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Contributing for Safer Ships And Cleaner Oceans….

ISO 9001:2015 Company

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

المجلس الوطني للاعتماد EGAC

Achilles Oil and Gas Europe SILVER

CERTIFIED LEARNING PROGRAMME DNV DNV-ST-0008

NAVIGATIONAL INCIDENTS– CAUSE, EFFECT AND SOLUTIONS

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Studies Sighted

Sr No	Research Paper
1	Risk Factors and Navigational Accidents (SINTEF and SAFTEC) By Asbjorn Lein Aalberg, Rolf Johan Bye, Peter Risberg April 2022
2	Incident Hot Spots by Gard. Sept 2021
3	Analysis of Navigational Accidents- EMSA Sept 2022
4	Report on P and I Claims involving vessels under Pilotage IG P and I club- 2020
5	Safe Navigation and Stakeholders UK P and I - 2021

Objective–

To understand
Patterns ,
Key aspects
Simplify actions
Achieve desire benefits
Lower costs,
Prevent waste,
Protect environment.

Navigation Incidents

- Navigation Claim Frequency stands at 7.2 % or one in every 14 ships have had an incident in a year.
- Average of USD 300,000 per claim.
- Business loss

P and I Gard, as per IGP average claim is more then 1 million dollar.

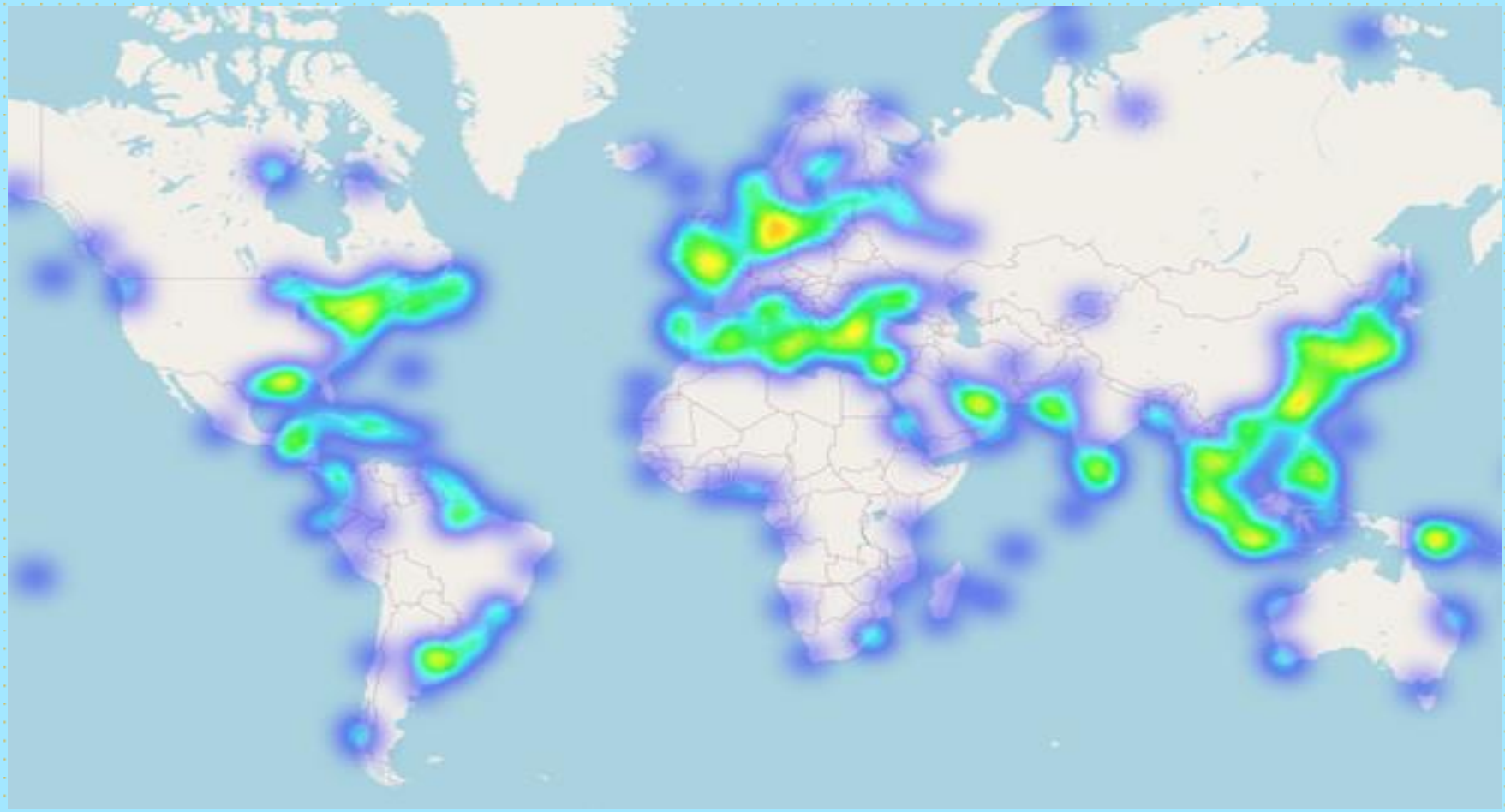
Research Insights

	Conclusion
Bye and Aalborg (2018) researched data between 2000-2017 and published review 2018-2020.	- Overlooked hazards in SMS. - Insufficient Training - Insufficient feedback to the company
P and I Gard	Human Error Entailing Lack of situational awareness, poor lookout, and Competence. Other factors include Navigation Hot Spots
EMSA report	78 % Nav Incidents due to Human Actions.
"Behind the scenes" of "human errors" there are many contributing factors from various domains deriving from complex interactions between people and systems. On the one hand there are challenges with the coordination of the bridge team, ergonomic issues, lack of resources, completeness and realistic implementation of the SMS, use of technology, etc. On the other hand, the pressure to "get the job done", thus to cope with the actual situation on board, pushes the crew to optimise the processes.	

Specifics

Accident Heat map

Are Some geographical areas more prone to navigation incident then others??



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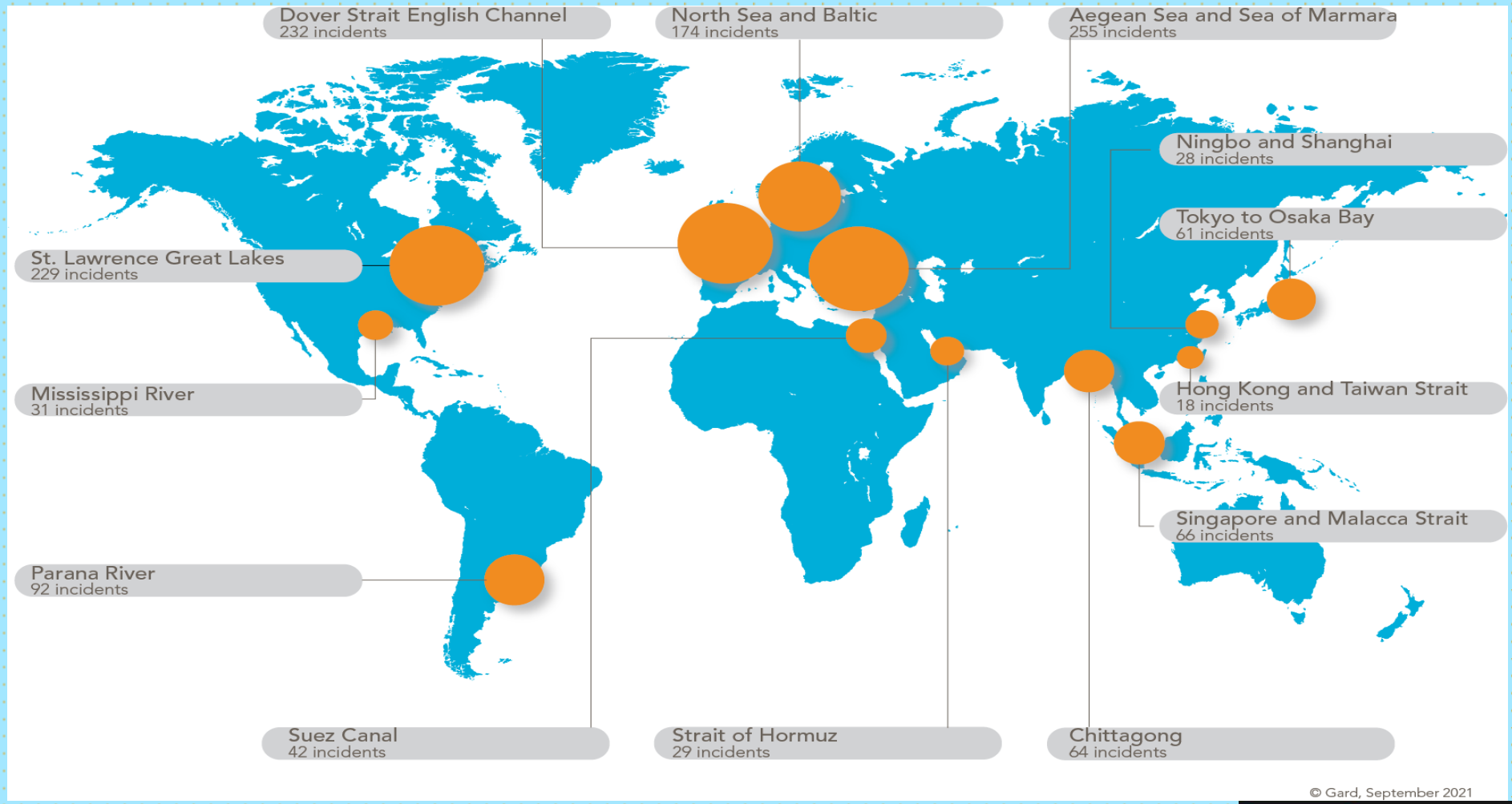
Number of Incidents by Geographic Area- 2016-2020



