Supplementary Materials:

Table S1. Vessel types by year (* selected for the study)

nº	Cod.	Type of ship	2018	2019	2020	2021	2022	Total
1	340	Bulk carrier *	7547	7888	6754	9368	13206	44763
2	330	Chemical tanker*	2286	2276	1159	1342	1632	8695
3	312	Combination carrier	10	22	0	4	2	38
4	323	Commercial yacht*	328	328	129	143	175	1103
5	353	Container*	2698	2762	2167	3064	4020	14711
6	378	Dredger	165	157	91	128	147	688
7	373	Fish factory	3	2	3	4	16	28
8	320	Gas carrier*	467	454	327	317	624	2189
9	324	Gas Carrier/NLS tanker	0	0	17	13	27	57
10	360	General cargo/multipurpose*	17033	16066	10800	13458	15186	72543
11	375	Heavy load	91	52	46	63	58	310
12	384	High speed cargo	6	15	20	11	23	75
13	383	High speed passenger craft	199	138	85	91	162	675
14	367	Livestock carrier*	768	630	596	467	478	2939
15	380	MODU & FPSO	45	38	30	28	48	189
16	311	NLS tanker	61	38	21	22	30	172
17	376	Offshore supply*	758	751	379	600	890	3378
18	313	Oil tanker*	1763	1740	980	1356	1982	7821
19	314	Oil tanker/Chemical tanker*	0	219	537	1080	2134	3970
20	321	Oil tanker/NLS tanker	0	29	0	24	1	54
21	399	Other special activities*	838	998	636	601	855	3928
22	371	Passenger ship*	496	444	192	297	641	2070
23	361	Refrigerated cargo*	590	479	269	360	353	2051
24	355	Ro-Ro cargo*	1095	1190	864	1055	1171	5375
25	370	Ro-Ro passenger ship*	1047	1363	664	822	1467	5363
26	382	Special purpose ship	242	199	95	131	144	811
27	385	Tug*	618	492	317	289	539	2255
28	322	322	0	4	0	0	0	4
		Total	39154	38774	27178	35138	46011	186255

Table S2. Type of general categories of deficiencies (2-3 digits) grouped and separated by year.

Type of deficiency DIC 2 Díg	Frec.	DIC 3 Díg	Description	2018	2019	2020	2021	2022	Total
01 Certificates & Documentation	26905	011	Ship Certificate	2127	2050	1160	1511	2023	8871
		012	Crew Certificate	1122	1184	1007	1172	1637	6122
		013	Document	2843	2505	1682	2204	2678	11912
02 Structural condition	9542	021	Structural condition	1768	1850	1309	2007	2608	9542
03 Water/Weathertight condition	8505	031	Water/Weathertight condition	1767	1736	1267	1584	2151	8505
04 Emergency Systems	11174	041	Emergency Systems	2031	2553	1562	2094	2934	11174
05 Radio communication	3880	051	Radio communication	914	859	550	713	844	3880
06 Cargo operations including equipment	1046	061	Cargo operations including equipment	232	212	134	220	248	1046
07 Fire safety	24741	071	Fire safety	5040	5072	3529	4692	6408	24741
08 Alarms	1801	081	Alarms	343	350	242	361	505	1801
09 Working and Living Conditions	1073	091	Living conditions	8	17	3	0	0	28
		092	Working Conditions	340	401	229	75	0	1045
10 Safety of Navigation	20279	101	Safety of Navigation	4755	4295	3049	3608	4572	20279
11 Life saving appliances	14427	111	Life saving appliances	3223	3131	2100	2550	3423	14427
12 Dangerous Goods	275	121	Dangerous Goods	64	60	33	47	71	275
13 Propulsion and auxiliary machinery	8152	131	Propulsion and auxiliary machinery	1514	1667	1248	1666	2057	8152
14 Pollution Prevention	12559	141	MARPOL Annex I	587	538	358	525	653	2661
		142	MARPOL Annex II	12	15	7	2	12	48
		143	MARPOL Annex III	5	8	2	14	6	35
		144	MARPOL Annex IV	320	351	242	266	358	1537
		145	MARPOL Annex V	752	581	460	541	676	3010
		146	MARPOL Annex VI	686	521	292	324	402	2225
		147	Anti Fouling	3	8	1	5	4	21
		148	Ballast Water	566	614	468	617	757	3022
15 ISM	8926	151	ISM	1886	1763	1285	1759	2233	8926
18 MLC	29792	181	Minimum requirements to work on a ship	71	43	19	29	43	205
		182	Conditions of employment	346	322	267	297	299	1531
		183	Accommodation, recreational facilities, food and catering	1957	2165	1565	2129	3102	10918
		184	Health protection, medical care, social security	3120	3174	2693	3538	4613	17138
99 Other	912	991	Other	209	244	124	151	184	912
Total	183989	Total		38611	38289	26887	34701	45501	183989

