

# An Analysis of Tourist and Passenger Vessel Accidents in the Slovenian Sea

**Katarina Mušič**

*University of Primorska, Faculty of Tourism Studies – Turistica  
katarina.music@fts.upr.si*

**Janez Mekinc**

*University of Primorska, Faculty of Tourism Studies – Turistica  
janez.mekinc@fts.upr.si*

**Helena Cviki**

*Višja strokovna šola za gostinstvo in turizem Maribor  
helena.cvikl@vsqt-mb.si*

Tourism is acutely dependent on safety, as it is one of the most important competitive advantages; this is true for nautical tourism and tourist transportation on tourist and passenger vessels. This paper presents the first comprehensive analysis of tourist and passenger vessel accidents in the Slovenian Sea for the period from 2007 to 2011, using data provided by the Maritime Administration of the Republic of Slovenia.

On the basis of statistical data, we analysed the relationship between the number of vessels and the number of accidents; the causes and number of accidents, and the distribution of accidents, according to months and years. The research problem was devised to reveal the causes and common characteristics of tourist and passenger vessel accidents, thus enabling the creation of proposals for measures to reduce them. This paper presents a historical overview of the worst maritime accidents, their causes, and their consequences. Equally important is establishing the research problem, the international regulations, and the fundamental elements of the legal basis for the provision of maritime safety in Slovenia.

The analysed results show that there are relatively few maritime accidents involving tourist and passenger vessels; the usual reasons for the accident were avoiding other vessels and docking in port, the consequence of human error, and strong *tramontana* winds, as natural causes. The methodology for monitoring and recording statistical information about accidents including tourist and passenger vessels is inadequate, and urgent improvements are required for an in-depth analysis.

*Keywords:* safety, Slovenian Sea, vessels, maritime accidents, tourism, nautical

## Introduction

The impact of globalization on the processes taking place around the world is the greatest in the tourism industry. Globalization and modern forms of transport can transport tourists to even the remotest destinations. Places, events and people from different

parts of the world have become more accessible than ever. Alongside modern telecommunications and the Internet, which is a significant factor in globalization is the development of transportation. Increasingly, new and modern roads and advanced and safe cars allow us to travel ever faster from Point A to Point

B. The development of trains over the past three decades is also very evident, as they have become faster and more comfortable, but they are used for short and medium distance travel, and not for longer trips, for which air transport is preferred. In Slovenia, the development of rail passenger traffic in recent decades has virtually stalled.

The greatest development in the last five to seven decades has been in that of air transport, with technologically advanced aircraft and airports. Even in commercial terms, aircraft have undergone remarkable development; consequently, the whole world is now interconnected by flight paths. For passengers, flights are practical and safe, and the recent rise of popular low-cost providers has brought airline tickets within reach of large numbers of people.

Mention should also be given to water transportation, i.e. river and maritime transport. Individuals have engaged in marine and sea travel since ancient times. The first records of regulated shipping are from 5th century B.C Egypt. (Timerime, 2010). At present, shipping remains one of the most important means of transport for goods and people. How important shipping is to the world economy is shown by the fact that 90% of the world's cargo is transported by cargo ships (UNCTAD,<sup>1</sup> 2012). Sea freight transport is, of course, of a much greater magnitude than passenger transport; thus, cargo ships are much more prone to accidents. Especially notable are oil tanker accidents, since they are usually accompanied by ecological disasters as a result of oil leakage (EMSA,<sup>2</sup> 2010).

Accidents also occur with maritime passenger and tourist traffic. Such accidents cause considerable material damage and casualties. In a review of cruise ship accidents up to 2012, the cruise ship RMS Titanic still ranks in the first place. Human error is responsible for approximately 70 percent of maritime accidents while sailing, along with extreme weather conditions and equipment failure (Marine Insight, 2012). In cases of human error, the crew of the ship or its shipmaster must be held accountable for their mistakes and even prosecuted. The most recent notable example was the Costa Concordia ship disaster (Saltzman, 2013).

In the 21<sup>st</sup> century, tourism is a modern global culture and leading industry; in Slovenia, it is also

1 United Nations Conference on Trade and Development

2 European Maritime Safety Agency

one of the main economic sectors, as the 105,500 people employed in tourism during 2012 earned as much as 13% of the nation's GDP (Černič, 2013). From the tourism perspective, Slovenia has three strategic areas: nautical tourism at the coast, gambling-entertainment tourism along the borders and health tourism inland (GZS,<sup>3</sup> 2011). Nautical tourism is developing rapidly. The world already has several million tourist boats (yachts, motor boats, sail boats, etc.) of varying types and sizes. The Gulf of Trieste, as the most northern end of the Mediterranean, covers 551 km<sup>2</sup>, one-third (180 km<sup>2</sup>) belonging to the Slovenian Sea (*Zavarovana območja in njihov pomen za turizem...*, 2004), has become one of the world's most important waterways for a variety of raw materials by being the shortest transport link between Central and Eastern Europe. Increasingly, it is becoming significant for maritime transport. With the development of tourism, nautical tourism is also developing in the Slovenian Sea, bringing a significant share of income to the economy (Božič, 1999). The development of passenger transport, nautical tourism and cruise tourism in the Slovenian Sea has required deepening of the seabed, replacing fenders and installing new cleats<sup>4</sup> for larger capacities, especially at the Koper passenger terminal (Turk, 1999), and the redevelopment of the existing coastline.

Coastal nautical tourism is an important component of tourism supply and tourism product, especially for tourists who strongly favour it. At the advent of nautical tourism in Slovenia, which dates back to just after the Second World War, such tourists were typically from the wealthier classes. Accordingly, their vessels were also large. Over the past three decades, however, due to the increases in the standards of living, nautical tourism has become a mass phenomenon. Data on the global extent of nautical tourism in other countries states that around 100 million people engage in it, of which 20 million were Europeans, and that the annual growth rate accounts for around 3 to 4% from 2009 to 2011 and prior to that up to 10% (GZS, 2011). The northern location of all three marinas in the Slovenian Sea means that foreign nautical tourists from neighbouring and

3 Gospodarska zbornica Slovenije – Chamber of Commerce and Industry of Slovenia

4 Ship or harbour equipment used for mooring ships and other vessels

Central European countries predominate. The majority are Italians, Germans and Austrians. Vessels between 10 and 12 metres long are the most common.

