Gender, social norms, and survival in maritime disasters

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Since the sinking of the *Titanic*, there has been a widespread belief that the social norm of "women and children first" (WCF) gives women a survival advantage over men in maritime disasters, and that captains and crew members give priority to passengers. We analyze a database of 18 maritime disasters spanning three centuries, covering the fate of over 15,000 individuals of more than 30 nationalities. Our results provide a unique picture of maritime disasters. Women have a distinct survival disadvantage compared with men. Captains and crew survive at a significantly higher rate than passengers. We also find that: the captain has the power to enforce normative behavior; there seems to be no association between duration of a disaster and the impact of social norms; women fare no better when they constitute a small share of the ship's complement; the length of the voyage before the disaster appears to have no impact on women's relative survival rate; the sex gap in survival rates has declined since World War I; and women have a larger disadvantage in British shipwrecks. Taken together, our findings show that human behavior in life-and-death situations is best captured by the expression "every man for himself."

altruism | discrimination | homo economicus | leadership | mortality

On April 15, 2012, a century had passed since RMS *Titanic* sank in the North Atlantic Ocean. The *Titanic* disaster has generated immense public and scholarly interest and, as one of the most extensively covered events in history, obtained an almost mythological status. The evacuation of the *Titanic* serves as the prime example of chivalry at sea. Men stood back, while women and children were given priority to board the lifeboats. In the end, 70% of the women and children were saved compared with only 20% of the men (1). The social norm of saving "women and children first" (WCF) in shipwrecks has often been referred to as the "unwritten law of the sea."

It is well known that social norms of fairness and cooperation influence human behavior in a wide range of situations (2, 3). For instance, charitable giving and donation of blood and organs is widespread (4–6). Men and women are, however, subject to different norms of helping behavior (7, 8). Men are in general expected to help people in emergencies, whereas women are, to a higher degree, expected to engage in care over the long term. The expectation of men to display chivalry and heroism in maritime disasters can be seen as an archetypal example of sex differences in social norms of helping behavior. Men displaying extreme altruism in disasters contrasts the picture from economic experiments in which men tend to be more selfish than women (9).

Rational individuals, whether with self-regarding or other-regarding preferences, compare the benefits and costs of helping. When helping substantially increases the risk of dying, it would be rational for most individuals to save themselves rather than helping others. This cost–benefit logic is fundamental in economic models of human behavior, including models in which individuals choose to comply with or violate social norms, for instance by committing crimes (10).

Maritime disasters provide a valuable context in which it is possible to empirically investigate how people act and organize behavior in life-and-death situations and, in particular, if social norms of helping behavior are being upheld. However, so far, only the shipwrecks of the *Titanic* and the *Lusitania* have been analyzed with respect to sex and survival (1, 11–14). It has been concluded that the men on board the *Titanic* followed the norm of WCF (11, 12). Based on a comparison of the *Titanic* and the *Lusitania* (where the former sank in 160 min and the latter in less than 20 min), a conjecture has been suggested to the effect that norm compliance is more pronounced in disasters that evolve slowly (11, 12).

Do women normally have a survival advantage in maritime disasters or was the evacuation of the *Titanic* an exception? What situational and cultural conditions determine who survives and who dies? And what role does the captain play?

To address these questions, we have compiled and analyzed a database of 18 maritime disasters over the period 1852–2011 (Table 1). Our data cover the fate of over 15,000 passengers and crew members of more than 30 different nationalities.

Eight hypotheses are tested. The first and main hypothesis (H1) is that women have a survival advantage over men in maritime disasters. Previous research on the *Titanic* has found, in line with the notion of WCF, that women have a survival advantage over men, whereas evidence from the *Lusitania* disaster indicates no difference in survival rates between men and women (11, 12). There are, however, several reasons to believe that men have better survival prospects than women, if they do not engage in self-sacrificing helping behavior. The most important argument would be that men are physically stronger than women. In the evacuation of a sinking ship, success is typically determined by the ability to move fast through corridors and stairs, which is often made difficult by heavy list, congestion, and debris. Other traits that may enhance survival prospects, such as aggressiveness, competitiveness, and swimming ability, are also more prevalent in men (9, 15–17), whereas for example resistance to cold water may benefit either sex (18–20). Accordingly, if men try to save themselves, we expect women to have a relative survival disadvantage. We would, however, expect women's survival chances to improve if men comply with the norm of WCF. Hence, an observed survival advantage of women is regarded as supporting evidence of behavior being governed by the WCF norm. A small survival disadvantage for women is difficult to interpret, as it can either indicate that the WCF norm has helped women from a potentially larger disadvantage or that the norm has not been upheld. However, if we observe a substantial survival disadvantage of women we regard it as evidence that compliance with the WCF norm is exceptional in maritime disasters.

As a second hypothesis (H2), we posit that crew members have a survival advantage over passengers. According to maritime conventions, it is the duty of crew members—and in particular the captain—to conduct a safe evacuation of the ship (21). If the crew

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Table 1. Maritime disasters from 1852 to 2011

Name of ship	Nationality	Year	Cause of disaster	Water	Duration	WCF order	Voyage, days	Women, % of passengers	Casualties	Survivors
HMS *Birkenhead*	British	1852	Grounding	Indian Ocean, South Africa	Quick	Yes	21	1.4	365	191
SS *Arctic*	US	1854	Collision	North Atlantic, Canada	Slow	Yes	6	39.7	227	41
SS *Golden Gate*	US	1862	Fire	Pacific Ocean, Mexico	Slow	No	6	16.3	206	172
SS *Northfleet*	British	1873	Collision	English Channel, United Kingdom	Slow	Yes	9	22.8	287	80
RMS *Atlantic*	British	1873	Grounding	North Atlantic, Canada	Slow	No	12	29.6	538	330
SS *Princess Alice*	British	1878	Collision	River Thames, United Kingdom	Quick	No	1	56.8	697	140
SS *Norge*	Danish	1904	Grounding	North Atlantic, United Kingdom	Quick	No	6	51.0	635	160
RMS *Titanic*	British	1912	Collision	North Atlantic, Canada	Slow	Yes	5	35.2	1,496	712
RMS *Empress of Ireland*	British	1914	Collision	St. Lawrence River, Canada	Quick	No	2	38.2	983	465
RMS *Lusitania*	British	1915	Torpedoed	North Atlantic, United Kingdom	Quick	Yes	6	39.0	1,190	768
SS *Principessa Mafalda*	Italian	1927	Technical	Atlantic Ocean, Brazil	Slow	No	7	27.0	309	877
SS *Vestris*	British	1928	Weather	Atlantic Ocean, United States	Slow	No	2	33.6	125	183
SS *Morro Castle*	US	1934	Fire	Atlantic Ocean, United States	Slow	No	3	60.4	130	412
MV *Princess Victoria*	British	1953	Weather	North Channel, United Kingdom	Slow	No	1	20.2	135	44
SS *Admiral Nakhimov*	Russian	1986	Collision	Black Sea, Ukraine	Quick	No	1	47.9	423	820
MS *Estonia*	Estonian	1994	Technical	Baltic Sea, Finland	Slow	No	2	47.4	852	137
MS *Princess of the Stars*	Philippine	2008	Weather	Philippine Sea, Philippines	Slow	Not known	2	49.6	791	59
MV *Bulgaria*	Russian	2011	Weather	Volga, Russia	Quick	Not known	1	47.7	110	76

Duration indicates whether the ship sank quickly or slowly. WCF order indicates whether the captain gave the WCF order. (In the analysis, *no* and *not known* are treated as if the order was not given.) Voyage refers to the number of calendar days between departure and the sinking.

follow procedures and leave the ship after the passengers, we expect them to suffer a survival disadvantage compared with passengers. However, crew members are familiar with the ship, often have emergency training, and are likely to receive early information about the severity of the situation. We, therefore, expect the crew to have a relative survival advantage if they try to save themselves rather than assisting the passengers. Evidence from the *Titanic* suggests that crew members indeed have a significant survival advantage over passengers (11).

The third hypothesis (H3) is that the survival rate of women, relative to that of men, improves when the captain orders WCF. The potentially important role of the captain has largely been overlooked in previous studies. Evidence of people helping each other is not necessarily evidence of other-regarding preferences, or social norms, governing behavior. It has been shown, both theoretically and experimentally that people, who would not otherwise do so, may comply with a social norm if violation is threatened with punishment (22–24). Unlike other types of catastrophes, e.g., earthquakes, tsunamis, and terrorist attacks, a maritime disaster is characterized by the presence of a well-defined leader. On board a ship, the captain is the commanding officer with the supreme power to give and enforce orders. In the evacuation of the *Titanic*, the captain ordered WCF (25) and officers were reported to have shot at men who disobeyed the order (26). The situation on the *Titanic* resonates with the situation in a third-party punishment game (TPPG), in which threat of punishment is necessary for self-regarding players to transfer resources to other players (22). Similar to the TPPG, in which punishment is costly, the WCF order comes at a cost for the captain because with the order he agrees to remain on board the ship until all women and children have been rescued. When the captain does not order priority to women, the situation resembles the allocation problem of a standard dictator game (27, 28), in which self-regarding players comply with norms only if the cost of the social stigma of violation exceeds the cost of compliance.

The fourth hypothesis (H4) is that women fare worse, relative to men, when the ship sinks quickly. It has been suggested that time is of critical importance for norms to guide behavior (11). When a ship sinks quickly, human actions are driven by hormonal reactions, such as a rapid increase of adrenaline, and selfish behavior should dominate. Evidence in favor of this argument rests on a comparison of the slowly sinking *Titanic* and the quickly sinking *Lusitania*. If a shipwreck is to be considered quick or slow depends on the size of the ship as well as the number of people on board the ship. Consequently, we define a shipwreck as *quick* if the ship sank in less than X minutes, where we let X be proportional to the size of the ship's complement. For a ship of the average size in our sample (686 passengers and crew) $X = 30$ min. See *SI Appendix, A* for a detailed description of how *quick* is defined.

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The share of women among the passengers may have important implications for helping behavior among men. Giving priority to women comes at a cost for the men, as they lose valuable time in abandoning the ship and securing a lifeboat seat. This cost is lower when there are fewer women on board the ship, suggesting that behavior in line with the WCF norm will be more prevalent in shipwrecks with relatively few women. On the other hand, men have been shown to be more inclined to take risk in the presence of women (29), suggesting that the presence of relatively few women may make men less inclined to display chivalry. As the fifth hypothesis (H5), we posit that the survival rate of women improves, relative to that of men, when they constitute a comparably small share of the total number of passengers (below the sample mean of 36.8%).

The sixth hypothesis (H6) is that the survival rate of women improves, relative to that of men, if the voyage lasted for more than 1 d before the disaster. The premise is that longer time on board the ship will lead to more social interactions and increase social proximity by reducing anonymity between people, formation of networks, and strengthening of group cohesion. This, in turn, increases the likelihood that helping behavior is governed by social norms (30–32). Similarly, social proximity is likely to be higher on ships with a more intimate atmosphere. We, therefore, also test an alternative formulation of H6, H6.1, that the relative survival rate of women is higher when the ship is small (carrying fewer people than the average-sized ship in the sample, 686 people).

