Attitudes, perceived bathing risks and behaviours among recreational users at a high-energy beach in South-West France. A dataset containing human and environmental data, beachgoers and lifeguards assessments

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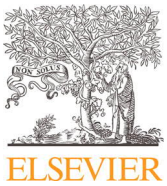

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Data Article

Attitudes, perceived bathing risks and behaviours among recreational users at a high-energy beach in South-West France. A dataset containing human and environmental data, beachgoers and lifeguards assessments

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ABSTRACT

The dataset provides data on beachgoers' behaviours, attitudes and perceptions of coastal bathing risks at a high energy beach in South-West France [1]. Data were collected from a face-to-face quantitative survey conducted at La Lette Blanche beach, during the lifeguard-patrolled summer period (July-August) 2022 from a sample of 722 visitors. Beachgoers were interviewed across various times of the day (i.e. morning or afternoon), on various days of the week (i.e. weekdays or weekends) and various marine and weather conditions. All respondents provided informed consent after reading a participant information form at the beginning of the survey. The survey was conducted in French or English and consisted of forty questions convering four main topics: (1) attitudes toward risk in general and concerns about risks in everyday life, including leisure and water based recreation context; (2) risk experience (participation in beach activities in general, visits at southwest France beaches, recreational activities, previous accidents); (3) visits to La Lette-Blanche beach at the time of the survey (attractiveness, bathing

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behaviour and perception of risks); (4) sources of information and preventive behaviours related to bathing risks. Respondents socio-demographic characteristics were collected at the beginning of the survey [2]. At the same time, environmental data were collected by a nearby directional wave buoy, tide gauge and weather station, and an hourly estimate of rip current hazard, shore break wave hazard and of the total beach crowd during the patrolling hours has been provided by the chief lifeguard of the study beach [3]. The dataset can be used to conduct quantitative analyses or to compare with others studies in the domain of beach safety research.

Specifications Table

Subject:	Social Sciences/ Health and Medical Sciences
Specific subject area:	Safety Research, Public Health and Health Policy
Type of data:	Analyzed, Tables, Figures
Data collection:	Data were collected through a face-to-face survey with structured questionnaire, between July-August 2022. Respondents were 18 years or older beachgoers visiting La Lette-Blanche, in South-West France. The survey contained forty questions, grouped into five themes. The questionnaire is available online (both French and English versions). Individuals were interviewed across various times of the day, days of the week, marine and weather conditions. Out of the 987 beachgoers reached by the survey team, 722 valid responses were included in the subsequent analysis. The levels of rip currents and shore break waves hazards were estimated hourly by lifeguards during patrolled hours.
Data source location:	Data were collected by: Institutions: INRAE (ETTIS), University of Bordeaux (EPOC), SMGBL City/Town/Region: Vielle-Saint-Girons Country: France
Data accessibility:	Repository name: Recherche Data Gouv/Data INRAE Data identification number: 10.57745/ORIIVR Direct URL to data: https://doi.org/10.57745/ORIIVR
Related research article:	J. Dehez, S. Lyser, B. Castelle, R.W. Brander, A.E. Peden, J.-P. Savy, Investigating beachgoer's perception of coastal bathing risks in southwest France, Natural Hazards (2024). https://doi.org/10.1007/s11069-024-06715-w.

1. Value of the Data

- To our best knowledge, these data are the first world dataset to associate detailed information on the bathing behaviours, beach safety knowledge and preventing behaviours, risks experience, risks perceptions, and a set of sociodemographic variables, at the individual level in regard with the bathing risks at a high energy sandy beach
- The data are useful for researchers from other countries to develop similar survey on similar beach user groups
- The dataset can be used to conduct quantitative analyses, with univariate, bivariate, and multivariate methods, or to compare with others studies aimed at analysing beachgoers exposure and bathing risks perceptions
- The data are valuable for stakeholders involved in beach safety management (e.g. lifeguards) by providing useful information about at risks beachgoers groups
- The data are valuable future studies aimed at comparing risk perceptions between “experts” and “laypeople”