Safety in nautical tourism is crucial to its development. Therefore, we decided to prepare an initial analysis of passenger and tourist vessel accidents in the Slovenian Sea to determine whether there are characteristics that define such maritime disasters. The analysis will focus on identifying the trends and characteristics of accidents of maritime passengers and tourist vessels in the Slovenian Sea.

### Research Problem

In this study, we analysed data on marine tourist vessel accidents in the Slovenian Sea for the 2007–2011 period. In the Nautical Guide to the Slovenian Sea and Coast, tourist vessels (ships and boats) are defined as those intended for sport and entertainment (GIS,<sup>5</sup> 2013). In our study, we use the same terms, but in addition to ships and boats, motor yachts and sailing boats are also represented in the survey. Under maritime law, a vessel is defined as an object that is designed for navigation at sea. For accident characteristics, we identified the causes and consequences, time periods over months of the year, the nationalities of the complainants and the offenders. It is necessary to state the basic technical concepts that define each marine accident to understand the analysis. Particularly important is the difference between two similar concepts (maritime) incident and (maritime) accident. The difference stems from the concept of safety, which in English is determined by the words »security« and »safety«. »Security« refers to actively ensuring safety, which also includes the technology and regulations that ensure safety. The word »safety« is defined as situations where the risks and threats of adverse events are kept to a minimum. Notwithstanding the fact that the word »safety« in Slovenian covers both aspects of safety (Cvikl & Artič, 2007), the Slovenian language distinguishes the concept of an »accident« (Eng. Incident) that defines the event in which a person is injured or dies, and an »accident« (Eng. Accident), in which a person is injured, but also adversely affected materially (SSKJ). Insurance companies in Slovenia define an incident as an event that is unexpected and unintentional, and at the same time causes injury requiring

medical care (Zavpro, 2012). The Protection Against Natural and Other Disasters Act (1994) defines an accident as: »an event or series of events caused by uncontrolled natural and other forces that affect or threaten the life or health of people, animals and property, cause damage to cultural heritage and the environment to the extent that it is, for their control and management, necessary to use special measures and resources.« According to the different use of the words »incident« and »accident«, it is not surprising that the Regulations for the Investigation of Marine Accidents (2011) defines »marine accident« as any incident on board or in relation to a ship, in which a person dies or suffers serious physical injury in connection with the operation of the ship; a person falls overboard due to the operation of the ship; the ship is lost, assumed lost or abandoned; the ship is damaged; the ship runs aground unless it is deliberately short-term and, therefore, undamaged; the ship is unfit to sail; ship collision; property damage caused by the ship's operation or contamination of the environment due to ship damage or the operation of the ship«. The regulations define a severe accident as a »maritime accident in which a ship is destroyed, a person dies, or there is significant pollution of the environment«. In Slovenia, the majority of tourist voyages are undertaken as domestic journeys, primarily for transporting passengers between two or more Slovenian ports.

The subject of our study covers international and Slovenian legislation in this field and the parties who are responsible for implementing all the necessary measures for safety at sea. International standards directly specify safety at sea, which are defined in various international legal instruments and summarized and aligned with the Slovenian legislation for ensuring safety at sea. The implementation of standards and measures to ensure safety and the responsibility of different parties are defined below. Shipping is one of the most important industries in the world, but also one of the more dangerous (IMO<sup>6</sup>, 2011). The safety of shipping is determined by international regulations, which are adopted and implemented by all maritime countries. The International Hydrographic Organization (IHO), the Paris MoU<sup>7</sup>

6 IMO - International Maritime Organization

7 Paris Memorandum - Paris MoU - The organization consists of 27 participating maritime Administrations

5 Geodetic Institute of Slovenia

on Port State Control and the International Maritime Organization based in London are the international institutions and authorities responsible for establishing uniform regulations and standards and, consequently, maritime safety (GIS, 2013). The International Hydrographic Organization (IHO) includes all the coastal states and states that have an interest in the progress and effectiveness of maritime safety. Member states promote protection, sustainable development and concern for the maritime environment. The International Maritime Organization (IMO) is an umbrella organization concerned with the safety of maritime traffic (GIS, 2013). Founded in 1959, it is responsible for ensuring safety at sea, on the basis of the International Convention for the Safety of Life at Sea (SOLAS). This convention is the fundamental international regulation dealing with maritime safety. It defines safe ship construction, fire safety, organizations that carry out rescues for incidents and accidents, radio communications standards, maritime navigation/sailing and other safety regulations that relate to vessel safety. The IMO also approves international rules about procedures for the collision of two or more vessels, as well as the international standards for sailors. The IMO plays a very important role in the development and adoption of international rules on maritime liabilities and pollution, and for the transport of dangerous freight. The Paris Memorandum (Paris MoU) encompasses the methods and international standards of supervision and a review of a vessel's compliance with international environmental standards, standards of safety and security. It also relates to the safety standards and appropriate living/working conditions for crew members (Paris MoU, 2010).

### International Dimensions of Sea Accidents

Research has shown that maritime rescue services have been interconnected since the 18<sup>th</sup> century, but participation today continues under the auspices of the International Lifeboat Federation (ILF) (Evans, 2003). »Marine Insight« (2012) published a new list of the ten largest cruise ship disasters. Despite the expectation that such accidents would be in decline due to modern technologies, statistics shows the op-

---

and covers the waters of the European coastal States and the North Atlantic basin from North America to Europe.

posite. Natural factors and human error remain most common causes of accidents at sea. The greatest number of maritime passenger casualties (1,517) recorded in the history of sea transport is still that from the sinking of the RMS Titanic. The tragedy resulted in a strong fear of travelling by cruise ship. In 1934, 137 passengers lost their lives when the SS Morro Castle caught fire. Sailing along the coast of New York, they failed to extinguish the fire due to a lack of fire-fighting equipment, and the vessel burned and sank with all passengers on board. This has earned it an unenviable second place on this scale. The third place goes to the Royal Pacific Cruise, which experienced an incident in 1992 in Greek waters colliding with another ship. Of the 530 passengers, 30 lost their lives, and 70 were injured. In fourth place with 32 victims, the Costa Concordia is ranked as the most recent of cruise ship disasters. It ran aground off the Italian coast, with more than 4,000 passengers on board. Some people were able to jump off the ship and swim to shore 400m away. In fifth place is ranked the luxury Club Royale casino cruise ship, which sank in 1995 during the storms of Hurricane Erin. There were no passengers on board; however, 8 of the 11 employees who were on board the ship at that time lost their lives (Marine Insight, 2012).