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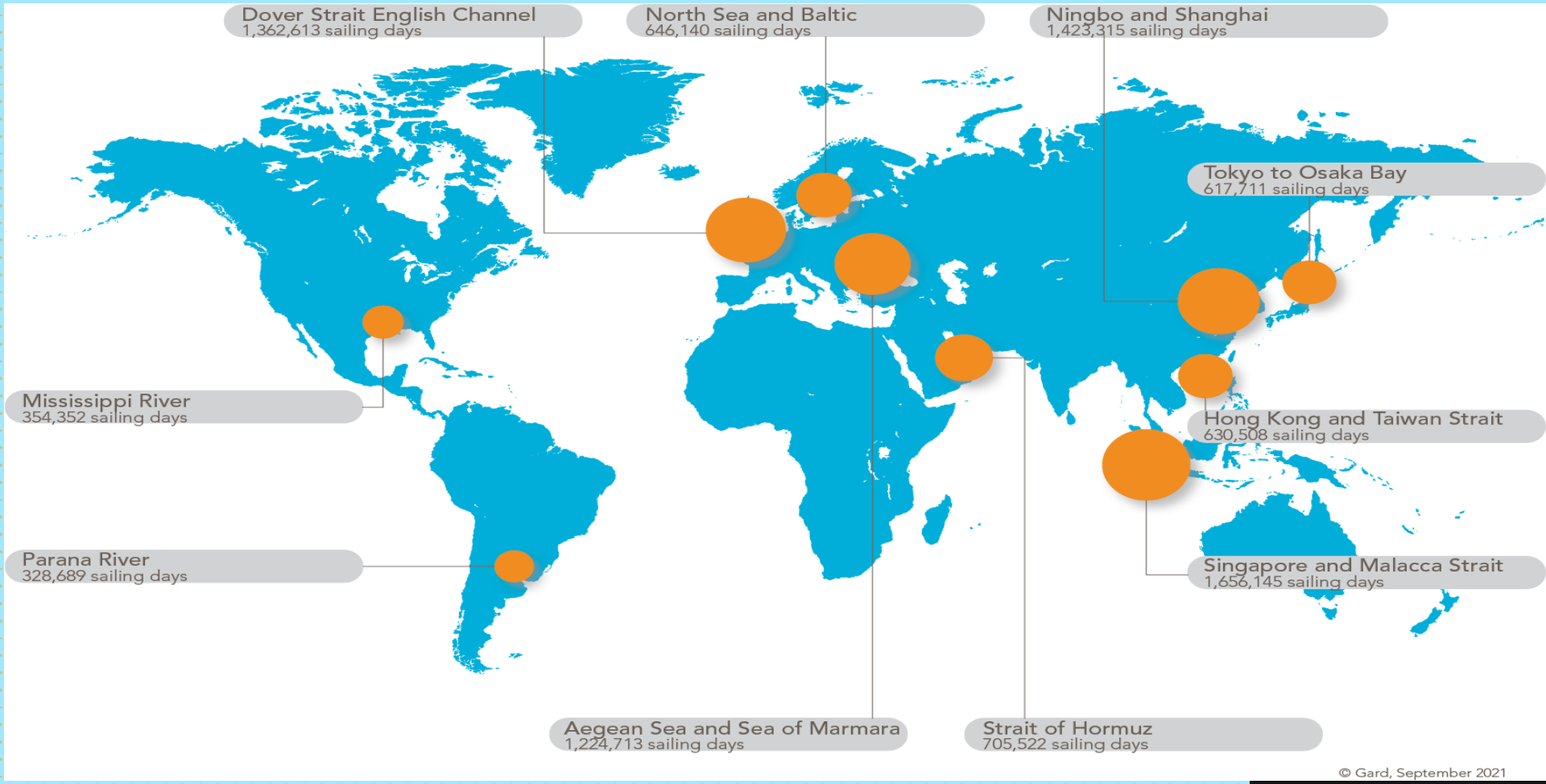
Sailing Days