Whereas norms vary over time and space, it has been a grand challenge for scientists to understand when, where, or how norms develop, strengthen, or wane (33–35). It is possible that chivalry at sea was a common phenomenon in the 19th and early 20th century and that the fates of women were determined by men. With the rise of more sex-equal societies, however, women may have become more capable of surviving on their own. For instance, improved swimming skills as well as less restrictive clothing may have increased the survival prospects of women. World War I has been seen as a paradigmatic shift in the general view of manliness and the role of women in society (36). If H1 is true, but the strength of the WCF norm has weakened over time, we expect the survival advantage of women to be lower after World War I. However, if H1 is false, and women have a survival disadvantage compared with men, we expect the disadvantage to be smaller after World War I, as women have become more capable of surviving on their own. In both cases, we expect the survival rates of men and women to have converged. The seventh hypothesis (H7) is that the survival difference between men and women is lower after World War I.

Helping behaviors differ between cultures (34). Such differences may be present in maritime disasters involving ships with passengers and crew of different nationalities. Previous research on sex differences in survival has focused solely on British shipwrecks. Chivalry at sea has been seen as a defining characteristic of Britishness (36). If the expected stigma of norm violation is more severe for British men than for men of other nationalities, we expect higher compliance with the WCF norm on board British ships. The captains are British on all British ships in our sample; likewise crew and passengers are dominated by Britons on these ships. Our eighth and final hypothesis (H8) is that women fare better, relative to men, in maritime disasters involving British ships than in shipwrecks of other nationalities.

Results

Because the hypotheses have been derived mainly from evidence from the *Titanic* disaster (and to some extent from the *Lusitania*), we focus primarily on the 16 previously uninvestigated shipwrecks, data that we label as our main sample (MS). We denote the full sample including all shipwrecks in our data FS. Fig. 1 displays that, in the MS, crew members have the highest survival rate, followed by captains and male passengers, whereas the lowest survival rates are observed for women and children. This pattern stands in sharp contrast to the pattern observed for the *Titanic*.

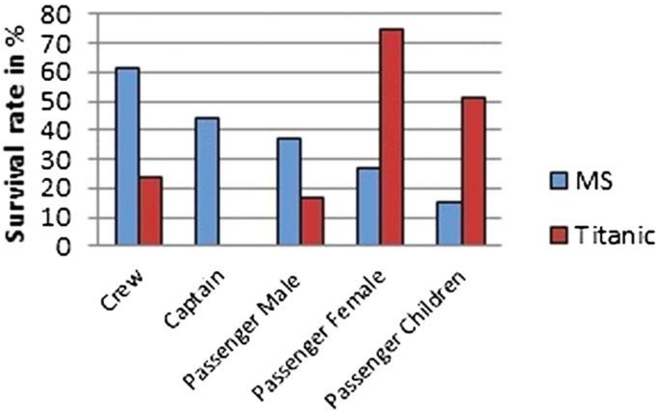

Fig. 1. Survival rates of passengers and crew. Survival rates of children are only available for nine shipwrecks in MS. See *SI Appendix*, *B*, Tables S2 and S3 for the statistics underlying this figure.

We use regression analysis to study determinants of survival in shipwrecks. The shipwrecks are analyzed both in separate regressions and in regressions based on pooled data including all of the shipwrecks. The separate analyses of the shipwrecks allow us to test only H1 and H2. The advantage of these tests, however, is that they are methodologically comparable to previous tests conducted on data from the *Titanic* and the *Lusitania*. The regression analyses of the pooled data make it possible to control for unobservable shipwreck-specific circumstances and to test all eight hypotheses.

The first hypothesis (H1) is that women have a survival advantage over men in maritime disasters. In the separate analyses of all of the shipwrecks (FS) we find that women have a survival advantage ($P < 0.01$) over men in only 2 of the 18 disasters: the *Birkenhead* and the *Titanic*. For 11 of the shipwrecks, we find that women have a survival disadvantage ($P < 0.01$) compared with men. For the remaining 5 shipwrecks, we find no clear evidence of survival differences between men and women.

If crew members try to save themselves rather than assisting the passengers, we expect them to have a survival advantage over passengers (H2). Indeed, we find that crew members have a relative survival advantage ($P < 0.01$) in 9 of the 18 disasters. For the remaining 9 shipwrecks, we find no clear evidence of survival differences between crew and passengers. In addition to the *female* and *crew* variables, we augment the regressions with control variables for characteristics that are likely to affect the individual's chances of surviving in a shipwreck, such as age, ticket class, etc. The estimated impacts of those characteristics show that prime aged adults have a survival advantage over children and older persons and that there is a class gradient in survival benefitting first class passengers. Moreover, we find a survival disadvantage for passengers traveling as part of a group and that passengers and crew of the same nationality as the ship have no survival advantage over persons of other nationalities. (For detailed results, see *SI Appendix*, *B*, Tables S4 and S5.)

To take full advantage of the data, we present results from analyses, including all shipwrecks of the MS in each regression. To control for unobservable factors that vary between ships, but affect the survival chances of everybody on board each ship equally, such as e.g., severity of the disaster and weather conditions, we estimate regressions that include shipwreck-specific fixed effects (37). Table 2 reports the tests of each of the eight hypotheses (columns 1–8) as well as a joint test of all of the hypotheses together in one regression (column 9). For results of

Table 2. Determinants of survival in maritime disasters

Main hypothesis tested	H1	H2	H3*	H4*	H5*	H6*	H7*	H8*	H1–H8*
	1	2	3	4	5	6	7	8	9
Female	−0.167	−0.126	−0.151	−0.151	−0.116	−0.154	−0.195	−0.093	−0.179
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.009)
Crew		0.187	0.157	0.157	0.157	0.157	0.158	0.159	0.161
		(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Female interacted with									
WCF order			0.019						0.096
			(0.477)						(0.019)
Quick				0.005					0.032
				(0.806)					(0.452)
Small share of women					−0.109				−0.050
					(<0.001)				(0.104)
More than one day voyage						0.006			0.026
						(0.807)			(0.443)
Post World War I							0.085		0.073
							(<0.001)		(0.074)
British ship								−0.153	−0.101
								(<0.001)	(0.002)
Constant	0.346	0.325	0.244	0.237	0.111	0.229	0.329	0.435	0.471
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Observations	10,978	10,976	10,976	10,976	10,976	10,976	10,976	10,976	10,976
R^2	0.249	0.270	0.242	0.242	0.244	0.242	0.244	0.247	0.248

Linear probability models. The dependent variable (survival) is binary and equals 1 if the person survived the disaster and 0 if the person died. Coefficients are followed by *P* values, based on robust SEs, in parentheses. All models include shipwreck-specific fixed effects. Because WCF order, quick, small share of women, more than one day voyage, post World War I, and British ship do not vary within ships, observations in these regressions are weighted by the inverse of the number of individuals on board the ship to give all ships equal weight. Complete regression results, as well as results from unweighted regressions and regressions including the *Lusitania* and the *Titanic* can be found in *SI Appendix, B*, Table S6–S14.

*These regressions also include the binary indicators, which the female variable is interacted with.

samples including the *Lusitania* and the *Titanic*, see *SI Appendix, B*. The results in column 1 show that the survival rate of women is 16.7 percentage points lower than, or about half of (17.9 vs. 34.6%) that of men. The results in column 2 show that crew members are 18.7 percentage points more likely to survive than passengers. The finding that women have a large survival disadvantage compared with men, and that crew members have a survival advantage over passengers, holds true throughout the specifications in columns 3–9, and also with the inclusion of data from the *Lusitania* and the *Titanic*.

We find some evidence that the survival rate of women, relative to that of men, improves when the captain orders WCF. Because the WCF order was given on only five ships, including the *Lusitania* and the *Titanic*, MS is not ideal for testing this hypothesis. Nevertheless, the joint, and most reliable, test (column 9) indicates that the relative survival rate of women improves by 9.6 percentage points when the captain orders WCF. The result is strengthened when the *Lusitania* and the *Titanic* are included in the analysis.

The results give no support for H4 (that women fare worse, relative to men, when the ship sinks quickly, compared with when the disaster evolves more slowly). Women have a disadvantage independently of whether the ship sinks quickly or slowly.

The separate test of H5 (column 5) suggests that women fare worse rather than better, relative to men, when there are comparably few women among the passengers. However, the coefficient is statistically insignificant in the joint test (column 9) and when we include the *Lusitania* and the *Titanic.*

Contrary to H6, we do not find evidence that the relative survival rate of women improves if the voyage lasts for more than 1 d before the disaster. The coefficient estimates are close to zero and statistically insignificant in both specifications (columns 6 and 9). This finding also holds true for the alternative test of this hypothesis (H6.1), i.e., when we test whether women fare relatively better in shipwrecks involving ships with comparably few people on board (*SI Appendix, B*, Table S14).

The results in columns 7 and 9 indicate that the survival rate of women, compared to that of men, is 8.5 and 7.3 percentage points higher after World War I. The finding that the relative survival rate of women has improved after World War I holds also with the inclusion of the *Lusitania* and the *Titanic*.

In contrast to H8, the results show that women fare relatively worse, not better, in shipwrecks involving British ships. The average survival rate of women on board British ships is estimated to be 15.3 (column 8) and 10.1 (column 9) percentage points lower than in disasters involving ships of other nationalities. Although being less strong, the effect remains also with the inclusion of data from the *Lusitania* and the *Titanic*. We note that the WCF order is given more often on board British ships. However, we find a larger survival disadvantage for women on British-dominated ships even when controlling for whether or not the WCF order has been given (column 9).

Discussion

Our results provide unique insights about human behavior in life-and-death situations. On the *Titanic*, the survival rate of women was more than three times higher than the survival rate of men (11). By investigating a much larger sample of maritime disasters than what has previously been done, we show that the survival rate of women is, on average, only about half that of men. We interpret this as evidence that compliance with the WCF norm is exceptional in maritime disasters. That women fare worse than men has also been documented for natural disasters (38–42). We also find that crew members have a higher survival rate than passengers and that only 9 of 16 captains went down with their ships. Children appear to have the lowest survival rate.

Moreover, we shed light on some common perceptions of how situational and cultural conditions affect the survival of women. Most notably, it seems as if it is the policy of the captain, rather

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than the moral sentiments of men, that determines whether women are given preferential treatment in shipwrecks. This finding suggests an important role for leaders in disasters. Preferences of leaders seem to have affected survival patterns also in the evacuations of civilians during the Balkan Wars (43). In contrast to previous studies, we find no association between duration of the disaster and the influence of social norms. Furthermore, women do not appear to benefit from constituting a small share of the passengers. Neither do we find that contextual factors, which are likely to reduce social distance on board the ship, such as the length of the voyage and the size of the complement, influence the survival rate of women. Moreover, we find that the sex gap in survival rates has decreased since World War I. This supports previous findings that higher status of women in society improves their relative survival rate in disasters (41). We also show that women fare worse, rather than better, relative to men in maritime disasters involving British ships. This contrasts with the notion of British men being more gallant than men of other nationalities. On the basis of our analysis, it becomes evident that the sinking of the *Titanic* was exceptional in many dimensions and that what happened on the *Titanic* seems to have spurred misconceptions about human behavior in disasters.