In recent years, the European Union has invested great efforts in increasing safety at sea. In doing so, they have adopted rules focussed on enforcing high standards of passenger and crew safety and for reducing pollution. The EU's encouraging approach in rewarding companies that invest in maritime safety, while at the same time punishing companies that make shortcuts, when it comes to safety and pollution, for higher profits can be positively assessed (European Commission – Maritime transport, 2014). Furthermore the difference in the authority of the United States Coast Guard and the EU is noteworthy, as the EU rules check the safety requirements and standards solely for cargo and passenger ships, while in the United States, the Coast Guard also checks the safety of other sailing vessels (USCGAUX<sup>8</sup>, 2013).

The European Maritime Safety Agency (EMSA), consisting of all the EU Member States and Norway, collates a review of passenger vessels in maritime accidents. The total number of maritime accidents increased in 2010 compared to 2009 and 2008, while in

---

8 United States Coast Guard Auxiliary

2007 there were 149 shipping accidents. In 2008 (134 incidents) and 2009 (135 incidents), the number decreased in comparison with 2007 (147 incidents); in 2010 the number of incidents again increased to 147.

Table 1 Number of passenger ship accidents/incidents in 2007–2010

Cruise ships	2007	2008	2009	2010
Sinking	4	0	0	2
Collision/Contact	73	77	80	70
Running aground	24	26	30	22
Fire/Explosion	17	17	11	30
Other	31	14	14	23
Total	149	134	135	147

Source: EMSA Maritime Accident Report 2010

The data reveal that accidents due to collision and running aground have decreased. We can conclude that the reason for such a trend is the modern technologies and equipment, which have allowed the crew to better control the ship’s navigation. In other categories, in which human error is considered to be the underlying cause, the number of maritime accidents of passenger vessels has risen. In 2010, there were as many as 30 cases of maritime accidents due to fire/explosion, while the numbers in previous years

ranged from 17 (in 2007 and 2008) and 11 (in 2009). It should be noted that these statistics relate to passenger vessels that do not carry specific hazardous or flammable materials. In 2010, one ship sank in the harbour, the other on its way to the shipyard.

The number of fatalities on passenger vessels in the years 2007–2010 is similar; the highest in 2007 (10), the fewest in 2009 (4), while in 2010 the total was 7 people.

Table 2 Fatalities on cruise ships

	2007	2008	2009	2010
Fatalities on passenger ships	10	6	4	7

Source: EMSA Maritime Accident Report 2010

In its annual report for 2010, the Spanish Commission for Maritime Safety presented some interesting findings, stating that a third of all maritime accidents were due to human error, faulty equipment or unforeseen circumstances. The Spanish institutions responsible only investigated in detail those accidents that they considered would provide information to assist in the implementation of measures to improve maritime safety (CIAIM,<sup>9</sup> 2010), which is certainly an interesting approach. Thus, in 2010, they investigated 31 accidents of passenger vessels from a total of 91 officially registered accidents. Similarly, the relevant Slovenian institutions also empha-

size that a detailed analysis of maritime accidents is important from the point of protection, rescue and assistance (ACPDR<sup>10</sup>, 2011). The same is also underscored by Husick (2009), who says that reporting on maritime accidents assists in determining the causes of accidents and making recommendations for their prevention.

International comparisons of statistical data show a growing number of maritime passenger vessel accidents, especially characteristic of the seas around Florida, both in the Atlantic and in the Gulf of Mexico. Those most affected are the maritime routes to the Bahamas and the Caribbean Islands. There is a

9 Standing Commission for Maritime Accident and Incident Investigation

10 Administration of the Republic of Slovenia for Civil Protection and Disaster Relief

trend for increasing numbers of maritime accidents, which have been growing by 5% annually over the last ten years. This is true for large tourist cruisers, as well as sailing boats, yachts and water sport craft (Shackley, 1996).

Of particular interest is navigation safety in the neighbouring Croatian Sea. In Croatia, a large part of the tourist sea transport is carried out by public transport carriers, express lines and ferries. Vessels in this part of the Croatian Sea are the concern of the Agency for Coastal Lines and Maritime Traffic, which provides the rules for operators; publishes tenders and awards the rights for the provision of public transport (AOLPP,<sup>11</sup> 2014). The National Maritime Rescue Coordination Centre Rijeka (MRCC Rijeka) is the Croatian institution dealing with safety issues and accidents on the Croatian Sea. This institution only publishes information about all accidents at sea, both freight and passenger vessels. In 2010, it registered nine accidents, in which 24 people were injured, and one year later (2011) it registered 15 maritime accidents, in which 20 people were injured. The data shows that in addition to unfavourable weather conditions, the main causes of accidents were due to human or technical errors. The statistics highlight inexperience in navigation, lack of appropriate vessel equipment, or the failure to comply with the navigation rules. Croatia has recently tightened its legislation governing navigation safety in the Croatian Sea, with the intention of improving safety and reducing accidents.