Number of vessels multiplied by Time in days in each area



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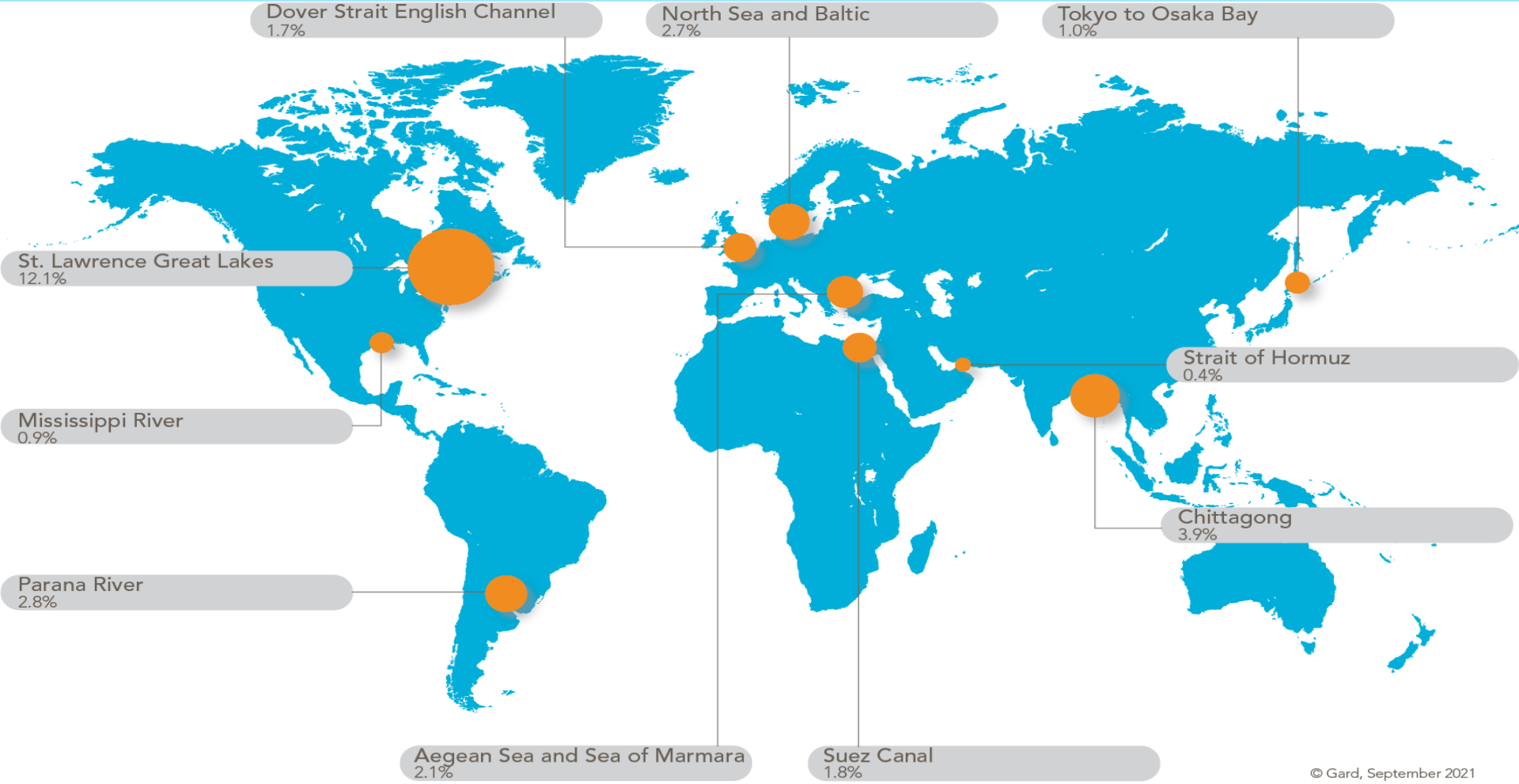
Rate of incident for geographic areas