Methods

Data. Starting from the list *Some Notable Shipwrecks since 1854*, published in the 140th Edition of The World Almanac and the Book of Facts (44), we have selected shipwrecks involving passenger ships that have occurred in times of peace, and for which there are passenger and crew lists containing information on the sex of survivors and descendants separately. We limit the sample to shipwrecks involving at least 100 persons and in which at least 5% survived and 5% died. We have added data for one shipwreck occurring before 1854, HMS *Birkenhead* (1852), because it is often referred to as giving rise to the expression, women and children first: a notion that first became widespread after the sinking of the *Titanic* (36). Data for two shipwrecks that have taken place after 2006 are added: MS *Princess of the Stars* (2008) and MV *Bulgaria* (2011). Despite it being a wartime disaster, we also include data from the *Lusitania* (1915) in the sample, as it has been investigated in previous research. For details about the data, see *SI Appendix, A*. The data reported in this paper are available in Dataset S1.

Analytic Method. We test the hypotheses (H1–H8) by estimating linear probability models. The unit of analysis is the individual passenger or crew member. The dependent variable (survival) is binary and equals 1 if the person survived the disaster and 0 if the person died. The independent variable of main interest is the binary variable, female (females = 1, males = 0). A positive (negative) coefficient implies that women have a higher (lower) survival rate than men. Crew status is indicated by the binary variable crew (crew = 1, passengers = 0). For details on coding of variables, see *SI Appendix, A* and for model specification see *SI Appendix, B*.

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Supplementary Information Appendix for

Gender, Social Norms and Survival in Maritime Disasters

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Appendix A

This section provides a description of the database of maritime disasters used in the article *Gender, Social Norms and Survival in Maritime Disasters*. It consists of three parts: In the first part, we describe the selection of shipwrecks. In the second part, we discuss the data obtained from passenger and crew lists. In the third part, we discuss the shipwreck characteristics that we use in the analysis. The complete database of shipwrecks is available as SI Material, Dataset S1.

Selection of shipwrecks

Every year, hundreds or even thousands of accidents occur at sea. Fortunately, only a few cause substantial loss of life. No official list of the most severe maritime disasters exists. To select shipwrecks for the analysis, we therefore started off from the list *Some Notable Shipwrecks since 1854* in the 140th Edition of The World Almanac and the Book of Facts (1). The list contains a total of 152 shipwrecks over the period 1854–2006. Although the list is comprehensive and covers maritime disasters globally, it is likely that disasters of the Western world and disasters that have gained much media attention are overrepresented. It is, however, the most extensive list we are aware of.

We have imposed four criteria that need to be fulfilled for the shipwreck to be included in our database: First, the disaster should have occurred in peacetime. Second, the shipwreck in question should involve a passenger ship. Third, we only include shipwrecks that involved more than 100 people and in which at least 5 percent survived and 5 percent died.

Fourth, data (individual or aggregate) on survival rates of men and women separately should be available. The two first criteria can be seen as limiting the population of interest, while the latter two renders the sample somewhat unrepresentative. It should be mentioned that information about the shipwrecks and passenger lists are very difficult to obtain for disasters involving ships from many developing countries. This is unfortunate, since several of the deadliest disasters have involved such ships. For instance the sinking of Philippine registered MV *Doña Paz* and the Senegalese registered MV *Le Joola* are estimated to have resulted in more than 4,000 and 1,800 lives lost but are not included in our sample. Furthermore, language barriers have made it difficult to find extensive information about some shipwrecks. As a consequence, British and American ships are likely to be overrepresented in our sample.

Applying the above sample criteria leaves us with a sample of 14 shipwrecks. We have added one shipwreck occurring before 1854, HMS *Birkenhead* (1852), as it is often referred to as giving rise to the expression 'women and children first'. Moreover, we have added two shipwrecks that have taken place after year 2006: MS *Princess of the Stars* (2008) and MV *Bulgaria* (2011). We have also added RMS *Lusitania*, despite occurring in wartime, since it has been analyzed in previous research. In total, we have a sample consisting of 18 shipwrecks, whereof only RMS *Titanic* and RMS *Lusitania* have previously been systematically investigated with respect to individual and social determinants of survival.

Individual level data for each shipwreck have been collected from the ship's passenger and crew lists. 5 of the lists are obtained from books, 3 from official sources, such as e.g. inquiry commissions or government authorities, 8 from web sites, and 2 are collected from newspaper articles. It difficult to say which source is the most reliable. Logbooks and ship records have often been lost in the wreck, especially in earlier years. Moreover, it takes time to establish accounts of a maritime disaster. As a consequence, we have used the latest source available. The main sources have been cross-checked with other sources whenever possible. Reference to each source is provided in the excel file MartimeDisasters.xlsx.

We only include persons who have been confirmed to have been on board the ship at the time of the accident, or put differently, only those persons appearing in the particular passenger and crew lists. As a consequence, the total number of passengers, as well as the number of survivors and deceased, sometimes differs from the numbers appearing in other references.

We have individual level data for 17 of the shipwrecks. For the *Admiral Nakhimov* there are aggregate data on the number of male and female passengers and crew. Accordingly, we use the aggregate statistics to construct individual level data.

Data from passenger and crew lists

Below follow details about how the variables obtained from passenger and crew lists are coded and for which shipwrecks these variables are available. Table S1 reports which variables are available for each shipwreck.

Survival. Some passenger lists discriminate between deceased and missing persons. In the majority of cases 'missing' implies that the body has not been recovered, but that the person is presumed dead. For our analysis we have grouped the two categories and created a binary variable which takes the value one (=1) if the individual survived the disaster and zero (=0) if the individual died (either confirmed dead or missing). We have compared our statistics with the casualty figures appearing in other sources and can conclude that there are only minor discrepancies.

Female. Gender is the individual characteristic of primary interest to us. Only a few passenger lists provide explicit information about the gender of the persons on board the ship. For most ships we have used the individual's name to determine gender. When there are uncertainties regarding the gender associated with a particular name we have used online name dictionaries that provide information on the origin of the name and informative statistics on whether it is typically a male name or a female name. In some passenger lists, especially those dating back to the 19th century, the classification is simplified by the presence of gender based prefixes such as MRS (if married female), MISS (if unmarried female) or MR (if adult male). Professional titles such as Dr, Professor, Stewardess, Captain, etc., have also been helpful for determining the gender of passengers and crew members. We have been unable to determine the gender of some individuals, when they are stated with initials instead of forenames in the passenger manifest. This appears primarily for shipwrecks in the 19th century. Other difficulties come from misspellings in transcription of names. This occurs especially among East European emigrants travelling on American and British ships. The observations, which remained inconclusive after applying the above methods, were left out from the empirical analysis. In many cases, we cannot discriminate between women and girls and men and boys. Hence, we use the terms female and male. Gender enters our empirical analyses as a binary variable, *Female*, taking the value one (=1) for females (women and girls) and zero (=0) for males (men and boys).

Crew. All the passenger lists we have gathered provide some sort of indictor of whether listed person is a passenger or member of the crew. In some passenger lists there is more detailed information about the crew such as e.g. in which department (i.e., deck, engineering, or steward) the crew member worked, and in some cases even the specific title. The amount, quality and type of crew characteristics vary substantially between the ships. We therefore treat the crew as a homogenous entity. For most shipwrecks the great majority of crew members are men. This implies that the information on crew membership is not only important in the test of H2 but also that crew membership is an important control variable in the other tests as well. Accordingly, we have constructed a binary variable *Crew* taking the value one (=1) for crew members and zero (=0) for passengers. The captain is included in the crew.

Table S1. Availability of individual level data

Ship/Variable	Survival	Gender	Age	Crew	Passenger class	Nationality	Companionship
HMS *Birkenhead*	X	X		X			
SS *Arctic*	X	X		X			X
SS *Golden Gate*	X	X	X[1]	X	X		X
SS *Northfleet*	X	X	X	X			
SS *Atlantic*	X	X		X	X[4]		
SS *Princess Alice*	X	X	X[2]	X			
SS *Norge*	X	X	X	X	X[5]	X	
RMS *Titanic*	X	X	X	X	X		
RMS *Empress of Ireland*	X	X		X	X		
RMS *Lusitania*	X	X	X	X	X	X	
SS *Principessa Malfalda*	X	X	X[3]	X	X		
SS *Vestris*	X	X	X[1]	X			
SS *Morro Castle*	X	X		X	X		X
MV *Princess Victoria*	X	X	X	X		X[6]	
SS *Admiral Nakhimov*[a]	X	X		X			
MS *Estonia*	X	X	X	X		X	
MS *Princess of the Stars*	X	X		X			
MV *Bulgaria*	X	X	X	X			

Notes. [a]Data are compiled from aggregate statistics. [1]Only indicator for whether the individual is a child or adult. [2]Indicator for whether the individual is a child or adult and age for adults and some (presumably older) children. [3]The data are incomplete for the crew and therefore not controlled for in the regression models. [4]Passengers are categorized as saloon (1st class) passengers and steerage (2nd and 3rd class) passengers. [5]One person appears as first class passenger in the passenger list and ten persons appear as second class passengers. Because of the relatively small numbers we do not include controls for passenger class in the analysis of SS *Norway*. [6]The nationalities are: English, Welsh, Scottish, Northern Irish, and Irish. We do not use this information in the analysis of MV *Princess Victoria.*

Age. Physical strength and mobility are likely to be important determinants of survival in a shipwreck. Unfortunately, the passenger lists do not provide us with this kind of information. A person's age may however capture these characteristics fairly well. For instance, prime aged individuals are likely to be both physically stronger and more mobile than children and older adults. 9 passenger lists contain information on age. In some cases it seems as if the availability is systematic. For example, the emigrant ships tend to have more extensive documentation of the age of the first class (saloon) passengers than the third class (steerage) passengers. For two of the ships (the *Estonia* and the *Bulgaria*) age is not given explicitly but in the form of year-of-birth. We have then calculated age as the year of the disaster minus the person's year-of-birth. Age enters the empirical specifications in the form of categorical variables, namely: persons younger than 16 (*Age<16*); persons 16–50 years old (*Age 16–50*); and persons older than 50 (*Age>50*), with *Age 16–50* being the reference group. Similar age groups have been used in previous studies (2, 3). Two passenger lists (the *Golden Gate* and the *Vestris*) do not contain information on age but make a distinction between adults and children. We create a binary variable *Child* which equals one (=1) if the person is a child and zero (=0) if an adult. When we analyze children explicitly we denote persons for whom *Age<16*=1 or *Child*=1 as children.

Passenger class. Another individual characteristic that may correlate with survival is passenger class. First and second class passengers may have a survival advantage over third class passengers as their cabins are often located further up in the ship, close to the lifeboats, while the third class compartments are often located at the lower decks, away from the lifeboats. Also, in the case of a collision or grounding the ship's hull, beneath, or just above, the water level often takes the initial strike with the consequence that third class compartments are flooded quicker than the first and second class decks. Previous studies on the loss of the *Titanic* and the *Lusitania* report that first and second class passengers had a significantly better chance to survive than third class passengers (3, 4). 8 passenger lists, especially those dating back in time, separate passengers into different classes: often first class, second class and third class, or saloon (first class) and steerage (second and third class). We have constructed two binary variables: *1^{st} class* and *2^{nd} class* (*3^{rd} class* being the reference group), each taking the value one (=1) if the passenger belongs to the particular class and zero (=0) otherwise.

