Industry, Homeland Security, Coast Guard, and others. No female or minor received minor injuries. The percentage of females sustaining severe injuries was higher than that of males (72% to 66%), while the percentage of deaths was equal for males and females. Minors yielded a lower percentage of severe injuries than the adults did (61% to 73%), while the percentage of deaths of minors was about three times that of adults (35% to 11%).

Table 2 examined the relationship between the incident and the sex and age of the injured party. When females were compared with males, females incurred a higher percentage of injuries involving a collision with PWC (36% to 31%), falls from PWC (12% to 11%), collision with a boat (24% to 17%), and collision with other (20% to 9%). The percentages for injured minors based on collision with PWC (44% to 27%), or collision with other (22% to 8%) were higher than those of adults, while yielding lower percentages of fall from PWC (0% to 19%) and collision with a boat (17% to 22%).

Table 3 analyzed the relationship between the cause of the incident and the sex and age of the injured party. The categorized variables were obtained from the court decisions based on the literature, such as Homeland Security, Coast Guard, and states data base. Lack of experience injuries were found more often among females (32%) than among males (9%), and among minors (30%) than among adults (11%). On the contrary, high-risk maneuver injuries were found more often among males (17%) than among females (8%), and among adults (19%) than among minors (4%). Sharp turn injuries were also more often among males (20%) than among females (16%), and among adults (19%) than among minors (17%).

Table 4 shows the relationship between the location of the incident and the sex and age of the injured party. 68% of the females were injured inland; 66% of the males were injured in the same environment. Of the minors, 70% were injured inland while 26% were injured in the ocean.

According to Clement and Otto [30], “while descriptive statistics are interesting they do not always provide professionals with enough information; rather, it would be more helpful if there was a way to analyze the probability of winning in a court of law. The results of the logistic regression begin to do just that” (p. 115).

Using a total of 58 court cases, a binary logistic regression model was suggested with a dependent variable, dichotomously categorized as “finding for the plaintiff” or “finding not for the plaintiff”. The independent variables input in the model were injured party, age, extent of injury, cause of incident, legal theory, and vehicle owner. Since all of the independent variables were categorically measured, reference groups for each were the largest numbers of court cases and were coded as 0. For example, the reference groups of extent of injury and legal theory were severe and negligence (See Table 5).

Table 5. Reference groups and coding.

Categories	Levels of Category	Frequency	Parameter Coding			
			(1)	(2)	(3)	(4)
Cause of Accident	Lack of Experience	11	1	0	0	0
	Lack of Maneuver	6	0	1	0	0
	High Risk Maneuver	8	0	0	1	0
	Sharp Turn	10	0	0	0	1
	Other	23	0	0	0	0
Extent of Injury	Severe	40	0	0	0	
	Minor	3	1	0	0	
	Death	11	0	1	0	
	Unknown	4	0	0	1	
Legal Theory	Negligence	45	0	0		
	Product Liability	9	1	0		
	Insurance	4	0	1		
Injured Party	Driver	33	0	0		
	Passenger	20	1	0		
	Other	5	0	1		
Vehicle Owner	Non Owner	37	0			
	Owner	21	1			
Age of Injured Party	Adult	36	0			
	Minor	22	1			

Overall, the model was statistically significant, $\chi^2(13, N = 58) = 23.27, p < 0.05$. That indicates that at least one sub-category could significantly affect a court decision (win or loss) [35]. The model produced 0.33 of Cox and Snell R^2 and 0.47 of Nagelkerke R^2 , respectively. Therefore, the model accounted for between 33% and 47% of the variation in the dependent variable.

Among the input independent variables, cause of incident, specifically, high-risk maneuver (0.03 of odds ratio), and sharp turn (0.04 of odds ratio) were found to be the significant factors in the decision of the court cases (See Table 6). In other words, plaintiffs were 0.03 times less likely to win when the incident was due to a high-risk maneuver, compared to other incident causes. Plaintiffs were 0.04 times less likely to win when the incident was due to a sharp turn, compared to other incident causes.