Top 10 areas for collisions and groundings



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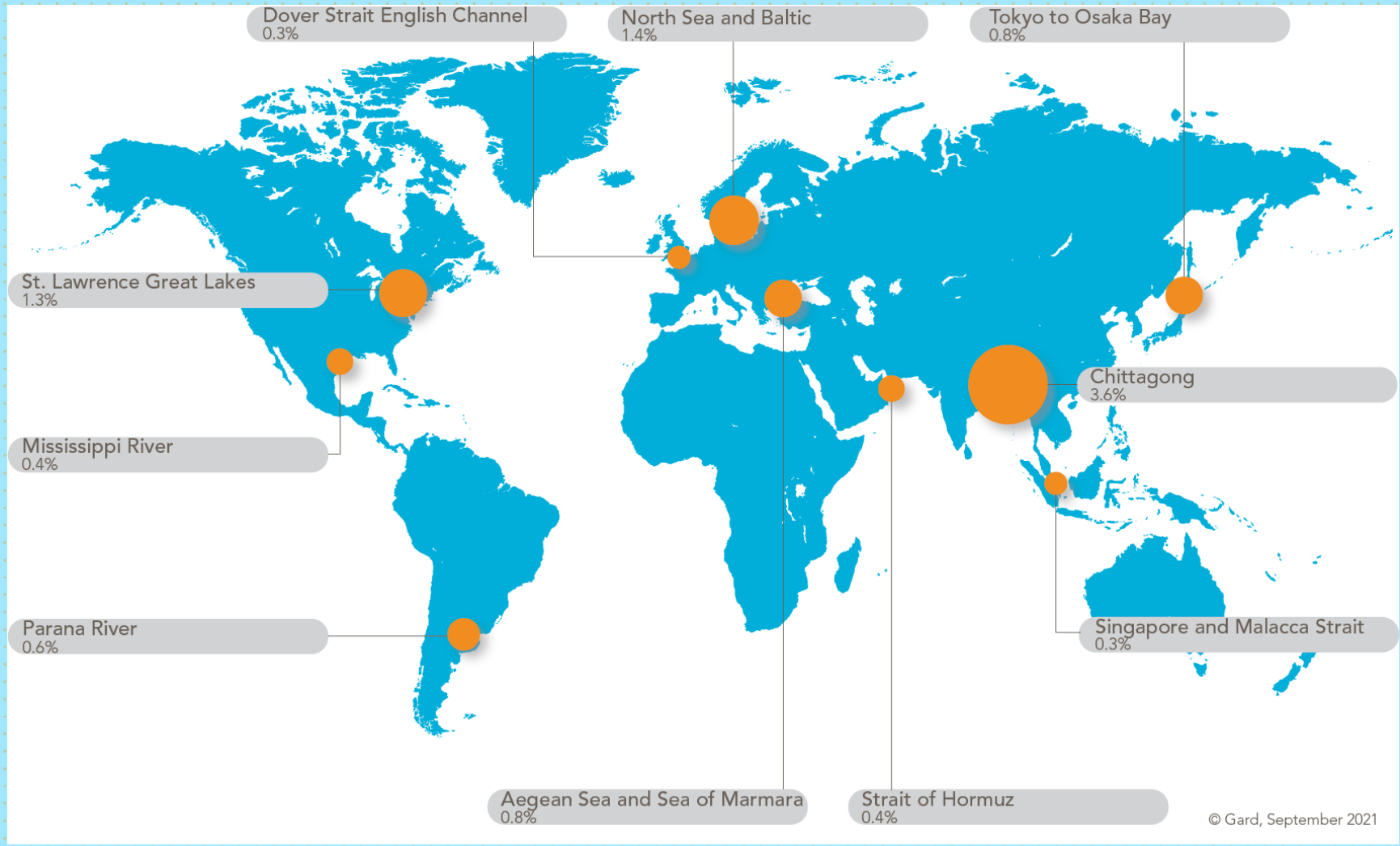
Rate of incident for geographic areas