Nationality. Another potentially important individual characteristic that could influence survival chances is nationality. For instance, speaking the same language as the crew may be important in order to absorb information about safety equipment and also for understanding directions about where to go during the evacuation. 4 passenger lists contain information on the nationalities of the passengers and crew members. We create a binary variable, *Nationality*, which takes the value one (=1) if the individual is of the same nationality as the ship and zero (=0) otherwise.

Companionship. The social attachment model of human behavior in disasters (5) predicts that the presence of familiar persons affect peoples' perceptions of, and responses to, danger. A general finding is that people want to keep proximity to attachment figures, such as family and friends (6). Accordingly, we may see differences in survival rates between persons traveling alone and those traveling as a part of a social entity. It is, however, not obvious whether the effect of traveling with family or friends on survival probability is positive or negative. On the one hand, the social attachment model suggest that group membership could act as a constraint on survival if the member is slowed down by the search for and help directed to weaker members. On the other hand a social entity can provide information and physical help which in turn may increase the survival chances of its members. 3 passenger lists provide some sort of indicator of the social relationships between the passengers, e.g. information on whether people were married or whether they shared cabins. We create a binary variable *Companionship* which takes the value one (=1) if the individual traveled in a group and zero (=0) otherwise.

Shipwreck characteristics

We complement the data obtained from the passenger and crew lists with shipwreck specific characteristics. The information underlying these variables has been collected from the key references for each shipwreck, and whenever possible crosschecked against alternative sources.

WCF order. We have searched the shipwreck accounts for evidence of whether the captain, or any other officer, gave the order 'women and children first' at some point during the evacuation. For 5 of the shipwrecks we have found supporting evidence of the order while for 9 cases there is no indication of the order been given. For 2 shipwrecks (the *Princess of the Stars* and the *Bulgaria*) the documentation of the evacuation is too brief to conclude whether or not the order was given. For the empirical analysis we create a binary variable *WCF order* equal to one (=1) if the order was given and zero (=0) if it was not given, or if it is not known to us whether it was given.

Quick. We define sinking time as the duration between the first indication of distress and the sinking. For ease of interpretation we classify the disasters into two categories: 'Quick' and 'Slow'. Whether a ship is defined as 'Quick' depends on the time period between the first indication of distress and the sinking and the number of people on board. A ship of average size in our sample (686 passengers and crew) is defined as 'Quick' if it sinks in less than 30 minutes. The threshold time for a ship being categorized as 'Quick' is defined as follows: *threshold time= ship size/22.86.* If the actual sinking time is lower than the threshold time it is categorized as 'Quick' and 'Slow' otherwise. A ship with a complement of 229 people is thus categorized as 'Quick' if it sinks in less than 10 minutes, while a ship with a complement of 2,286 persons is categorized as quick if it sinks in less than 100 minutes. 7 disasters in FS are 'Quick' according to this definition. In the econometrical specifications we include a binary variable *Quick*, which equals one (=1) if the disaster was 'Quick' and zero (=0) if it was 'Slow'.

Small share of women. We have information on the number of passengers on board each ship in the sample, as wells as information on how many of these were men and women. For the empirical analysis we define a binary variable, *Small share of women*, which equals one (=1) if the share of women passengers of the total number of passengers on board the ship is below the mean share in the sample (0.368), and zero (=0) otherwise.

More than one day voyage. For each ship we have information on the date of final departure and the date of the disaster. This allows us to calculate the length of the voyage (in calendar days). We use this information to construct a binary variable, *More than one day voyage,* which equal one (=1) if the final voyage lasted for more than one day, and zero (=0) otherwise. The number of days at sea prior to the disaster varies between 1 and 21 in the sample. 4 ships wrecked on the day of departure.

Small ship. We use information on the total number of persons (passengers and crew) on board the ships to construct a binary variable which takes the value one (=1) if the ship carried less people than the average ship in the sample (686), and zero (=0) if the ship carried more than 686 persons.

Post WWI. The sample spans the period 1852–2011. For the empirical analysis we define a binary variable, *Post WWI*, which equals one (=1) if the disaster took place after World War I and zero (=0) if it took place before, or during the war. The only shipwreck in our sample that took place during World War I is the *Lusitania* disaster in 1915. The first shipwreck after the World War I, in our sample, is the *Principessa Mafalda* in 1927.

British ship. Refers to the country in which the ship was registered at the time of the accident. In all cases, but three (the *Titanic*, the *Empress of Ireland* and the *Estonia*), there is an exact match between the ship's flag and the nationality of the ship owner. Also, all captains have the same nationality as their respective ship. In the empirical analysis we discriminate between British ships and vessels of other nationalities. There are 8 British ships in FS. We create a binary variable (=1) if the ship is British and (=0) otherwise.

Appendix B

In this section we present more detailed results than we provide in the main text. We also discuss results from supplementary analyses intended to show the robustness of the conclusions presented in the main text.

Data underlying Figure 1.

Here we present the statistics that are used to construct Fig 1, in the main text. Table S2 displays the casualty statistics for MS. Note that the information about children is based on 9 shipwrecks only. This means that, for these 9 shipwrecks, the sub-groups Men and Women exclude boys and girls. For the remaining 7 shipwrecks, however, boys and girls are included in Men and Women. Table S3 shows the casualty statistics for the *Titanic* disaster.

Table S2. Casualty statistics of MS

	Survivors	Deceased	Total
Passengers			
Men	1,802 (37.4)	3,010 (62.6)	4,812
Women	849 (26.7)	2,335 (73.3)	3,184
Children	95 (15.3)	526 (84.7)	621
Crew	1,441 (61.1)	918 (38.9)	2,359
Captain	7 (43.8)	9 (76.2)	16

Notes. Survival rates (in percent) are in parentheses. *Crew* includes captains.

Table S3. Casualty statistics of the *Titanic*

	Survivors	Deceased	Total
Passengers			
Men	132 (16.9)	650 (83.1)	782
Women	300 (74.6)	102 (25.4)	402
Children	68 (51.1)	65 (48.9)	133
Crew	212 (23.8)	679 (76.2)	891
Captain	0 (0)	1 (100)	1

Notes. Survival rates (in percent) are in parentheses. *Crew* includes the captain.

Table S4. Regression results for each shipwreck in FS

Shipwreck	Estimates of the coefficient on *Female*						Estimates of the coefficient on *Crew*						*N*
	LPM			Probit			LPM			Probit			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
HMS *Birkenhead*	0.665	0.729	n.a.	n.a.	n.a.	n.a.	0.546	0.557	n.a.	0.561	0.567	n.a.	547-554
	(<0.001)	(<0.001)					(<0.001)	(<0.001)		(<0.001)	(<0.001)		
SS *Arctic*	-0.199	-0.188	-0.168	n.a.	n.a.	n.a.	0.093	0.021	-0.034	0.090	0.022	-0.059	206-268
	(<0.001)	(<0.001)	(<0.001)				(0.043)	(0.697)	(0.589)	(0.039)	(0.697)	(0.325)	
SS *Golden Gate*	-0.136	-0.075	-0.120	-0.139	-0.079	-0.141	0.240	0.229	0.295	0.245	0.234	0.303	356
	(0.082)	(0.334)	(0.136)	(0.091)	(0.343)	(0.124)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	
SS *Northfleet*	-0.227	-0.233	-0.184	-0.312	-0.317	-0.244	-0.012	-0.065	n.a.	-0.012	-0.058	n.a.	338-367
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.879)	(0.419)		(0.880)	(0.446)		
RMS *Atlantic*	-0.521	-0.469	-0.469	n.a.	n.a.	n.a.	0.586	0.460	0.465	0.692	0.640	0.648	633-868
	(<0.001)	(<0.001)	(<0.001)				(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	
SS *Princess Alice*	-0.096	-0.087	-0.032	-0.095	-0.086	-0.032	0.174	0.136	0.082	0.141	0.103	0.041	578-837
	(<0.001)	(0.001)	(0.076)	(<0.001)	(0.001)	(0.047)	(0.030)	(0.085)	(0.233)	(0.011)	(0.059)	(0.158)	
SS *Norge*	-0.192	-0.183	-0.180	-0.197	-0.190	-0.181	0.150	0.062	0.026	0.130	0.047	0.018	795
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.012)	(0.314)	(0.716)	(0.005)	(0.304)	(0.745)	
RMS *Titanic*	0.526	0.542	0.499	0.506	0.526	0.527	-0.142	0.035	0.141	-0.145	0.042	0.192	2,198-2,208
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.067)	(<0.001)	(<0.001)	(0.069)	(<0.001)	
RMS *Empress of Ireland*	-0.288	-0.165	-0.171	-0.335	-0.215	-0.229	0.388	0.330	0.354	0.372	0.303	0.332	1,448
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	
RMS *Lusitania*	-0.029	-0.013	-0.029	-0.023	-0.013	-0.030	0.044	0.040	0.031	0.044	0.039	0.031	1,287-1,958
	(0.238)	(0.633)	(0.327)	(0.240)	(0.634)	(0.324)	(0.057)	(0.114)	(0.501)	(0.056)	(0.114)	(0.497)	
SS *Principessa Mafalda*	-0.008	0.036	0.053	-0.008	0.034	0.050	0.167	0.175	0.154	0.187	0.195	0.175	1186
	(0.803)	(0.270)	(0.105)	(0.802)	(0.284)	(0.119)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	
SS *Vestris*	-0.404	-0.269	-0.254	-0.416	-0.287	-0.287	0.295	0.209	0.168	0.296	0.214	0.161	296-308
	(<0.001)	(0.002)	(0.002)	(<0.001)	(0.003)	(0.004)	(<0.001)	(0.002)	(0.012)	(<0.001)	(0.001)	(0.016)	
SS *Morro Castle*	-0.022	0.079	0.073	-0.022	0.071	0.068	0.12	0.166	0.308	0.123	0.163	0.281	542
	(0.569)	(0.121)	(0.148)	(0.566)	(0.121)	(0.142)	(0.001)	(0.001)	(0.001)	(0.001)	(<0.001)	(<0.001)	
MV *Princess Victoria*	-0.297	-0.311	-0.441	n.a.	n.a.	n.a.	-0.064	-0.095	-0.199	-0.066	-0.112	-0.229	93-179
	(<0.001)	(<0.001)	(<0.001)				(0.358)	(0.169)	(0.095)	(0.373)	(0.185)	(0.074)	
SS *Admiral Nakhimov*	-0.055	0.002	n.a.	-0.055	-0.001	n.a.	0.215	0.216	n.a.	0.234	0.234	n.a.	1,243
	(0.041)	(0.933)		(0.042)	(0.972)		(<0.001)	(<0.001)		(<0.001)	(<0.001)		
MS *Estonia*	-0.167	-0.172	-0.165	-0.166	-0.171	-0.153	0.079	0.094	0.042	0.071	0.083	0.036	989
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.012)	(0.002)	(0.259)	(0.006)	(0.001)	(0.150)	
MS *Princess of the Stars*	-0.073	-0.085	n.a.	-0.080	-0.087	n.a.	-0.028	-0.061	n.a.	-0.032	-0.053	n.a.	850
	(<0.001)	(<0.001)		(<0.001)	(<0.001)		(0.201)	(0.012)		(0.269)	(0.041)		
MV *Bulgaria*	-0.334	-0.257	-0.216	-0.339	-0.271	-0.231	0.412	0.300	0.514	0.425	0.322	n.a.	148-186
	(<0.001)	(0.001)	(0.006)	(<0.001)	(0.001)	(0.005)	(<0.001)	(0.002)	(<0.001)	(<0.001)	(0.003)		

Notes. Linear probability and probit models. The dependent variable (*Survival*) is binary and equals one if the person survived the disaster and zero if the person died. p-values, based on robust standard errors, in parentheses below the coefficients (marginal effects for probit). N refers to the number of observations over which the models have been estimated. N varies within some shipwrecks. This is because, for some shipwrecks, the information underlying the regressor(s) is not available for everybody in the shipwreck.