### Legal Basis for Providing Maritime Transport Safety in Slovenia

The favourable geographical location and the Mediterranean climate and the proximity to central Europe have logically dictated the development of nautical tourism and the construction of modern marinas on the Slovenian coast. Nautical tourism here, involving yachts, motor boats, sailboats and other types of vessels, has practically all the necessary elements available for modern nautical services: from safe moorings and specialized professional services, to the quality of the environment (GZS, 2011). In Slovenia, safety and standards and their development in the maritime sector are under the control of the Mar-

itime Directorate, in collaboration with the Slovenian Maritime Administration, which operates within the Ministry of Infrastructure and Spatial Planning. There are also other entities that are responsible for maritime safety, such as the Maritime Police and Harbour Master. Slovenia is a member of all three international organizations that oversee international maritime safety: the International Maritime Organization, the International Hydrographic Organization and the Paris Memorandum (MZI RS,<sup>12</sup> 2013). The legal framework and regulation of maritime matters dealing with the safety of navigation on Slovenian territorial and internal waterways is the Maritime Code of Slovenia, which provides for safety at sea, imposing conditions that must be satisfied in the territorial seas and internal waterways, facilities for navigation safety, ports and anchorages, and the conditions which must be met by vessels and other floating devices and their crew (PZ,<sup>13</sup> 2001). Operational control and implementation of the terms of the Maritime Code is upheld by the Marine Police Station, located in Koper, and the Maritime Administration Port Harbour Masters.

In Slovenia, the majority of tourist trips are undertaken as internal journeys, carrying passengers between two or more Slovenian ports (PL,<sup>14</sup> 2011). Ships and other vessels are usually free to choose the shipping route between two ports, decided by the shipmaster on the basis of the current conditions (depth, draft, weather, etc.). However, when coastal states need to ensure safety for the most critical areas, they enact special maritime regimes, approved by the International Maritime Organization (IMO), according to which shipping must strictly observe these regulatory regimes. This is the case in the Slovenian Sea, where the waters surrounding the Cape of Savudrija and the Bay of Koper are less than two nautical miles from the coast, thus vessels are required to reduce speed to less than 12 knots (ACPD-R, 2011). In relation to the regulations concerning safe maritime navigation in the Slovenian Sea, it is noteworthy that two important features, i.e. the provision for the treatment of persons with reduced mobility<sup>15</sup>, which requires special attention from the op-

11 Agency for Coastal Lines and Maritime Traffic Republic of Croatia

12 Ministry of Infrastructure, Republic of Slovenia

13 Maritime Code

14 Rules of Passenger Ships

15 These are individuals who have particular difficulty when

erator or a companion tourist sailing together, as they require additional help from employees and additional understanding by other passengers, and the 'blue' Freephone 080 18 00 number or specific radio frequency (VHF channel 16, channel 70 DSC, MMSI 002780200) access to the Ministry of Infrastructure and Spatial Planning (2013). The aforementioned measure provides an extra dimension of safety in the Slovenian Sea.

**Research**

**Circumstances of Accidents in the Slovenian Sea**

The Slovenian Sea covers 180 km<sup>2</sup> and is part of the Gulf of Trieste in the Adriatic Sea. The length of the Slovenian coastline from the Gulf of St. Jernej on the Italian border to the mouth of the Dragonja River on the Croatian border is 46.6 km, while the distance by air is a mere 17 km. The largest by coastal proportion

are the gulfs of Koper and Piran; important but smaller are those of Strunjan and Portorož (Klanjšček and Radovan, 2005). Most of the coast is inaccessible by land due to its steep descent into the sea, and by the sea, due to the shallow water. The geomorphological structure of the Slovenian coastal zone is highly diverse; 97% of the Slovenian Sea depths do not exceed 25 m; 60% of the sea is shallower than 15 m and 40% shallower than 10 m. Depths over 25 m occur only in less than 3% of the measurements (Klanjšček and Radovan, 2005). The littoral shoreline is quite rocky and gravelly, and only partially covered with vegetation. The shallow waters represent a danger to navigation in the Gulf and are especially dangerous off the Cape of Savudrija. The information available deals with the causes of accidents (collision with an object, malfunction and engine damage, beaching, capsizing, and the steps taken to avoid hull

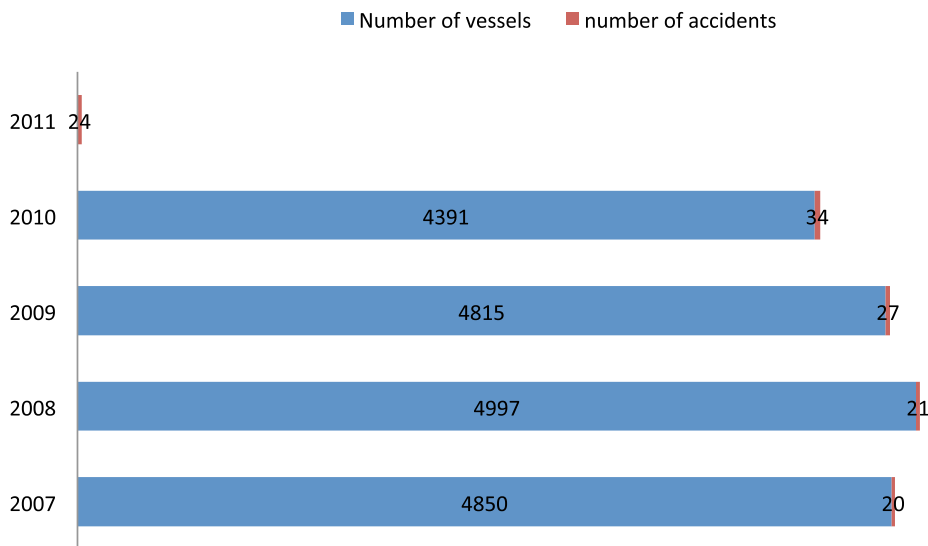


Figure 1 Relationship between the number of vessels\* and the number of accidents  
 Source: SI – Stat, Slovenian Maritime Administration \* Data on the number of vessels collected until 2010 (SI STAT)

damage), which can only be directly related to the risk of shallow water. Unfortunately, it does not include information on whether accidents were due to the vessel running aground or damaged by the shallows. The Slovenian Sea is exposed to the winds, especially the *tramontana* wind and the southerlies,

storms (especially in summer) and fog (especially in winter). There are three main freight ports in the Gulf of Trieste: Koper, Trieste and Tržic. Koper also has a terminal designed exclusively for maritime passenger transport. There are also three smaller ports

using public transport, including the elderly, disabled, individuals with special sensory needs and wheelchair users, pregnant women and individuals accompanying

small children. At each such voyage, especially in case of an accident and evacuation of the vessel, priority is given to those individuals, and they are supervised even more closely and carefully.

and marinas in the Slovenian Sea at Izola, Portorož and Piran (ACPDR, 2011). A quantitative analysis of the data, which was obtained from the website of the Statistical Office of the Republic of Slovenia along with data provided by the RS Maritime Administration, along with the Maritime Directorate of the Ministry of Infrastructure, was used. The data obtained were analysed; the results were tabulated and graphically represented.