Top 10 areas for collisions



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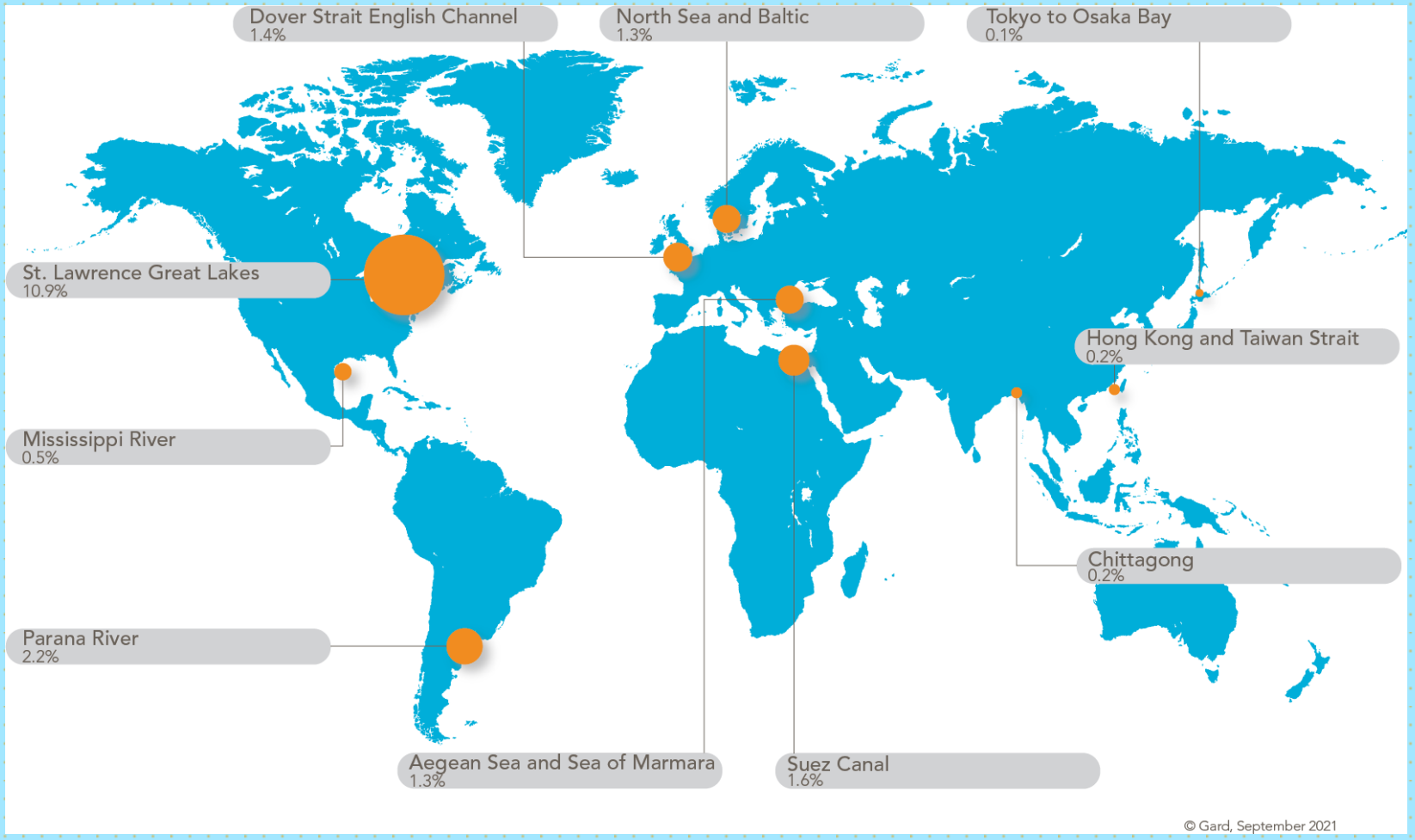
Rate of incident for geographic areas

Top 10 areas for groundings



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Corelating above

- Hot Spots for collision and grounding may not be the same.
- Singapore- Malacca- Ningbo-Shanghai- Highest traffic flow, but lowest incident rates.
- Chittagong low traffic rates but high collision and grounding rates.

Concluding- Areas with unregulated traffic contribute to high rates of collision. Nevertheless likelihood or probability of navigation incident in high traffic density areas remains high.

Main Take Outs– EMSA study

Sr No	
1	Human Element- 78 Percent "Human error" is a consequence of the sociotechnical complex interactions, involving humans on board, organisations ashore, procedures and machines.
2	Coordination of Bridge Team, Workload and Resources- 41 % OOW- Lookout employed in multiple tasks other then designated duties.
3	Conflicts of ship-borne technology- 23.6 % - Frequent alarms deactivation, ECDIS innumerable functions not used despite training received, PI not used, Radar Use
4	Bridge Ergonomics and equipment design-13%
5	Complexity of "procedures" in safety- 62 % Non Following, Circumventing

Main Take Outs– P and I GARD

Sr No	Grounding ∝
1	High Speed
2	River Traffic- Percentage of time in river transit
3	Unique ports specially first port call.
4	Number of port calls.