Table S5. Detailed regression results for the specifications in column 3 of Table S4.

Ship\Variable	*Female*	*Crew*	*Age <16*[1]	*Age >50*[1]	*Child*[2]	*Nationality*[3]	*1st class*[4]	*2nd class*[4]	*Companionship*[5]	*Constant*	N
HMS *Birkenhead*	0.729	0.557								0.271	554
	(<0.001)	(<0.001)								(<0.001)	
SS *Arctic*	-0.168	-0.034							-0.134	0.242	268
	(<0.001)	(0.589)							(0.003)	(<0.001)	
SS *Golden Gate*	-0.120	0.295			0.516		0.191	0.238	-0.202	0.364	356
	(0.136)	(<0.001)			(<0.001)		(0.029)	(0.003)	(0.029)	(<0.001)	
SS *Northfleet*	-0.184		-0.132							0.283	338
	(<0.001)		(<0.001)							(<0.001)	
RMS *Atlantic*	-0.469	0.465					0.119			0.460	868
	(<0.001)	(<0.001)					(0.100)			(<0.001)	
SS *Princess Alice*	-0.032	0.082	-0.027	0.004						0.071	578
	(0.076)	(0.233)	(0.126)	(0.891)						(<0.001)	
SS *Norge*	-0.180	0.026	-0.128	-0.204		-0.005				0.335	795
	(<0.001)	(0.716)	(<0.001)	(<0.001)		(0.913)				(<0.001)	
RMS *Titanic*	0.499	0.141	0.140	-0.133			0.341	0.142		0.087	2,198
	(<0.001)	(<0.001)	(0.002)	(<0.001)			(<0.001)	(<0.001)		(<0.001)	
RMS *Empress of Ireland*	-0.171	0.354					0.242	0.023		0.244	1,448
	(<0.001)	(<0.001)					(<0.001)	(0.425)		(<0.001)	
RMS *Lusitania*	-0.029	0.031	-0.131	-0.161		0.033	0.051	0.098		0.376	1,287
	(0.327)	(0.501)	(0.002)	(<0.001)		(0.328)	(0.198)	(0.006)		(<0.001)	
SS *Principessa Mafalda*	0.053	0.154					-0.250	-0.080		0.710	1,186
	(0.105)	(<0.001)					(<0.001)	(0.110)		(<0.001)	
SS *Vestris*	-0.254	0.168			-0.433					0.538	308
	(0.002)	(0.012)			(<0.001)					(<0.001)	
SS *Morro Castle*	0.074	0.311					-0.088		0.012	0.517	542
	(0.146)	(0.001)					(0.532)		(0.804)	(<0.001)	
MV *Princess Victoria*	-0.441	-0.199	-0.463	-0.324						0.463	93
	(<0.001)	(0.065)	(<0.001)	(0.005)						(<0.001)	
SS *Admiral Nakhimov*	0.002	0.216								0.598	1,243
	(0.933)	(<0.001)								(<0.001)	
MS *Estonia*	-0.165	0.042	-0.093	-0.151		-0.016				0.274	989
	(<0.001)	(0.259)	(0.264)	(<0.001)		(0.599)				(<0.001)	
MS *Princess of the Stars*	-0.085	-0.061								0.110	850
	(<0.001)	(0.012)								(<0.001)	
MV *Bulgaria*	-0.216	0.514	-0.096	-0.144						0.541	169
	(0.006)	(<0.001)	(0.263)	(0.108)						(<0.001)	

Notes. Linear probability models. The dependent variable (*Survival*) is binary and equals one if the person survived the disaster and zero if the person died. p-values, based on robust standard errors, in parentheses below the coefficient. N refers to the number of observations over which the model has been estimated. [1]The reference group is people aged 16−50. [2]The reference group is *Adult*. [3]The reference group consists of persons of nationalities other than that of the ship. [4]The reference group is 3rd class. [5]The reference group is people traveling alone.

Tests of H1 for individual shipwrecks: linear probability models

In this section we provide additional support to the discussion surrounding the separate analyses of the shipwrecks of FS in the main text. In all models, the dependent variable is *Survival*.

Table S4, column 1–3, reports the coefficient for *Female* from a set of linear probability models (LPM). These models serve as tests of H1: that women have a survival advantage over men in maritime disasters. The baseline model (Model 1) is: $Survival_i = constant + \beta_1 Female_i + \varepsilon_i$. The subscript i indicates that the variables are estimated at the individual level and ε_i is an error term. We estimate Model 1 separately for each shipwreck.

Column 1 shows the regression estimates of β_1, which we denote $\hat{\beta}_1$. We note that $\hat{\beta}_1$ is negative and statistically significant (p<0.01) for 11 of the 18 shipwrecks in FS. In the case of both the *Admiral Nakhimov* and the *Golden Gate,* $\hat{\beta}_1$ is negative but the corresponding p-values are somewhat higher. In three cases $\hat{\beta}_1$ is statistically insignificant (p>0.10). And in two cases (the *Titanic* and the *Birkenhead)* $\hat{\beta}_1$ is statistically significant (p<0.01) and positive.

Next, we augment Model 1 with the variable *Crew*. The results, reported in column 2, do not change much; $\hat{\beta}_1$ becomes positive and statistically insignificant (p>0.10) for the *Admiral Nakhimov.* Also, $\hat{\beta}_1$ remains statistically significant (p<0.01) and positive for the *Birkenhead* and the *Titanic.*

Column 3 reports the results from Model 1 augmented with *Crew* as well as the additional control variables. The set of control variables differ between the shipwrecks depending on which variables are available for the particular shipwreck (see Table S1). For three shipwrecks (*Birkenhead*, *Admiral Nakhimov*, *Princess of the Stars*) we lack variables other than *Female* and *Crew*. Accordingly, the cells in column 3 are denoted by n.a. (*not available*) for these shipwrecks. For the remaining shipwrecks we use all available information.

The results with respect to the *Female* and *Crew* variables are similar in terms of statistical significance to those in column 2. In one case (the *Princess Alice*), the corresponding p-value increases (p<0.076).

In Table S5 we present the results with respect to the additional control variables from the regressions reported in Table S4, column 3. For 5 out of 10 shipwrecks we find that children, defined as being younger than 16, or indicated as a child (*Child*), have a lower survival probability than persons aged 16–50 (*Adult*). These results support the discussion surrounding Fig. 1. in the main text. In fact, the only shipwrecks in which children have a survival advantage over prime aged adults (*Adults*) are the *Titanic* and the *Golden Gate*. Moreover, the results with respect to age are also in line with our prior regarding older adults (*Age>50*). In 5 shipwrecks the survival rate of this subgroup is between 13 and 32 percentage points lower than that of individuals aged 16–50. Taken together the results are in line with the hypothesis that physical strength and mobility are important characteristics in shipwrecks.

We find no statistically significant effect of *Nationality* suggesting that people who share nationality with the ship are no more likely to survive than persons of other nationalities.

Similar to studies based on the *Titanic* we find evidence of a class gradient in survival rates (3). For two ships, besides the *Titanic*, we find that first class passengers (*1st class*) have a statistically significant (p<0.01) survival advantage over third class passenger. Being a first class passenger rather than third class passenger increases the probability of surviving by between 19 and 34 percentage points. Notably, for one shipwreck (*Principessa Mafalda*) we find that first class passengers in fact have lower survival probability than third class passengers.

Regarding *Companionship* we find that, in two out of three instances, the coefficient estimate is negative and statistically significant (p<0.05). These findings indicate that traveling together with someone, rather than travelling alone, is associated with a lower survival probability (between 13 and 20 percentage points).

Tests of H1 for individual shipwrecks: probit models

Next, we show that our results are insensitive to the choice between the linear probability model and the (non-linear) probit model, which has been used in previous studies of the *Titanic* and the *Lusitania*. We estimate probit models (Model 2) of the form: $Survival_i = \phi\ (constant + \beta_1 Female_i + \varepsilon_i)$, where ϕ is the cumulative standard normal distribution function.

The $\hat{\beta}_1$'s are obtained using a Maximum Likelihood estimator. However, for ease of interpretation, as well as to make the results comparable with the results from the linear models we present the marginal effects. The impact of a change in a regressor on the dependent variable is calculated with the finite difference method (7). Table S4, column 4–6, reports the marginal effects for *Crew* from models augmented with the same control variables as for the linear probability model. One caveat with the probit model is that it falls short when all or no women survive. This is the case for four shipwrecks: the *Birkenhead* (all of the women on board survived), the *Arctic*, the *Princess Victoria*, and the *Atlantic* (all women perished). Accordingly, the cells corresponding to these shipwrecks are denoted n.a. (*not available*).

We note that the probit results with respect to *Female* are very similar in terms of statistical significance to those obtained from the linear models. Likewise, the marginal effects are similar in size to the $\hat{\beta}_1$'s in column 1–3.

Tests of H2 for individual shipwrecks: linear probability models

The hypothesis that crew members have a survival advantage over passengers (H2) is tested using the same approach as we used to test for gender differences. Table S4, column 7–9, reports the coefficient for *Crew* from a set of linear probability models (LPM). We start by estimating the following model (Model 3): $Survival_i = constant + \beta_2 Crew_i + \varepsilon_i$. $\hat{\beta}_2$ is the estimate of β_2. Table S4 shows that $\hat{\beta}_2$ is statistically significant ($p<0.01$) and positive for 9 of the 18 shipwrecks. In four cases $\hat{\beta}_2$ is positive, but p-values slightly higher ($p<0.05$). These results show that, being a crew member, compared to a passenger, is associated with higher probability of survival. This is in line with the hypothesis that the crew members have informational advantages over the passengers, e.g. in knowledge about escape routes. In fact, *Titanic* is the only shipwreck where $\hat{\beta}_2$ is statistically significant ($p<0.01$) and negative.

To control for the influence of gender on the relationship between crew membership and survival we augment the Model 3 with *Female* (this model is equivalent to Model 1 augmented with *Crew*). The results, reported in column 8, are very similar to those in column 7. However, for the *Titanic,* the coefficient changes sign. The p-value increases somewhat for the *Princess Alice*. For the *Norge* and the *Lusitania* the p-values increase and becomes statistically insignificant at conventional levels ($p>0.1$), when we control for *Female*. Noteworthy, $\hat{\beta}_2$ is negative ($p<0.05$) for the *Princess of the Stars,* when we control for *Female,* suggesting that crew members have a survival disadvantage compared to passengers.