Table 6. Significant values and odds ratios for model variables.

Categories	Levels of Category	Sig.	Odds Ratio
Injured Party	Passenger	0.154	3.803
	Other	0.813	1.401
Age	Minor	0.228	0.349
Extent of Injury	Minor	0.999	0.000
	Death	0.094	0.171
	Unknown	0.999	0.000
Cause of Accident	Lack of Experience	0.081	0.117
	Lack of Maneuver	0.603	0.457
	High Risk Maneuver	0.019 *	0.032
	Sharp Turn	0.014 *	0.036
Legal Theory	Product Liability	0.420	2.858
	Insurance	0.568	0.371
Vehicle Owner	Owner	0.545	0.573

* $p < 0.05$.

4. Discussion

The sixty cases examined for the demographic data represented twenty-five states; however, four of the five states with the highest number of cases were either on the Atlantic Ocean (Florida and New York), Pacific Ocean (California), or the Great Lakes (Ohio). Eighteen states recorded only one or two court decisions. Fifty-eight percent of the persons injured were male; forty-two percent were female. Among incidents in sport in general, males often have a higher proportionate incident of injury as found in this study [36]. Nearly two-thirds of the injured parties were adults. This was similar to the findings of the 2018 Recreational Boating Statistics [11] where four hundred and fifteen adults were injured and one hundred ninety-six minors were injured. In this study, 68% of the incidents resulted in severe injuries while 20% of the incidents resulted in death. Of those who perished, seven were male and five were female; eight were minors and four were adults.

Negligence was the legal theory found most often (63%) followed by product liability (15%). Negligent entrustment, seldom found in sports cases, was found in two decisions. In these cases, loaned or leased vehicles had been given to persons who lacked the skill or knowledge to use them and had resulted in an incident. The owner was suing the person who borrowed or leased the personal watercraft for their poor decisions. Another theory, unique to water incidents was decisions related to navigable waters discussed earlier. That is, in order for an event related to a PWC incident to be established, the case must occur in navigable waters under U.S. maritime law.

Of the fifty-eight cases, 18 (31%) were a finding for the injured party, 40 (69%) did not find for the injured party. The successful cases included 10 males and 8 females, a close representation of the population while the numbers of adults (13) versus minors (5) suggest that adults were far more successful in a court of law. A finding for the injured

party was considerably higher when the party sustained a severe injury. Within a group of cases, some have been shown to model how the results of the binary logistic regression are useful. Based on the findings of this study, if the plaintiff was not involved in a high-risk maneuver or sharp turn regarding operating PWCs, then they would have the best chance of being part of the 31% of the successful plaintiffs. With the exception of the statistically significant factors (high-risk maneuvers and sharp turns), a comparison of the incidents that resulted in a finding for the injured party was relatively close to the results of the cases, in general, with a few additional exceptions. Among the exceptions were that none of the four cases in Kentucky was won and passengers were 10% more successful than drivers. Among those successful were 8 out of the 18 owners, 8 loaners, and 2 leased. Among the nine product liability claims that succeeded, four were adults. Of the twelve deaths, only two succeeded. Insurance companies suing for negligent entrustment were successful three out of seven times. Negligence entrustment meant that the insurance company refused to pay the policy based on the facts that the owner loaned the craft to a person who was not prepared to use it.

5. Conclusions

Among the male adults who succeeded, two died, four were drivers, two were passengers, and one went over the top of a dam. The successful female adults included three passengers, three drivers, three out of four product liability claims, two who fell from the PWC, and one who went over a dam. Minor males that won included one who was struck by a boat while swimming, one who flew over the handlebars of the craft, and one who collided with another PWC while executing a high-risk maneuver. Successful minor females were one who was run over by a boat while riding in a tube dragged by a PWC, and the victim of an insurance company suing for negligent entrustment.

What was learned from the study was that only one-third of the cases were successful; that insurance companies may not pay, that it is unwise to loan a PWC to a female who has no experience, women are more likely to have product liability incidents than men, and male owners who were also drivers seemed to have fewer incidents.

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