Sr No	Collission ∝
1	Time at anchorage
2	High Speed
3	Traffic density in ports
4	Time of Accelerations
5	The higher the total miles covered lower the risk of collision

Main Take Outs- Research by ASBJORN

Data from 9000 vessels, 10 years.

Sr No	Summary
1	High Speed
2	Size and type of vessels etc

Navigational incidents during Pilotage

IGP data

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Navigational incidents during Pilotage

UW Year	No. of Incidents	Total Cost	Average Cost per Incident	Allision and FFO	Collision	Grounding	Navigation
1999	33	$21,761,748	$659,447	26	6	1	0
2000	47	$35,371,471	$752,584	29	13	5	0
2001	70	$51,090,973	$729,871	45	21	4	0
2002	52	$41,662,008	$801,192	38	9	4	1
2003	56	$106,305,096	$1,898,305	35	16	3	2
2004	59	$76,596,850	$1,298,252	29	20	10	0
2005	46	$39,563,866	$860,084	20	20	5	1
2006	54	$112,306,540	$2,079,751	29	20	5	0
2007	57	$306,538,481	$5,377,868	30	20	6	1
2008	57	$50,811,280	$891,426	31	22	4	0
2009	38	$149,212,660	$3,926,649	26	10	2	0
2010	32	$70,436,063	$2,201,127	23	7	2	0
2011	59	$76,077,997	$1,271,310	32	25	2	0
2012	74	$130,646,688	$1,765,496	49	21	4	0
2013	42	$107,118,832	$2,550,448	25	13	4	0
2014	79	$144,241,993	$1,825,848	39	32	7	1
2015	70	$134,125,800	$1,916,083	40	25	4	1
2016	42	$66,593,613	$1,585,562	27	9	6	0
2017	45	$42,425,808	$942,796	32	10	2	1
2018	34	$58,769,271	$1,728,507	25	8	1	0
Totals	**1,046**	**$1,821,657,039**	**$1,741,545**	**630**	**327**	**81**	**8**

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Navigational incidents during Pilotage

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Category	No. of Incidents	Approx. Value US$	% of No.	% of Value
Allision/FFO	630	1,148,762,868	60%	63%
Collision	327	479,620,178	31%	26%
Grounding	81	190,532,761	8%	10%
Navigation	8	2,741,232	1%	1%
Total	**1,046**	**1,821,657,039**		

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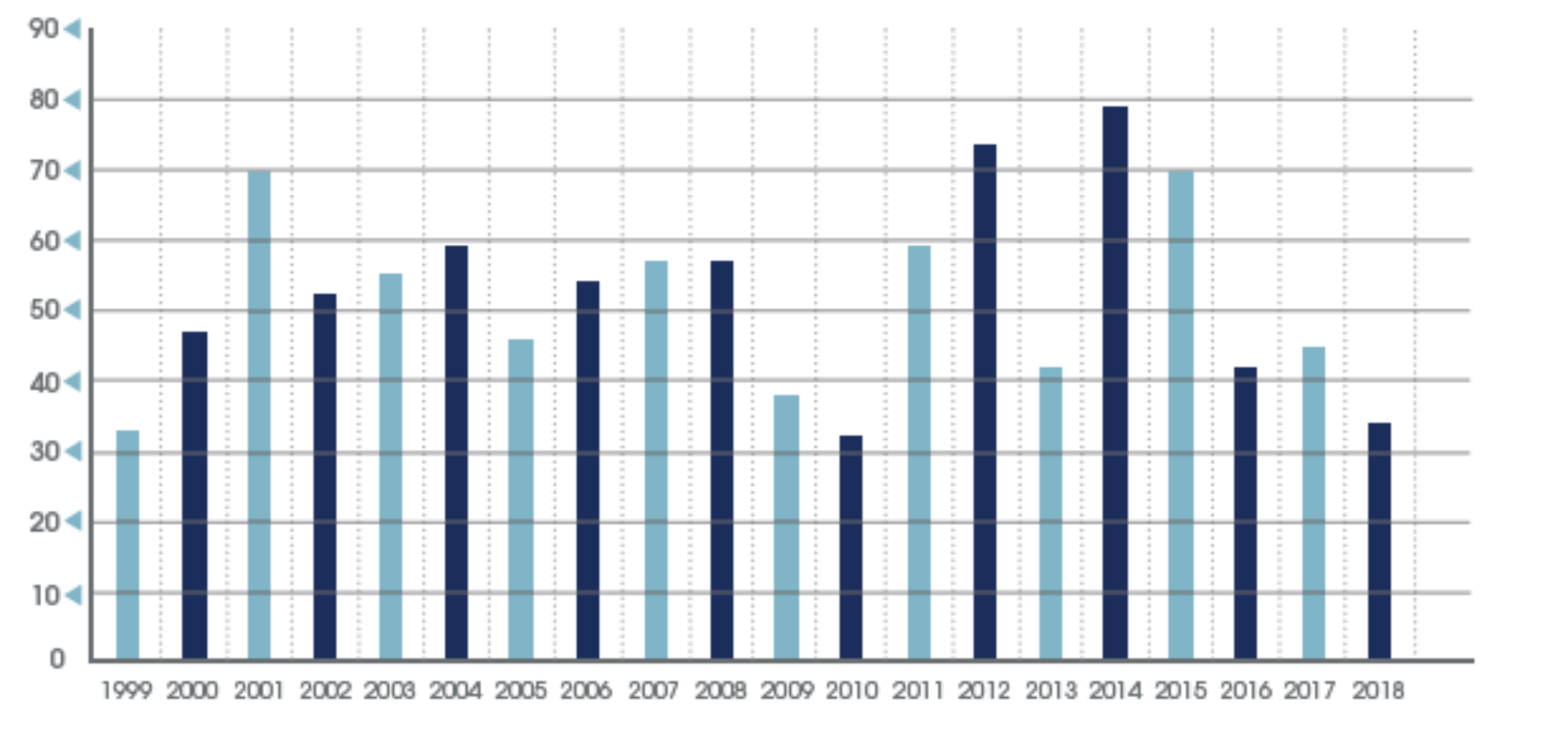
Navigational incidents during Pilotage