2. Background

Ocean beaches can be dangerous environments due to potentially powerful wave conditions and the presence of rip currents. Furthermore, it is widely recognised that beachgoers are generally unfamiliar with rip currents or shore break waves and therefore underestimate the associated risks. Understanding bathing risks is therefore of paramount importance to prevent drowning incidents and other injuries related to the surf zone hazard. The survey is part of a wider multidisciplinary research project dedicated to beach safety entitled SWYM (Surf zone hazards recreational beach use & Water safetY Management). The survey presented here was elaborated to assess the human components of the risk. It is aimed at better understanding beachgoers' recreational beach uses, beach safety knowledge, and to investigate individual perceptions and attitudes towards different bathing risks. Furthermore, each questionnaire is associated with the environmental information (wave, tide and weather conditions) and the lifeguards' hazard and beach crowds assessments at the time of the interview. By conducting a thorough analysis of the associated three sources of data, new quantitative insight into individual factors that influence beachgoers risky behaviours (choosing patrolled/unpatrolled beach, bathing in/out supervised bathing zone) and risk perception is gained. Ultimately, this research aims to contribute to improve beach bathing prevention strategies to cope with the drowning risk posed by rip currents and shore break waves hazards.

3. Data Description

The dataset presents beachgoers behaviours, attitudes and perceptions about various bathing risks. It contains survey responses on 40 questions, representing a total of 133 variables, for 722 beachgoers interviewed at La Lette-Blanche beach (South-West France), from July 1st to August 31st 2022. The dataset, accessible in [4], consists of a 'csv' file encoded with "UTF-8". This file merges survey responses, environmental information (wave, tide, and weather conditions), and lifeguards' hazard assessments for rip currents and shore break waves corresponding at the time of the interview. All questions and response items have been translated from French.

The first section of the survey focused on the socio-demographic characteristics of the respondents. In the preamble to the questionnaire, the interviewers were required to enter the time at which the individuals were being solicited: (1) *On the way to the beach*, (2) *On the beach*, or (3) *On the way back from the beach*. Table 1 summarises the distribution of respondents in terms of individual characteristics and Table 2 summarises household characteristics.

The second section of the questionnaire was related to general risk attitude. Individuals were asked about their willingness to take risks in various contexts [5]. The first question (Q10) addressed general risk, asking "On a 0-10 rating scale, how willing are you to take risks, in general?" [5,6]. Here, 0 indicates 'not at all willing to take risks' and 10 means 'very willing to take risks'. Using the same scale, the next question (Q11) enabled respondents to position themselves in five specific contexts of everyday life: car driving, financial, leisure or sports activities, professional career, health. Finally, the third question (Q12) asked respondents to assess their concerns about various risks in everyday life, including drowning, driving accidents, choking or suffocation, falls, poisoning and burns. Compared to question Q10, such a question aims at evaluating individual risks perception and not attitude toward risks, in a broader context [7]. On this scale question, the value 0 signifies 'Do not care at all' and the value 10 denotes 'Care a lot'. Fig. 1, Table 3 and Table 4 provide an overview of the distributions of answers in regard with risk attitudes and risk concerns, and summarise the differences across the domains or the six everyday accidents risks.

The third section of the questionnaire focused on individual behaviours and water based recreational activities, in order to analyse beachgoer's experience of risk. The set of questions addressing beach use in general, aimed to qualify individual bathing risk activities [8,9] beside the specific context of La Lette-Blanche beach. Fig. 2 shows distributions of respondents in terms

Table 1
Individual characteristics.

Question	Values	Counts (%)
Survey's timing	On the way to the beach	438 (61.1%)
	On the beach	24 (3.3%)
	On the way back from the beach	255 (35.6%)
Q01. Do you live in Vielle-Saint-Girons?	Yes	82 (11.4%)
	No, but in France	575 (79.6%)
	No, not in France	65 (9.0%)
Q02. You are...	Man	322 (44.6%)
	Woman	400 (55.4%)
Q03. Age in classes	Age class 18-24	142 (19.7%)
	Age class 25-39	174 (24.1%)
	Age class 40-54	183 (25.3%)
	Age class 55-64	107 (14.8%)
	Age class 65 and over	116 (16.1%)
Q05. What is your current employment situation? Are you...	Farmer	2 (0.3%)
	Craftspeople, shopkeeper, business leader	30 (4.2%)
		166 (23.0%)
	Executive, higher intellectual profession	64 (8.9%)
	Intermediate occupation	159 (22.0%)
	Employee	17 (2.4%))
	Worker	149 (20.6%)
	Retired or early retired	135 (18.7%)
	Unemployed	
Q08. What is the highest diploma you have obtained?	None	7 (1.0%)
	Diplomas below high school diploma	80 (11.1%)
	High school diploma	183 (25.3%)
	Undergraduate	107 (14.8%)
	Graduate	129 (17.9%)
	Postgraduate	190 (26.3%)
	PhD or over	26 (3.6%)
Q09. Have you attended the following first aid training courses?		
Introduction to first aid, first aid rescue worker, first aid and civil protection	No	320 (44.3%)
	Yes	402 (55.7%)
First aid team	No	587 (81.3%)
	Yes	135 (18.7%)
Ocean lifesaving	No	686 (95.0%)
	Yes	36 (5.0%)
Q09. Medical training	No	631 (87.4%)
	Yes	91 (12.6%)

Table 2
Household characteristics.