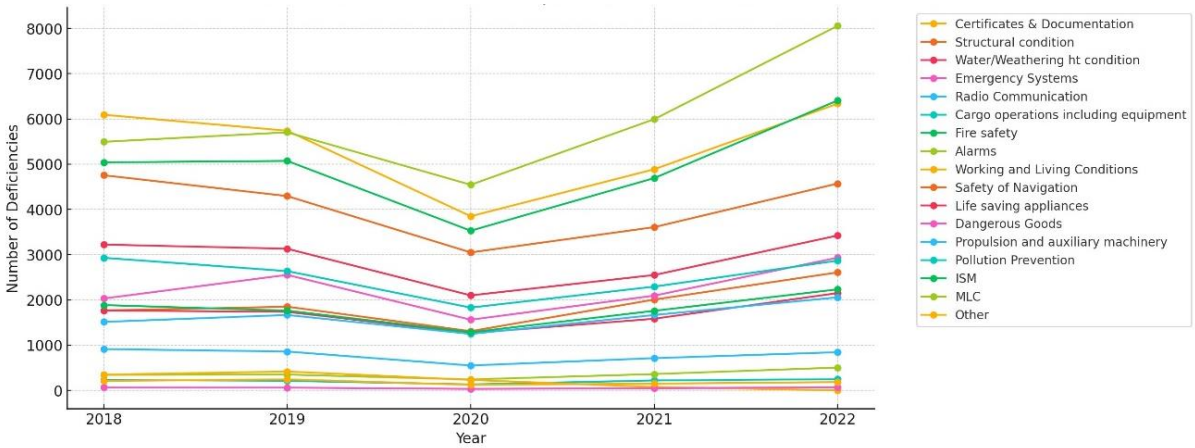

Figure S1. Annual Deficiencies Trend in PSC Inspections (2018-2022).

Table S3. Specific categories of deficiencies (4-5 digits)

Type of deficiency DIC 2 Díg	Code	Type of deficiency-Subcategories DIC 4-5 Dig
01 Certificates & Documentation	1101	Cargo ship safety equipment (including exemption)
	1113	Minimum safe manning document
	1117	International Oil Pollution Prevention (IOPP)
	1123	Continuous synopsis record
	1124	International Air Pollution Prevention Cert
	1136	Ballast Water Management Certificate
	1139	Maritime Labour Certificate
	1199	Other (certificates)
	1201	Certificates for master and officers
	1214	Endorsement by flagstate
	1218	Medical certificate
	1220	Seafarer' employment agreement SEA
	1305	Log-books/compulsory entries
	1306	Shipboard working arrangements
	1308	Records of seafarers' daily hours of work or rest
	1310	Signs, indications
	1314	Shipboard oil pollution emergency plan (SOPEP)
	1315	Oil record book
	1320	Garbage record book
	1330	Procedure for complaint under MLC, 2006
02 Structural condition	2101	Closing devices/watertight doors
	2102	Damage control plan
	2103	Stability/strenght/loading information and instruments
	2105	Steering gear
	2106	Hull damage impairing seaworthiness
	2107	Ballast, fuel and other tanks

	2108	Electric equipment in general
	2109	Permanent means of access
	2111	Beams, frames, floors-corrosion
	2112	Hull - corrosion
	2113	Hull - cracking
	2114	Bulkhead –corrosion
	2117	Decks – corrosion
	2122	Openings to cargo area, doors, …, scuttles
	2199	Other (Structural condition)
03 Water/Weathertight condition	3102	Freeboard marks
	3103	Railing, gangway, walkway and means for safe passage
	3104	Cargo and other hatchways
	3105	Covers (hatchway-, portable-, tarpaulins, etc.)
	3106	Windows, side scuttles and deadlights
	3107	Doors
	3108	Ventilators, air pipes, casings
	3109	Machinery space openings
	3110	Manholes / flush scuttles
	3112	Scuppers, inlets and discharges
	3199	Other (load lines)
04 Emergency Systems	4101	Public address system
	4102	Emergency fire pump and its pipes
	4103	Emergency lighting, batteries and switches
	4106	Emergency steering position communication
	4107	Emergency towing arrangements and procedures
	4108	Muster list
	4109	Fire drills
	4110	Abandon ship drills
	4114	Emergency source of power - Emergency generator
	4116	Means of communication between safety centre
	4117	Functionality of Safety Systems
	4118	Enclosed space entry and rescue drills
05 Radio communication	5105	MF/HF radio installation
	5106	INMARSAT ship earth station
	5109	VHF radio installation
	5110	Facilities for reception of marine safety information
	5111	Satellite EPIRB 406MHz / 1.6 GHz
	5113	SART/AIS-SART
	5114	Reserve source of energy
	5115	Radio log (diary)
	5116	Operation/maintenance
	5118	Operation of GMDSS equipment