We continue by estimating Model 3 with additional individual level controls. The results with respect to *Crew* are presented in column 9. The general conclusion from this exercise is that the inclusion of additional controls does not change the precision of the $\hat{\beta}_2$s. The exceptions are: the *Titanic*, for which $\hat{\beta}_2$ increases and becomes statistically significant ($p<0.01$), and the *Princess Alice* and the *Estonia* for which we now observe statistically insignificant $\hat{\beta}_2$'s

Tests of H2 for individual shipwrecks: probit models

Next, we switch to a probit model of the form: $Survival_i = \phi\ (constant + \beta_2 Crew_i + \varepsilon_i)$. We denote this model: Model 4. We augment the model in the same way as before. The results are reported in column 10–12. We can conclude that the probit results are similar, in terms of statistical significance, to the results from the linear model. The marginal effects are also very similar to the corresponding coefficient estimates in column 7–9.

Regression results for: MS, MS+*Lusitania*, MS+*Titanic*, and FS

This section supports the results reported in Table 2 in the main text. We also show how the results change when we augment MS with the data from the *Lusitania* and the *Titanic* separately, and together (FS). Table S6–S9 reports the results. Moreover, we report the regression results from a set of unweighted models. See Table S10–S13.

Table S6 reports the full results of Table 2 in the main text. The results in column 1 are generated by the following model (Model 5): $Survival_{i,s} = constant + \beta_1 Female_{i,s} + \boldsymbol{\delta}_s + \varepsilon_{i,s}$. The subscript i indicates that the variable is measured at the individual level. $\boldsymbol{\delta}_s$ is a vector of shipwreck specific fixed effects, which is included as a control for unobservable differences that vary between the ships but do not vary between persons within the ship. We let $\hat{\beta}_1$ denote the regression estimate of β_1.

The results in column 2 are generated by the model (Model 6): $Survival_{i,s} = constant + \beta_1 Female_{i,s} + \beta_2 Crew_{i,s} + \boldsymbol{\delta}_s + \varepsilon_{i,s}$. We let $\hat{\beta}_2$ denote the regression estimate of β_2.

Column 3–8 reports the separate tests of the hypotheses H3–H8, and column 9 reports the joint test. The results are generated by the model (Model 7): $Survival_{i,s} = constant + \beta_1 Female_{i,s} + \beta_2 Crew_{i,s} + \boldsymbol{\gamma_1 X}_s + \boldsymbol{\gamma_2}(\boldsymbol{X}_s Female_{i,s}) + \boldsymbol{\delta}_s + \varepsilon_{i,s}$. In the separate tests of H3–H8 (column 3–8) $\boldsymbol{X}_s$ is a binary variable: *WCF order*, *Quick*, *Small share of women*, *More than one day voyage*, *Post WWI*, or *British ship*. $\boldsymbol{X}_s Female_i$ is the interaction between the hypothesis specific binary variable and *Female*. In the joint test (column 9) $\boldsymbol{X}_s$ is a vector including all hypothesis specific dummies (i.e. *WCF order*, *Quick*, *Small share of women, More than one day voyage, Post WWI, British ship*). $\hat{\boldsymbol{\gamma}}_1$ and $\hat{\boldsymbol{\gamma}}_2$ are vectors of regression estimates of $\boldsymbol{\gamma_1}$ and $\boldsymbol{\gamma_2}$.

Table S7 displays the regression results when we augment MS with the *Lusitania* data. We note that the results are largely similar to those for MS. However, four coefficients relating to our hypotheses change. First of all, we note that the coefficient for *WCF order*Female* becomes statistically significant (p<0.001) in the separate test (column 3). Second, the coefficient for *Quick*Female* (column 9) becomes statistically significant (p<0.05). The sign suggest that women onboard quickly sinking ships have a survival advantage over women onboard slowly sinking ships. This result is probably due to the fact that the *Lusitania* sank in only 18 minutes and that the survival rate of women was relatively high. Third, the coefficient for *Small share of women *Female* in column 9 becomes statistically significant (p<0.10). Fourth, the coefficient for *More than one day voyage*Female* also becomes statistically significant (p<0.05) in the joint test.

Table S8 displays the results when we augment MS with the *Titanic* data. A few things happen. The gender gap and the crew-passenger gap decrease somewhat. The p-values remain the same implying that the coefficients are statistically significant at the 1% level. The result that the WCF order benefits women is strengthened, compared to for the MS. Inspecting column 4 and 9 it becomes apparent that the coefficient on *Quick*Female* is sensitive to the inclusion of the *Titanic*: it is statistically significant (p<0.01) negative in the separate test and significant (p<0.01) positive in the joint test. The impact of *Small share of women* on women's survival weakens when we augment MS with the *Titanic*. Moreover, the results indicate that *More than one day voyage* have a positive impact on the survival rate of women in this sample: the coefficient on *More than one day voyage *Female* is statistically significant both in the separate and in the joint test. Moreover, the coefficient on *British ship*Female* changes sign from negative to positive suggesting that women have a relative survival advantage on board British ships. This is probably an artifact of the *Titanic* being British with a comparably high survival rate of women.

Table S9 presents the regression results for FS, i.e., the sample including data on all 18 shipwrecks. We note that our previous findings with respect to *Female* and *Crew* hold also for this sample: the coefficients on *Female* and *Crew* are negative ($p<0.001$) and positive ($p<0.001$), respectively. Regarding the results of the separate tests of H3–H8, we see that they differ somewhat from those obtained for MS. The most notable discrepancy is that *Quick***Female* is negative ($p<0.10$) and positive ($p<0.05$) in the separate and joints tests, respectively. In contrast to what we found for MS, *Small* s*hare of women *Female* is statistically insignificant in the separate test. The p-value increases also in the joint test. Another apparent difference compared to the results for MS is that *More than one day voyage*Female* is statistically significant in the separate test. The coefficient implies that women have a relative survival advantage on board ships that have been on sea for more than one day before the disaster. In the joint test, however, the corresponding estimate is statistically insignificant at all conventional levels ($p>0.10$). Another discrepancy, compared to MS, is that *Post WWI***Female* is negative and statistically insignificant on conventional levels ($p>0.10$). In the joint test (column 9) it is however similar to *Post WWI***Female* for MS (Table S6, column 9) in terms of sign and p-value. Moreover, we note that *British ship***Female* is statistically insignificant ($p>0.10$), in both the separate and the joint tests.

We can conclude that our findings in the main text i.e., that women have a distinct survival disadvantage compared to men and that the crew survive at a significantly higher rate than passengers, are robust to the inclusion of data from the *Lusitania* and the *Titanic*. Although our findings with respect to the separate tests of H3–H8 are somewhat sensitive to the inclusion of *Lusitania* and the *Titanic* the joint, and most reliable, tests of the 8 hypotheses is robust, except for the hypotheses with respect to *Quick* and *Small* s*hare of women.*

Table S6. Regression results for MS

	H1	H2	H3	H4	H5	H6	H7	H8	H1–H8
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female	-0.167	-0.126	-0.151	-0.151	-0.116	-0.154	-0.195	-0.093	-0.179
	(0.008)	(0.009)	(0.011)	(0.012)	(0.012)	(0.023)	(0.013)	(0.014)	(0.068)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.009)
Crew		0.187	0.157	0.157	0.157	0.157	0.158	0.159	0.161
		(0.011)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
		(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
WCF order			0.085						-0.187
			(0.024)						(0.022)
			(0.001)						(<0.001)
WCF order*Female			0.019						0.096
			(0.026)						(0.041)
			(0.477)						(0.019)
Quick				0.091					0.321
				(0.029)					(0.025)
				(0.002)					(<0.001)
Quick*Female				0.005					0.032
				(0.021)					(0.043)
				(0.806)					(0.452)
Small share of women					0.218				0.181
					(0.030)				(0.022)
					(<0.001)				(<0.001)
Small share of women*Female					-0.109				-0.050
					(0.022)				(0.031)
					(<0.001)				(0.104)
More than one day voyage						0.100			-0.188
						(0.039)			(0.030)
						(0.010)			(<0.001)
More than one day voyage*Female						0.006			0.026
						(0.025)			(0.034)
						(0.807)			(0.443)
Post WWI							0.116		-0.136
							(0.041)		(0.026)
							(0.004)		(<0.001)
Post WWI*Female							0.085		0.073
							(0.019)		(0.041)
							(<0.001)		(0.074)
British ship								-0.106	-0.270
								(0.041)	(0.024)
								(0.009)	(<0.001)
British ship*Female								-0.153	-0.101
								(0.019)	(0.033)
								(<0.001)	(0.002)
Constant	0.346	0.325	0.244	0.237	0.111	0.229	0.329	0.435	0.471
	(0.020)	(0.020)	(0.015)	(0.022)	(0.023)	(0.034)	(0.020)	(0.036)	(0.044)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Observations	10,978	10,976	10,976	10,976	10,976	10,976	10,976	10,976	10,976
R-squared	0.249	0.270	0.242	0.242	0.244	0.242	0.244	0.247	0.248

Notes. Linear probability models. The dependent variable (*Survival*) is binary and equals one if the person survived the disaster and zero if the person died. Robust standard errors and p-values in parentheses below the coefficients. All specifications include controls for shipwreck specific fixed effects. Observations in regressions in column 3−9 are weighted by the inverse of the number of individuals on board the ship.

Table S7. Regression results for MS augmented with the *Lusitania*

	H1	H2	H3	H4	H5	H6	H7	H8	H1–H8
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female	-0.147	-0.109	-0.154	-0.154	-0.106	-0.156	-0.169	-0.097	-0.261
	(0.008)	(0.008)	(0.011)	(0.012)	(0.011)	(0.023)	(0.012)	(0.014)	(0.049)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Crew		0.153	0.147	0.145	0.146	0.146	0.146	0.146	0.151
		(0.010)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
		(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
WCF order			0.083						-0.188
			(0.024)						(0.022)
			(0.001)						(<0.001)
WCF order*Female			0.077						0.157
			(0.021)						(0.025)
			(<0.001)						(<0.001)
Quick				0.144					0.319
				(0.024)					(0.025)
				(<0.001)					(<0.001)
Quick*Female				0.031					0.081
				(0.019)					(0.032)
				(0.113)					(0.012)
Small share of women					0.112				0.188
					(0.024)				(0.022)
					(<0.001)				(<0.001)
Small share of women*Female					-0.122				-0.053
					(0.021)				(0.031)
					(<0.001)				(0.082)
More than one day voyage						0.083			0.028
						(0.027)			(0.023)
						(0.002)			(0.218)
More than one day voyage*Female						0.021			0.065
						(0.025)			(0.028)
						(0.407)			(0.021)
Post WWI							0.119		0.082
							(0.041)		(0.029)
							(0.003)		(0.004)
Post WWI*Female							0.056		0.111
							(0.019)		(0.032)
							(0.003)		(0.001)
British ship								-0.109	-0.274
								(0.041)	(0.024)
								(0.007)	(<0.001)
British ship*Female								-0.110	-0.072
								(0.018)	(0.029)
								(<0.001)	(0.012)
Constant	0.345	0.329	0.245	0.186	0.219	0.246	0.330	0.440	0.255
	(0.020)	(0.020)	(0.015)	(0.013)	(0.015)	(0.019)	(0.020)	(0.036)	(0.031)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Observations	12,936	12,934	12,934	12,934	12,934	12,934	12,934	12,934	12,934
R-squared	0.209	0.224	0.227	0.226	0.228	0.226	0.226	0.228	0.232

Notes. Linear probability models. The dependent variable (*Survival*) is binary and equals one if the person survived the disaster and zero if the person died. Robust standard errors and p-values in parentheses below the coefficients. All specifications include controls for shipwreck specific fixed effects. Observations in regressions in column 3–9 are weighted by the inverse of the number of individuals on board the ship.