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Navigational incidents during Pilotage

Table 4 **SUMMARY OF DATA FOR COLLISION INCIDENTS**

Policy Year	COLLISION		
	No	Total Cost	Average Cost
1999	6	$5,582,749	$930,458
2000	13	$15,098,573	$1,161,429
2001	21	$9,538,710	$454,224
2002	9	$5,821,959	$646,884
2003	16	$22,229,654	$1,389,353
2004	20	$16,550,971	$827,549
2004	20	$13,573,926	$678,696
2006	20	$30,437,682	$1,521,884
2007	20	$44,727,012	$2,236,351
2008	22	$19,470,277	$885,013
2009	10	$74,954,972	$7,495,497
2010	7	$16,009,207	$2,287,030
2011	25	$41,289,186	$1,651,567
2012	21	$11,649,961	$554,760
2013	13	$6,306,102	$485,085
2014	32	$48,458,801	$1,514,338
2015	25	$68,745,269	$2,749,811
2016	9	$15,829,170	$1,758,797
2017	10	$5,281,371	$528,137
2018	8	$8,064,626	$1,008,078
Totals	**327**	**$479,620,178**	**$1,466,728**

SUMMARY OF DATA FOR GROUNDING INCIDENTS

Table 5

Policy Year	GROUNDING		
	No	Total Cost	Average Cost
1999	1	$2,134,164	$2,134,164
2000	5	$1,988,065	$397,613
2001	4	$5,640,651	$1,410,163
2002	4	$14,157,494	$3,539,373
2003	3	$64,979,060	$21,659,687
2004	10	$9,511,008	$951,101
2005	5	$2,112,852	$422,570
2006	5	$22,678,229	$4,535,646
2007	6	$5,100,119	$850,020
2008	4	$9,837,061	$2,459,265
2009	2	$902,864	$451,432
2010	2	$856,259	$428,130
2011	2	$1,396,826	$698,413
2012	4	$3,351,056	$837,764
2013	4	$4,147,703	$1,036,926
2014	7	$9,961,006	$1,423,001
2015	4	$8,514,278	$2,128,570
2016	6	$21,263,462	$3,543,910
2017	2	$1,500,605	$750,303
2018	1	$500,000	$500,000
Totals	**81**	**$190,532,761**	**$2,352,256**

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Navigational incidents during Pilotage Causations and Recommendations

. Suboptimal BRM-BRIDGE RESOURCE MANAGEMENT

Sr No	
1	Proper and Diligent MPX
2	Understanding all aspects of voyage under pilotage
3	Vigilant ships officers in monitoring vessels progress under pilotage.
4	Deviation addressed when noted.
5	Communications doubts cleared with Pilot.
6	Encouraging officers to question Pilot to understand actions
7	Reinforcing Masters in command and the right and duty to intervene.

STATIC AND DYNAMIC CHECKS REGIME

TRAINING–REINFORCING SAFE PRACTISES

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THANK YOU FOR YOUR TIME AND PATIENCE

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