	5199	Other (radio communication)
07 Fire safety	7101	Fire prevention structural integrity
	7103	Division – decks, bulkheads and penetrations
	7105	Fire doors/openings in fire-resisting divisions
	7106	Fire detection
	7108	Ready availability of fire fighting equipment
	7109	Fixed fire extinguishing installation
	7110	Fire fighting equipment and appliances
	7111	Personal equipment
	7113	Fire pumps and its pipes
	7114	Means of control
	7115	Fire-dampers
	7116	Ventilation
	7117	Jacketed high pressure lines and oil leakage alarm
	7120	Means of escape
	7122	Fire control plan
	7124	Maintenance of Fire protection systems
	7125	Evaluation of crew performance (fire drills)
	7199	Other (fire safety)
10 Safety of Navigation	10101	Pilot ladders and hoist/pilot transfer arrangements
	10103	Radar
	10104	Gyro compass
	10105	Magnetic compass
	10106	Compass correction log
	10109	Lights, shapes, sound-signals
	10110	Signalling lamp
	10111	Charts
	10112	Electronic charts (ECDIS)
	10113	Automatic Identification System (AIS)
	10114	Voyage Data Recorder (VDR) /
	10115	Simplified Voyage Data Recorder (S-VDR)
	10116	Nautical publications
	10117	Echo sounder
	10118	Speed and distance indicator
	10119	Rudder angle indicator
	10123	International code of signals- SOLAS
	10126	Records of drills and steering gear tests
	10127	Voyage or passage plan
	10128	Navigation bridge visibility
	10129	Navigation records
	10133	Bridge operation
	10135	Monitoring of voyage or passage plan
	10136	Establishment of working language on board

	10137	Long-Range Identification and Tracking system (LRIT)
	10138	Bridge Navigational Watch Alarm System (BNWAS)
	10199	Other (navigation)
11 Life saving appliances	11101	Lifeboats
	11102	Lifeboat inventory
	11103	Stowage and provision of lifeboats
	11104	Rescue boats
	11105	Rescue boat inventory
	11108	Inflatable liferafts
	11110	Stowage of liferafts
	11112	Launching arrangements for survival craft
	11113	Launching arrangements for rescue boats
	11116	Distress flares
	11117	Lifebuoys incl. provision and disposition
	11118	Lifejackets incl. provision and disposition
	11119	Immersion suits
	11123	Emergency equipment for 2-way comm
	11124	Embarkation arrangement survival craft
	11128	Line-throwing appliance
	11129	Operational readiness of lifesaving appliances
	11131	On board training and instructions
	11132	Maintenance and inspections
	11134	Operation of Life Saving Appliances
	11135	Maintenance of Life Saving Appliances
	11199	Other (life saving)
	11118	Lifejackets incl. provision and disposition
	11119	Immersion suits
	11123	Emergency equipment for 2-way comm
	11124	Embarkation arrangement survival craft
	11128	Line-throwing appliance
	11129	Operational readiness of lifesaving appliances
	11131	On board training and instructions
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	11128	Line-throwing appliance
	11129	Operational readiness of lifesaving appliances
	11131	On board training and instructions

	11132	Maintenance and inspections
	11134	Operation of Life Saving Appliances
	11135	Maintenance of Life Saving Appliances
	11199	Other (life saving)
13 Propulsion and auxiliary machinery	13101	Propulsion main engine
	13102	Auxiliary engine
	13103	Gauges, thermometers etc.
	13104	Bilge pumping arrangements
	13105	UMS-ship
	13106	Insulation wetted through (oil)
	13108	Operation of machinery
	13199	Other (machinery)