Table S8. Regression results for MS augmented with the *Titanic*

	H1	H2	H3	H4	H5	H6	H7	H8	H1–H8
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female	-0.065	-0.034	-0.155	-0.091	-0.121	-0.157	-0.112	-0.099	-0.350
	(0.008)	(0.009)	(0.011)	(0.012)	(0.012)	(0.023)	(0.012)	(0.014)	(0.062)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Crew		0.125	0.142	0.138	0.137	0.138	0.137	0.137	0.146
		(0.010)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
		(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
WCF order			-0.198						-0.205
			(0.034)						(0.022)
			(<0.001)						(<0.001)
WCF order*Female			0.254						0.371
			(0.024)						(0.034)
			(<0.001)						(<0.001)
Quick				-0.188					0.342
				(0.034)					(0.025)
				(<0.001)					(<0.001)
Quick*Female				-0.059					0.119
				(0.021)					(0.038)
				(0.005)					(0.002)
Small share of women					0.209				0.202
					(0.030)				(0.022)
					(<0.001)				(<0.001)
Small share of women*Female					0.021				0.028
					(0.020)				(0.029)
					(0.306)				(0.341)
More than one day voyage						0.096			-0.155
						(0.039)			(0.030)
						(0.014)			(<0.001)
More than one day voyage*Female						0.060			0.083
						(0.025)			(0.032)
						(0.016)			(0.010)
Post WWI							0.193		-0.102
							(0.034)		(0.025)
							(<0.001)		(<0.001)
Post WWI*Female							-0.004		0.148
							(0.019)		(0.039)
							(0.813)		(<0.001)
British ship								-0.127	-0.283
								(0.033)	(0.024)
								(<0.001)	(<0.001)
British ship*Female								-0.037	-0.037
								(0.019)	(0.033)
								(0.050)	(0.259)
Constant	0.344	0.331	0.525	0.519	0.121	0.234	0.330	0.457	0.426
	(0.020)	(0.020)	(0.028)	(0.028)	(0.023)	(0.034)	(0.020)	(0.026)	(0.043)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Observations	13,186	13,184	13,184	13,184	13,184	13,184	13,184	13,184	13,184
R-squared	0.195	0.205	0.225	0.219	0.218	0.219	0.218	0.218	0.228

Notes. Linear probability models. The dependent variable (*Survival*) is binary and equals one if the person survived the disaster and zero if the person died. Robust standard errors and p-values in parentheses below the coefficients. All specifications include controls for shipwreck specific fixed effects. Observations in regressions in column 3−9 are weighted by the inverse of the number of individuals on board the ship.

Table S9. Regression results for FS

VARIABLES	H1 (1)	H2 (2)	H3 (3)	H4 (4)	H5 (5)	H6 (6)	H7 (7)	H8 (8)	H1–H8 (9)
Female	-0.061	-0.030	-0.156	-0.094	-0.111	-0.159	-0.098	-0.101	-0.273
	(0.008)	(0.008)	(0.011)	(0.012)	(0.011)	(0.023)	(0.011)	(0.014)	(0.049)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Crew		0.111	0.135	0.129	0.128	0.130	0.128	0.128	0.138
		(0.009)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
		(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
WCF order			0.081						-0.206
			(0.024)						(0.022)
			(0.001)						(<0.001)
WCF order*Female			0.235						0.320
			(0.020)						(0.024)
			(<0.001)						(<0.001)
Quick				-0.194					0.343
				(0.034)					(0.025)
				(<0.001)					(<0.001)
Quick*Female				-0.034					0.071
				(0.019)					(0.032)
				(0.078)					(0.025)
Small share of women					0.109				0.191
					(0.024)				(0.022)
					(<0.001)				(<0.001)
Small share of women*Female					0.008				0.036
					(0.020)				(0.029)
					(0.679)				(0.214)
More than one day voyage						0.082			0.034
						(0.027)			(0.023)
						(0.002)			(0.143)
More than one day voyage*Female						0.069			0.043
						(0.025)			(0.028)
						(0.005)			(0.125)
Post WWI							0.124		0.085
							(0.041)		(0.029)
							(0.002)		(0.003)
Post WWI*Female							-0.020		0.110
							(0.018)		(0.032)
							(0.273)		(0.001)
British ship								-0.114	-0.279
								(0.041)	(0.024)
								(0.005)	(<0.001)
British ship*Female								-0.015	-0.065
								(0.018)	(0.029)
								(0.405)	(0.025)
Constant	0.344	0.332	0.247	0.525	0.223	0.249	0.331	0.445	0.244
	(0.020)	(0.020)	(0.015)	(0.028)	(0.015)	(0.019)	(0.020)	(0.036)	(0.031)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Observations	15,144	15,142	15,142	15,142	15,142	15,142	15,142	15,142	15,142
R-squared	0.169	0.178	0.212	0.205	0.205	0.205	0.205	0.205	0.214

Notes. Linear probability models. The dependent variable (*Survival*) is binary and equals one if the person survived the disaster and zero if the person died. Robust standard errors and p-values in parentheses below the coefficients. All specifications include controls for shipwreck specific fixed effects. Observations in regressions in column 3−9 are weighted by the inverse of the number of individuals on board the ship.

Results from unweighted regressions

In Table S10 we present the results of the separate tests of H3–H8 (column 1-6) , as well as the results of the joint test (column 7), from models estimated without sample weights. Since the tests of H1 and H2 in Table 2 in the main text are generated without sample weights we omit them in the following representation. Regarding the results with respect to MS we note from looking at column 1 that the coefficient on *WCF order**Female* is similar in sign, size, and p-value to its equivalent in Table 2. This is the case also for the joint test (column 7). In fact, the p-value for *WCF order**Female* is smaller than the corresponding p-value in Table 2 (<0.001 vs. 0.019). The coefficient on *Quick**Female* (column 2) is, similar to its equivalent in Table 2, statistically insignificant on all conventional levels (p>0.10). Notable however is that the coefficient is statistically significant (p<0.01) in the joint test. This result indicates that the longer it takes between the first indication of distress and the sinking the higher women's survival rate becomes. The results of the tests with respect to *Small share of women* are similar in magnitude and statistical significance to those obtained from the weighted regressions. The coefficient on *More than one day voyage*Female* is statistically significant (p<0.001) in the separate test. Although this result contrasts the corresponding result obtained from the weighted regression (Table 2) the joint tests yield similar results, i.e. a statistically insignificant coefficient (p>0.10).

Regarding *Post WWI**Female* (column 5) we note that the coefficient is, still, positive (p<0.001) in the separate test but almost twice as large as the corresponding coefficient in Table 2 (p<0.001). The coefficient obtained in the joint test (column 7) is also relatively large. Noteworthy, the p-value is smaller than the corresponding p-value in Table 2.

Moreover, we note that the coefficient on *British ship**Female* (p<0.001) in column 6 is somewhat larger than the corresponding coefficient in Table 2 (p<0.001). This finding remains also for the joint test (column 7).

Table S11–S13 report the results from unweighted regressions for MS+*Lusitania*, MS+*Titanic*, and for FS. We note that these results are very similar to the results in Table S7–S9. The most notable difference is that the coefficient for *Quick**Female* vary in terms of sign, size and statistical significance. Furthermore the significance of the coefficient for *British ship**Female* is somewhat sensitive to the inclusion of the *Titanic* and that *More than one day voyage*Female* is negative and statistically significant (p<0.001) in the joint test with respect to FS.

Table S10. Results from unweighted regressions on MS

	H3	H4	H5	H6	H7	H8	H1–H8
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female	-0.127	-0.135	-0.103	-0.066	-0.210	-0.062	-0.231
	(0.009)	(0.011)	(0.010)	(0.018)	(0.012)	(0.011)	(0.057)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Crew	0.187	0.187	0.187	0.186	0.188	0.187	0.190
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
WCF order	0.109						-0.190
	(0.038)						(0.022)
	(0.004)						(<0.001)
WCF order*Female	0.017						0.180
	(0.030)						(0.038)
	(0.574)						(<0.001)
Quick		0.108					0.186
		(0.038)					(0.030)
		(0.005)					(<0.001)
Quick*Female		0.019					0.115
		(0.017)					(0.034)
		(0.262)					(0.001)
Small share of women			-0.111				0.187
			(0.040)				(0.022)
			(0.005)				(<0.001)
Small share of women*Female			-0.094				-0.003
			(0.020)				(0.026)
			(<0.001)				(0.924)
More than one day voyage				0.120			0.274
				(0.039)			(0.043)
				(0.002)			(<0.001)
More than one day voyage*Female				-0.081			-0.002
				(0.020)			(0.029)
				(<0.001)			(0.952)
Post WWI					-0.123		0.172
					(0.039)		(0.039)
					(0.001)		(<0.001)
Post WWI*Female					0.157		0.151
					(0.016)		(0.034)
					(<0.001)		(<0.001)
British ship						0.240	-0.132
						(0.030)	(0.029)
						(<0.001)	(<0.001)
British ship*Female						-0.178	-0.105
						(0.016)	(0.027)
						(<0.001)	(<0.001)
Constant	0.216	0.217	0.436	0.205	0.326	0.086	-0.002
	(0.033)	(0.033)	(0.035)	(0.033)	(0.020)	(0.023)	(0.048)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.973)
Observations	10,976	10,976	10,976	10,976	10,976	10,976	10,976
R-squared	0.270	0.270	0.271	0.271	0.275	0.276	0.279

Notes. Linear probability models. The dependent variable (*Survival*) is binary and equals one if the person survived the disaster and zero if the person died. Robust standard errors and p-values in parentheses below the coefficients. All specifications include controls for shipwreck specific fixed effects.