For the purposes of our study, we analysed the number of vessels from Austria, Croatia, Italy, Germany and Slovenia; as in the surveyed period, only nationals from these countries reported an accident in the Slovenian Sea.

From Figure 1, it is clear that the greater number of vessels does not actually increase the number of accidents, which is an interesting figure for 2010;

while there are fewer vessels in the period from 2007 to 2010, the number of accidents is highest (34) and, in contrast, according to data from 2008, where the highest number of vessels was 4,997, the number of accidents that year is almost the lowest: 21 accidents. The fewest accidents happened in 2007: 4850 vessels with 20 accidents.

Figure 2 shows the number of vessels moored in the Slovenian Sea from 2007 to 2010; 2011 is unfortunately not covered in the survey, as the Statistical Office stopped collecting data on the number of vessels moored in the Slovenian Sea after 2010. As expected, the maximum numbers were national, thus Slovenian vessels, then Italian, followed by German, Austrian and finally Croatian vessels. Vessels of other nationalities can also be found around the Slovenian Sea, but they are comparatively few.

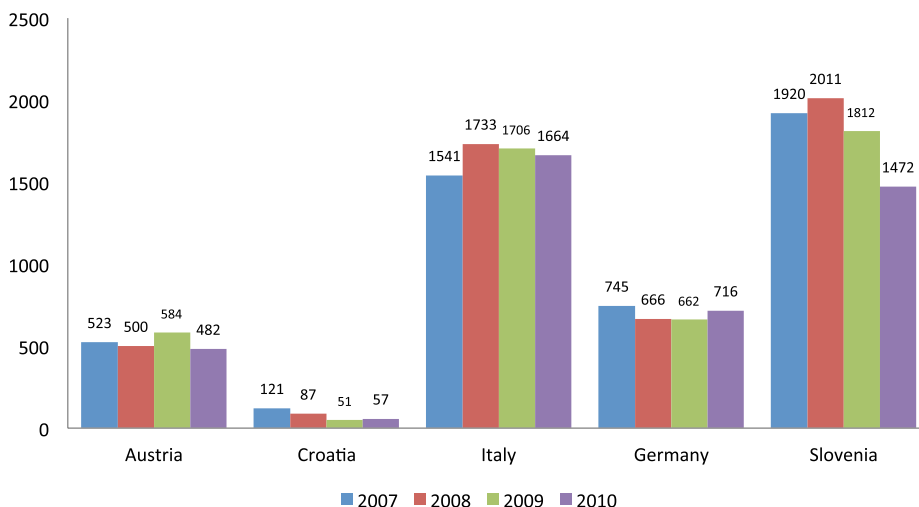


Figure 2 Number of vessels by year and nationality of craft  
Source: SI – Stat, Slovenian Maritime Administration

The third table shows that, in most cases, the reported accidents involved Slovenian citizens, only one case was for Austrian (2007), Croatian (2008) and German (2010) nationals and twice for the nationals of Italy (2011). In all cases, Slovenian nationals were responsible for the accident. No data is recorded on serious or tragic accidents in the Slovenian Sea, but it is known that there was only one casualty with serious bodily injuries for within the entire surveyed period (2011).

Figure 3 shows that in 2010, most accidents (13) involved avoidance and docking. In comparison with

the rest of the research period (2007, 2008, 2009, 2011), 2010 also shows more accidents with vessels at berth, as a result of a strong *bora* wind or *tramon-tana*. Ten such accidents were registered. The year 2010 had the highest number of vessel accidents (34) and in addition to the previously mentioned reasons, three accidents were due to malfunction or engine damage, followed by two accidents due to poor visibility, and another due to mast breakage and capsizing.

The year with the second highest number of vessel accidents is 2009, which recorded 27 vessel acci-



Table 3 Notifications of accidents by year and nationality

Country of the applicant / year of accident	2007	2008	2009	2010	2011
Austria	1	0	0	0	0
Croatia	0	1	0	0	0
Italy	0	0	0	0	2
Germany	0	0	0	1	0
Slovenia	19	20	27	33	22
Total	20	21	27	34	24
Number of injuries	0	0	0	0	1

Source: SI – Stat

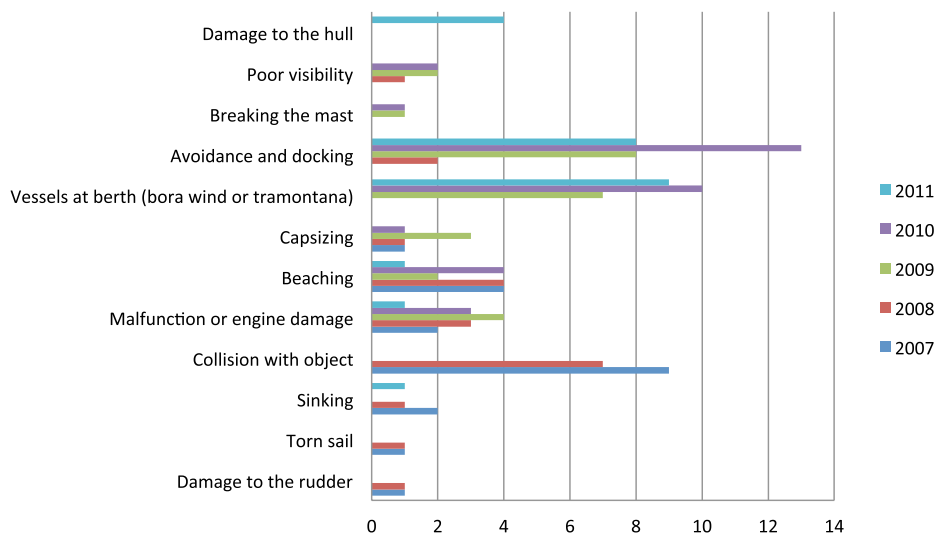


Figure 3 Causes and number of accidents from 2007 to 2011  
Source: Slovenian Maritime Administration

dents. Most (8) were due to avoidance and docking, followed by seven accidents while at berth (strong bora wind, or *tramontana*), then four accidents due to a malfunction or engine damage, three accidents resulting from capsizing; the reason for two of these was poor visibility and beaching; one accident occurred due to mast breakage.

The year 2011 is next in line with 24 reported accidents, which mostly happened while at berth due to the strong bora winds or *tramontana* (9), followed by eight in order to avoid accidents and docking, then four accidents due to damage to the hull; only one accident occurred due to beaching, malfunction and damage to the engine, and sinking. In 2008,

there were 21 accidents reported; of this number, the most frequent accidents were due to collision with an object (7), followed by four accidents due to beaching, then three accidents due to malfunction or engine damage, two in order to avoid an accident and docking, and (after an accident due to poor visibility) capsizing, sinking, torn sails and rudder damage. In 2007, the biggest cause of vessel accidents was collision with an object, of which nine cases were recorded, followed by four cases of beaching, two cases of engine failure or damage and sinking, and one example of rudder damage, torn sails and capsizing.

The results show that most accidents occur while avoiding objects or docking at marinas and ports.

These types of accidents are caused by human factors, occurring due to negligence in navigation or docking due to bad information about the weather

conditions. The lack of information about the weather conditions is common to boats owned by foreign nationals.

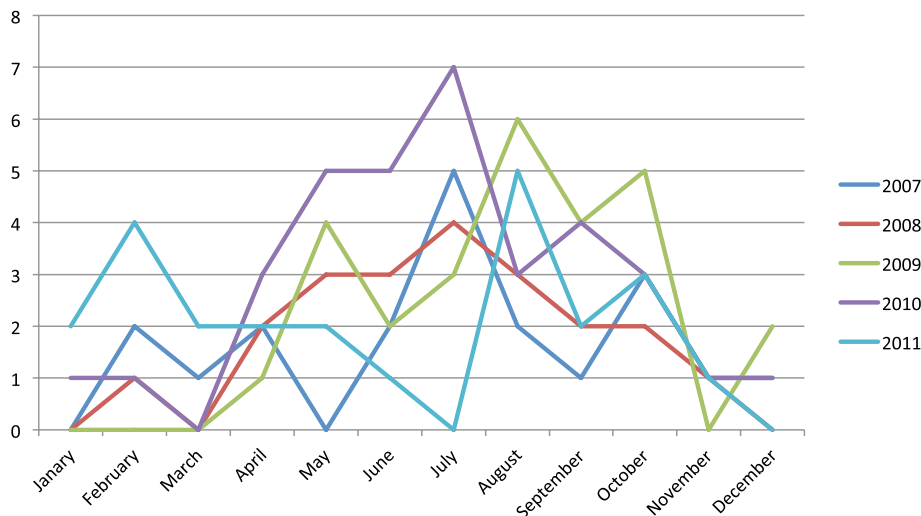


Figure 4 Number of accidents by months and years  
Source: SI – Stat, Slovenian Maritime Administration

Figure 4 shows the number of accidents by months and years. Most of them take place in July 2010 (7), or in August of 2009 (6), which can be attributed to increased traffic at sea during the summer months when Slovenia has its main tourist boating season. This is followed by five vessel accidents in October 2009, five accidents in May and June 2010 and five accidents in 2011. In the remaining periods, there were less than five accidents per month. It is interesting to note that at least one accident occurred each month in the period between 2007 and 2010, regardless of the tourist or nautical season.

The greatest total number of accidents (19) between 2007 and 2011 occurred in July, as well as 19 accidents in August, which is to be expected because of the two-month peak summer season.

**Conclusion**

The survey results confirm the fact that a small number of marine casualties and tourist passenger vessels accidents occur in the Slovenian Sea. In almost all cases, the accidents cause material damage. The number and causes of the accident cannot be objectively compared to the accidents of tourist and passenger vessels in other seas, as they differ in their

characteristics, size, number of ports and marinas as well as the number of vessels. The methodology of data collection for tourist passenger vessel accidents varies from country to country. Even within the EU there is no uniform data collection. This causes a problematic grey area, making it difficult to judge how many accidents are reported and how many are not. As a rule, vessel owners only reported an accident in cases in which there was damage or when claiming insurance compensation for damage. The study has highlighted the problem of a lack of accident data collection, resulting in poor analysis, and consequently making it more difficult to make recommendations and propose preventive measures to reduce accidents.

The fundamental research findings tell us the two main causes of accidents in the Slovenian Sea. The most common is avoiding objects and docking. The risk could be reduced by the active role of a person at the marina or port to advise and assist in manoeuvring and docking the vessel, especially during the nautical tourist season of July and August. Based on the results of the research, those months are also affected by the most accidents and this applies to the entire research period. The second most common

cause of accidents in the Slovenian Sea is natural accidents while docked, occurring due to strong winds or the *tramontana*. In this case, the risk can be reduced by giving direct warnings about the suitability and adequacy of mooring, as operators often moor their vessels inadequately. While docking is often carried out in fine weather, vessel operators do not take account the circumstances resulting from the strong bora wind or the *tramontana*. Even for skipper exams, more attention should be given to safety. The number of accidents is also affected by inadequate marina or port facilities that are not sufficiently protected from strong winds. In this case, marina/port management should eliminate or reduce their shortcomings in the infrastructure construction and technical developments. Similarly, additional precautionary information for vessel users on the liabilities and ownership of the marina and port properties can be effective. It is also proposed that it is reasonable to intensify measures that reduce the causes of accidents in July and August, when the peak season has the greatest number of accidents, according to the research. In addition, proactive steps to prevent accidents should consider in which country the vessels are registered (Italy, Austria and Germany, in addition to Slovenia) and that preventative measures should also be adapted to the official languages of those countries.