Table S11. Results from unweighted regressions on MS augmented with the *Lusitania*

	H3	H4	H5	H6	H7	H8	H1–H8
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female	-0.133	-0.142	-0.083	-0.073	-0.149	-0.070	-0.277
	(0.009)	(0.011)	(0.009)	(0.018)	(0.011)	(0.011)	(0.044)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Crew	0.157	0.154	0.154	0.152	0.151	0.151	0.160
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
WCF order	-0.132						-0.144
	(0.039)						(0.023)
	(0.001)						(<0.001)
WCF order*Female	0.133						0.239
	(0.022)						(0.023)
	(<0.001)						(<0.001)
Quick		0.101					0.014
		(0.038)					(0.023)
		(0.008)					(0.558)
Quick*Female		0.060					0.136
		(0.016)					(0.027)
		(<0.001)					(<0.001)
Small share of women			0.224				0.239
			(0.030)				(0.029)
			(<0.001)				(<0.001)
Small share of women*Female			-0.120				-0.005
			(0.020)				(0.026)
			(<0.001)				(0.852)
More than one day voyage				-0.096			-0.055
				(0.041)			(0.034)
				(0.019)			(0.103)
More than one day voyage*Female				-0.047			0.015
				(0.020)			(0.025)
				(0.018)			(0.548)
Post WWI					0.089		0.061
					(0.040)		(0.028)
					(0.027)		(0.032)
Post WWI*Female					0.088		0.173
					(0.016)		(0.028)
					(<0.001)		(<0.001)
British ship						0.226	-0.015
						(0.030)	(0.028)
						(<0.001)	(0.591)
British ship*Female						-0.087	-0.090
						(0.016)	(0.024)
						(<0.001)	(<0.001)
Constant	0.459	0.227	0.105	0.425	0.329	0.103	0.288
	(0.034)	(0.033)	(0.022)	(0.036)	(0.020)	(0.023)	(0.033)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Observations	12,934	12,934	12,934	12,934	12,934	12,934	12,934
R-squared	0.226	0.224	0.226	0.224	0.225	0.225	0.234

Notes. Linear probability models. The dependent variable (*Survival*) is binary and equals one if the person survived the disaster and zero if the person died. Robust standard errors and p-values in parentheses below the coefficients. All specifications include controls for shipwreck specific fixed effects.

Table S12. Results from unweighted regressions on MS augmented with the *Titanic*

	H3	H4	H5	H6	H7	H8	H1–H8
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female	-0.135	0.034	-0.115	-0.078	-0.004	-0.075	-0.393
	(0.009)	(0.011)	(0.010)	(0.018)	(0.012)	(0.011)	(0.054)
	(<0.001)	(0.003)	(<0.001)	(<0.001)	(0.718)	(<0.001)	(<0.001)
Crew	0.147	0.127	0.131	0.126	0.126	0.128	0.150
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
WCF order	0.094						-0.245
	(0.038)						(0.022)
	(0.013)						(<0.001)
WCF order*Female	0.562						0.738
	(0.022)						(0.028)
	(<0.001)						(<0.001)
Quick		0.127					0.111
		(0.039)					(0.030)
		(0.001)					(<0.001)
Quick*Female		-0.164					0.175
		(0.017)					(0.031)
		(<0.001)					(<0.001)
Small share of women			0.206				0.232
			(0.030)				(0.022)
			(<0.001)				(<0.001)
Small share of women*Female			0.235				0.070
			(0.019)				(0.026)
			(<0.001)				(0.006)
More than one day voyage				-0.102			0.042
				(0.041)			(0.023)
				(0.014)			(0.073)
More than one day voyage*Female				0.057			0.033
				(0.020)			(0.028)
				(0.004)			(0.241)
Post WWI					0.096		0.054
					(0.040)		(0.028)
					(0.018)		(0.057)
Post WWI*Female					-0.063		0.243
					(0.017)		(0.034)
					(<0.001)		(<0.001)
British ship						-0.100	-0.024
						(0.040)	(0.028)
						(0.013)	(0.391)
British ship*Female						0.092	-0.018
						(0.017)	(0.027)
						(<0.001)	(0.515)
Constant	0.228	0.204	0.122	0.432	0.330	0.430	0.203
	(0.032)	(0.033)	(0.022)	(0.036)	(0.020)	(0.035)	(0.030)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Observations	13,184	13,184	13,184	13,184	13,184	13,184	13,184
R-squared	0.246	0.211	0.216	0.206	0.206	0.207	0.253

Notes. Linear probability models. The dependent variable (*Survival*) is binary and equals one if the person survived the disaster and zero if the person died. Robust standard errors and p-values in parentheses below the coefficients. All specifications include controls for shipwreck specific fixed effects.

Table S13. Results from unweighted regressions on FS

VARIABLES	H3 (1)	H4 (2)	H5 (3)	H6 (4)	H7 (5)	H8 (6)	H1–H8 (7)
Female	-0.139	0.029	-0.094	-0.080	-0.003	-0.078	-0.023
	(0.009)	(0.011)	(0.009)	(0.018)	(0.011)	(0.011)	(0.048)
	(<0.001)	(0.010)	(<0.001)	(<0.001)	(0.798)	(<0.001)	(0.637)
Crew	0.130	0.110	0.114	0.112	0.112	0.114	0.129
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
WCF order	0.093						-0.185
	(0.038)						(0.023)
	(0.014)						(<0.001)
WCF order*Female	0.387						0.492
	(0.019)						(0.022)
	(<0.001)						(<0.001)
Quick		0.123					0.085
		(0.039)					(0.024)
		(0.001)					(<0.001)
Quick*Female		-0.123					-0.045
		(0.016)					(0.029)
		(<0.001)					(0.117)
Small share of women			-0.113				0.246
			(0.040)				(0.030)
			(0.005)				(<0.001)
Small share of women*Female			0.208				0.124
			(0.019)				(0.025)
			(<0.001)				(<0.001)
More than one day voyage				0.104			-0.002
				(0.038)			(0.034)
				(0.007)			(0.951)
More than one day voyage*Female				0.063			-0.149
				(0.020)			(0.026)
				(0.002)			(<0.001)
Post WWI					-0.105		0.103
					(0.038)		(0.028)
					(0.006)		(<0.001)
Post WWI*Female					-0.068		0.050
					(0.016)		(0.030)
					(<0.001)		(0.095)
British ship						-0.103	-0.027
						(0.040)	(0.028)
						(0.011)	(0.326)
British ship*Female						0.092	-0.124
						(0.016)	(0.025)
						(<0.001)	(<0.001)
Constant	0.234	0.210	0.444	0.228	0.332	0.434	0.209
	(0.032)	(0.033)	(0.035)	(0.033)	(0.020)	(0.035)	(0.033)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Observations	15,142	15,142	15,142	15,142	15,142	15,142	15,142
R-squared	0.203	0.181	0.185	0.178	0.179	0.179	0.212

Notes. Linear probability models. The dependent variable (*Survival*) is binary and equals one if the person survived the disaster and zero if the person died. Robust standard errors and p-values in parentheses below the coefficients. All specifications include controls for shipwreck specific fixed effects.

Results from regressions with respect to H6.1

In this section we present regression results with respect to H6.1, i.e. when *More than one day voyage* is replaced with *Small ship* (see Table S14). Like *More than one day voyage*, the variable *Small ship* could be seen as a proxy for the degree of social proximity on board the ship. Following the arguments surrounding the discussion of H6 in the main text, *Small ship* is thus hypothesized to have a positive effect on the relative survival rate of women. Regarding MS we note that the coefficient on *Small ship*Female* in column 1 is statistically insignificant. A similar result is obtained from the joint test (column 2). Turning to the unweighted regressions we see that the coefficient from the individual test (column 3) is statistically significant ($p<0.05$). The estimated effect is positive suggesting that the survival rate of women, relative to that of men, is lower (4.5 percentage points) in shipwrecks involving ships with a comparably small complement. However, the joint test (column 4) yields a statistically insignificant ($p>0.10$) coefficient estimate. Regarding the corresponding results for FS (column 5−8) they reveal that the number of people on board the ship indeed have an effect on the relative survival rate of women. The coefficients on *Small ship*Female* are with no exceptions negative and statistically significant ($p<0.001$). Taken together the results presented above are similar to the results with respect to *More than one day voyage*.

Table S14. Regression result from an alternative test of H6

	MS				FS			
	Weighted		Unweighted		Weighted		Unweighted	
	H6.1	H1–H8	H6.1	H1–H8	H6.1	H1–H8	H6.1	H1–H8
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female	-0.145	-0.140	-0.133	-0.237	-0.077	-0.182	-0.017	-0.198
	(0.009)	(0.035)	(0.009)	(0.030)	(0.009)	(0.031)	(0.009)	(0.027)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.049)	(<0.001)
Crew	0.156	0.158	0.189	0.191	0.124	0.131	0.108	0.127
	(0.014)	(0.014)	(0.011)	(0.011)	(0.012)	(0.012)	(0.009)	(0.009)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
WCF order		-0.130		-0.096		-0.168		0.163
		(0.027)		(0.027)		(0.026)		(0.024)
		(<0.001)		(<0.001)		(<0.001)		(<0.001)
WCF order*Female		0.123		0.148		0.379		0.483
		(0.047)		(0.045)		(0.025)		(0.021)
		(0.009)		(0.001)		(<0.001)		(<0.001)
Quick		0.069		0.042		0.097		0.060
		(0.030)		(0.029)		(0.029)		(0.020)
		(0.020)		(0.150)		(0.001)		(0.002)
Quick*Female		0.014		0.120		0.029		0.020
		(0.034)		(0.025)		(0.031)		(0.023)
		(0.673)		(<0.001)		(0.350)		(0.378)
Small share of women		0.240		0.278		0.223		0.337
		(0.022)		(0.022)		(0.022)		(0.025)
		(<0.001)		(<0.001)		(<0.001)		(<0.001)
Small share of women*Female		-0.044		-0.003		0.067		0.158
		(0.029)		(0.026)		(0.028)		(0.024)
		(0.139)		(0.907)		(0.017)		(<0.001)
Small ship	-0.405	-0.120	0.076	-0.141	0.129	-0.076	0.134	-0.305
	(0.024)	(0.022)	(0.025)	(0.022)	(0.024)	(0.021)	(0.025)	(0.021)
	(<0.001)	(<0.001)	(0.002)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Small ship*Female	-0.011	-0.039	0.045	0.037	-0.091	-0.179	-0.104	-0.172
	(0.023)	(0.032)	(0.022)	(0.030)	(0.023)	(0.025)	(0.022)	(0.023)
	(0.638)	(0.225)	(0.047)	(0.212)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Post WWI		0.139		0.118		0.145		0.140
		(0.025)		(0.025)		(0.025)		(0.025)
		(<0.001)		(<0.001)		(<0.001)		(<0.001)
Post WWI*Female		0.072		0.147		0.134		0.129
		(0.032)		(0.028)		(0.028)		(0.026)
		(0.026)		(<0.001)		(<0.001)		(<0.001)
British ship		-0.077		-0.078		-0.082		-0.141
		(0.025)		(0.025)		(0.025)		(0.022)
		(0.002)		(0.002)		(0.001)		(<0.001)
British ship*Female		-0.108		-0.106		-0.096		-0.112
		(0.029)		(0.025)		(0.027)		(0.024)
		(<0.001)		(<0.001)		(<0.001)		(<0.001)
Constant	0.733	0.347	0.248	0.318	0.204	0.336	0.200	0.213
	(0.014)	(0.023)	(0.015)	(0.023)	(0.014)	(0.023)	(0.015)	(0.022)
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
Observations	10,976	10,976	10,976	10,976	15,142	15,142	15,142	15,142
R-squared	0.242	0.248	0.270	0.279	0.206	0.219	0.179	0.213

Notes. Linear probability models. The dependent variable (*Survival*) is binary and equals one if the person survived the disaster and zero if the person died. Robust standard errors and p-values in parentheses below the coefficients. All specifications include controls for shipwreck specific fixed effects. Observations in regressions in column 1−2 and 5−6 are weighted by the inverse of the number of individuals on board the ship. The joint test of H1–H8 (in column 2, 4, 6, and 8) includes H6.1 instead of H6.

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