It should be emphasized that the Slovenian Sea, with less than 1,500 berths, has far fewer berths than the Italian part of the Gulf of Trieste, with 15,000 berths in 23 marinas (TFVG,<sup>16</sup> 2013) and Croatia, with 49 locations also with approximately 15,000 berths. The number of berths directly and indirectly affects the safety of the maritime traffic, so increasing the number of berths by building a modern marina in Koper would be a very welcome. Technological developments aimed at nautical and passenger tourism is also affected by the increase in the length of modern vessels. According to international estimates, vessels made for tourist and passenger purposes are being built about 40 cm longer each year, on average. Similarly, this requires appropriate action in the modernization and construction of marinas on the Slovenian Sea.

According to the statistics of all maritime disasters, we can conclude that the number of accidents

in the European area is declining. The area with the highest number of accidents remains the Atlantic Ocean and the North Sea, but even there the number of accidents has been declining from year to year. In the tourism sector, there has been a strong trend in passenger growth over the last 10 years on large cruise ships, whether in the Mediterranean Sea, Indian Ocean, Gulf of Mexico or around the Caribbean. Due to such large numbers of passengers, while there may be fewer vessel accidents, the consequences can be tragic and generate a great deal of publicity. In 2012, there were three cruise ship accidents, among which, the most notable was the Costa Concordia ship disaster, which killed 32 people (MIT,<sup>17</sup> 2012). The accident has raised many questions and concerns about ensuring safety during emergencies on large cruise ships and the adequacy of international regulations governing this area. An even more tragic accident took place on the Rabaul Queen ferry in February 2012, with 162 victims. The cause of the accident was bad weather conditions in the Solomon Sea, and the overloading of passengers (Warwick et al., 2012). Another notable incident was the sinking of the luxury yacht Yogi, awarded as the most innovative yacht in its category in 2011. Sailing along the coast of the Greek island of Skyros in the Aegean Sea, it sank due to a combination of several causes: mechanical failure, heavy seas and strong winds. Such media coverage of accidents has led to international organizations and associations to accept stricter and more up-to-date regulations for maritime safety. Greater safety is possible through the development of modern vessel technology, providing detailed information on sea conditions and in the marina/port, easier vessel manoeuvrability and other advanced vessel safety components. In this context, both large passenger ships and smaller passenger-carrying vessels are taken into account. Due to the high competition in the supply of marine technology has become cheaper and more widely available among different customer groups. The development of marine technology is one of the key element of marine safety.

The vision of Slovenian tourism and its development strategy are based on sustainable and responsible tourism, which is also true for nautical tourism. Tourist vessel accidents, unlike cargo vessel accidents, represent a lower risk for ecological disasters.

16 Turismo Friuli Venezia Giulia

17 Italian Ministry of Infrastructure and Transport

However, due to its small scale and the sensitivity of the Slovenian Sea, tourist vessel accidents could also cause ecological disasters affecting the natural heritage of the coastal communities. In the three coastal municipalities, there are eight formally protected areas, including six<sup>18</sup> that are directly or indirectly related to public access to the sea (Rejec and Brancelj, 2003). Tourist vessel accidents, such as fire and shipwreck, may cause environmental damage due to the spillage of fuel or other toxic substances. Maritime accidents that directly threaten the ecosystems of the Slovenian Sea also impact the natural value of these protected areas and can have a direct or indirect impact on the economy of the coastal communities.

The findings of this research show that the safety of maritime traffic and tourist passenger vessels is crucial for the development of nautical tourism as a promising, commercially attractive and environmentally friendly activity. Therefore, applying systematic improvements, upgrades and updates to all the elements will provide and increase safety in the Slovenian Sea. The competitiveness of nautical tourism also aids in the development of the quality of safety, in marinas and ports, as well as during the voyage.

Notwithstanding the limitations in capturing the statistical data that we have observed, the study will continue and analyse maritime tourism passenger vessel accidents in the next few years, and, of course, compare those results of the analyses presented here.

## References

- Ministrstvo za obrambo, Uprava RS za zaščito in reševanje. (2011). Načrt zaščite in reševanja ob nesreči na morju. Retrieved 15. 1. 2013 from [http://www.sos112.si/slo/tdocs/nacrt\\_morje.pdf](http://www.sos112.si/slo/tdocs/nacrt_morje.pdf)
- Agencija za obalni linijski pomorski promet Republike Hrvatske. (2014). Retrieved 8.7.2012 from <http://www.agencija-zolpp.hr/Po%C4%8Detnas-tranica/tabid/1251/language/hr-HR/Default.aspx>
- Božič, Z. (1999). Turizem in ekološke ter druge nesreče na morju; Varnost in turizem - zbornik posveta, edt. Andrej Anžič
- Standing Commission for Maritime Accident and Incident Investigation. (2010). Annual Report. Retrieved 15.1.2013 from <http://www.fomento.gob.es/NR/rdonlyres/9EE51919-E774-4272-ADE4-FD-07DDAA5102/103092/Report2010.pdf>
- Cvikl, H., & Artič, N. (2007). Security, a Fundamental Component of Hotel Quality in the Future. *Hotel-link*, 4(9–10), 523–529.
- Černič, P. (2013). *Slovenian Tourism in Numbers*. Ljubljana: SPIRIT Slovenia, Public Agency.
- European Commission – Maritime transport. (2014). Retrieved 6. 7. 2012 from [http://ec.europa.eu/transport/maritime/safety/safety\\_en.htm](http://ec.europa.eu/transport/maritime/safety/safety_en.htm)
- European Maritime Safety Agency. (2012). External news. Retrieved 15. 1. 2013 from <http://www.emsa.europa.eu/news-a-press-centre/external-news.html>
- Evans, C. (2003). *Rescue at Sea: An International History of Lifesaving, Coastal Rescue Craft and Organisations*. Annapolis, MD: Naval Institute Press.
- Geodetski inštitut Slovenije. (2013). Navtični vodnik Slovenskega morja in obale, RS Ministrstvo za infrastrukturo in prostor. Retrieved 26.9.2013 from <http://www.hidrografija.si/p2/3-3.php>
- Husick, C. B. (2009). *Chapman Piloting & Seamanship*. 66th ed. New York: Hearst Books.
- Italian Ministry of Infrastructure and Transport. (2012). Marine Accident Investigation C/S Costa Concordia. Retrieved 20. 1. 2013 from <http://www.ifsma.org/tempannounce/CostaConcordia.pdf>
- Klanjšček, M., & Radovan, D. (2005): *Navtični vodnik slovenskega morja in obale*. Ljubljana: Geodetski inštitut Slovenije.
- Tourismo Friuli Venezia Giulia. (2013). Land of Sea. Retrieved 20. 2. 2013 from [http://www.andrian.it/app/webroot/uploaded/fckeditor/Terra\\_di\\_mare\\_ing\(1\).pdf](http://www.andrian.it/app/webroot/uploaded/fckeditor/Terra_di_mare_ing(1).pdf)
- Pomorski zakonik. (2001). Uradni list RS, (26/2001), 2677. Retrieved 29. 1. 2013 from <https://www.uradni-list.si/1/content?id=30569>
- Marine Insight. (2012). Worst 10 Cruise Ship Accidents. Retrieved 6. 7. 2012 from <http://www.marineinsight.com/>
- European Maritime Safety Agency. (2010). Maritime Accident Review 2010. Retrieved 20. 2. 2013 from <http://www.emsa.europa.eu/news-a-press-centre/external-news/download/1388/1219/23.html>

18 Strunjan Nature Reserve; Stjuža Nature Reserve and Strunjan salt pans; Fiesa Lakes Natural Heritage; Debeli rtič Natural Heritage; Sečovlje Salina Nature Park; Skocjan Inlet Nature Reserve.

- Marine Casualty Investigation Board. (2012). Retrieved 8. 9. 2012 from <http://www.mcib.ie/>
- GZS Območna zbornica za severno Primorsko. (2011). Navtika in ladjedelništvo v Sloveniji. Retrieved 18.3.2013 from [http://www.icon-project.eu/docs/wp/5/nautic\\_SLO.pdf](http://www.icon-project.eu/docs/wp/5/nautic_SLO.pdf)
- Paris MoU on Port State Control. (2010). Retrieved 22. 1. 2013 from [http://www.parismou.org/Organization/About\\_us/2010.12.28/Principles.htm](http://www.parismou.org/Organization/About_us/2010.12.28/Principles.htm)
- Promet putnika i vozila na državnim linijama – usporedba 2010/2011. (2012). Retrieved 7. 7. 2012 from [http://www.agencija-zolpp.hr/Portals/12/doc/STATISTIKA\\_2011\\_novo.pdf](http://www.agencija-zolpp.hr/Portals/12/doc/STATISTIKA_2011_novo.pdf)
- Republika Slovenija, Ministrstvo za infrastrukturo. (2013). Varnost pomorskega prometa. Retrieved 26. 9. 2013 from [http://www.mzip.gov.si/si/delovna\\_podrocja/pomorstvo\\_in\\_plovba\\_po\\_celinskih\\_vodah/varnost\\_pomorskega\\_prometa/](http://www.mzip.gov.si/si/delovna_podrocja/pomorstvo_in_plovba_po_celinskih_vodah/varnost_pomorskega_prometa/)
- Statistični urad Republike Slovenije. (2013). Pomorski transport. Retrieved 19. 9. 2012 from [http://pxweb.stat.si/pxweb/Database/Ekonomsko/22\\_transport/04\\_22194\\_pomorski\\_transport/04\\_22194\\_pomorski\\_transport.asp](http://pxweb.stat.si/pxweb/Database/Ekonomsko/22_transport/04_22194_pomorski_transport/04_22194_pomorski_transport.asp)
- Pravilnik o potniških ladjah. (2011). Uradni list RS, (23/2011). Retrieved 29. 1. 2013 from <http://www.uradni-list.si/1/content?id=102901>
- Saltzman, D. (2013). 10 Cruise Industry Safety Policy Changes Since the Concordia Sinking. Retrieved from <http://www.cruise critic.com/news/news.cfm?ID=5151>
- Shackley, M. L. (1996). *Wildlife Tourism*. Boston: International Thomson Business Press.
- United nations conference on trade and development. (2012). Review of maritime transport. Retrieved 29.1.2013 from [http://unctad.org/en/PublicationsLibrary/rmt2012\\_en.pdf](http://unctad.org/en/PublicationsLibrary/rmt2012_en.pdf)
- Timerime. (2010). The History of Sea Transport. Retrieved 8.9.2012 from <http://timerime.com/en/timeline/493174/The+History+of+Sea+Transport/>
- Turk, R. (1999): Ocena ranljivosti slovenskega obalnega pasu in njegova kategorizacija z vidika (ne)dopustnih posegov, dejavnosti in rabe. *Annales, series historia naturalis*, 9(1), 37–50.
- Uhan, J., & Bat, M. (Eds.). (2003). *Morje, Vode bogastvo Slovenije*. Ljubljana: Ministrstvo za okolje prostor in energijo, Agencija RS za okolje. Retrieved 7. 6. 2012 from [http://www.arso.gov.si/podrocja/vode/poro~cila\\_in\\_publikacije/Vodno\\_bogastvo\\_6morje.pdf](http://www.arso.gov.si/podrocja/vode/poro~cila_in_publikacije/Vodno_bogastvo_6morje.pdf)
- United States Coast Guard Auxiliary. (2013). Vessel safety check. Retrieved 20. 1. 2013 from <http://wow.uscgaux.info/content.php?unit=V-DEPT>
- Uredba o preiskovanju pomorskih nesreč. (2011). Uradni list Republike Slovenije, (67/2011), 9221. Retrieved 29. 1. 2013 <https://www.uradni-list.si/1/content?id=104975>
- Zakon o varstvu pred naravnimi in drugimi nesrečami. (1994). Uradni list Republike Slovenije. Retrieved 2. 1. 2013 from <http://www.uradni-list.si/1/objava.jsp?urlid=199464&stevilka=2183>
- Zavarovana območja in njihov pomen za turizem: morska učna pot: Mesečev zaliv in njegovi zakladi: strokovni seminar in terensko delo, 28–29 november 2003 (2004). Strunjan, Koper: Univerza na Primorskem
- Warwick, A., et al. (2012). Commission of Inquiry into the Capsizing and Sinking of the MV Rabaul Queen. Retrieved 15. 1. 2013 from [http://www.mvrabaulqueen.com/Commission\\_Report.htm](http://www.mvrabaulqueen.com/Commission_Report.htm)