Question	Values	Counts (%)
Q04. Do you live?	as a couple with children	175 (24.2%)
	as a couple without children	346 (47.9%)
	single with children	13 (1.8%)
	single without children	188 (26.0%)
Q04a. And you live with children aged...		
0 to 14 years	No	80 (42.6%)
	Yes	108 (57.4%)
15 to 17 years	No	141 (75.0%)
	Yes	47 (25.0%)
18 years and over	No	122 (64.9%)
	Yes	66 (35.1%)
Q07. For your household, what are the total monthly resources among the following categories (in gross)?	Less than €2,600	285 (39.5%)
	€2,600–€3,399	133 (18.4%)
	€3,400–€4,199	80 (11.1%)
	€4,200–€5,399	49 (6.8%)
	€5,400 or more	25 (3.5%)
	Refusal to answer	150 (20.8%)

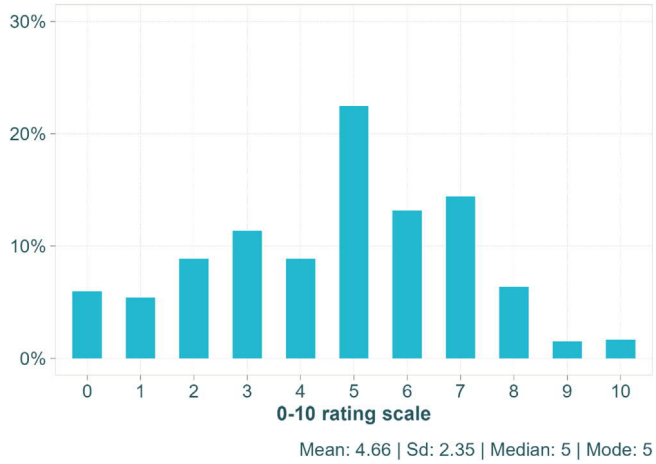

Fig. 1. Risk attitude in general. Frequencies of responses to question Q10. Each bar indicates the proportion of individuals who chose a score on the 0-10 rating scale.

Table 3
Risk attitudes by domain.

Q11. People may behave differently on different issues. On a 0-10 rating scale, how would you rate your propensity to take risks in each of the following situations:	Stats
car driving	Mean (sd) : 3.2 (2.5) min < med < max: 0 < 3 < 10
financial	Mean (sd) : 2.9 (2.4) min < med < max: 0 < 3 < 10
leisure or sports activities	Mean (sd) : 4.4 (2.5) min < med < max: 0 < 5 < 10
professional career	Mean (sd) : 4.2 (2.9) min < med < max: 0 < 4 < 10
health – tobacco, alcohol, food –	Mean (sd) : 3.6 (2.5) min < med < max: 0 < 3 < 10

of recreational activities practised at the beach (Q13), categorised in four frequency levels: (1) *All seasons*, (2) *Only in the summer*, (3) *Only off season*, (4) *Never*. Individuals were also questioned about behaviours explicitly described as 'risky' (Q13_baign), such as bathing without supervision [10,7]. Fig. 3 illustrates responses regarding three risky behaviours: (1) bathing on unsupervised beaches or out of the supervised bathing areas on supervised beaches, (2) bathing alone without anyone around and (3) bathing out of one's depth. For each item, response options were presented on a frequency scale with four levels: (1) *Always*, (2) *Most of the time*, (3) *Sometimes*, (4) *Never*. Respondents also have the option to select *"Can't tell"*. Additional questions explored why respondents chose to bath in the supervised area (Q13_baign_Surv) or why they chose to go bathing without supervision (Q13_baign_NoSurv_a). Fig. 4 and Fig. 5 display respondents' explanations for the choice they make. In the latter case, respondents were asked, on average, how far away from the supervision area they think they bath (Q13_baign_NoSurv_b). The distribution of their estimations is depicted in Fig. 6.

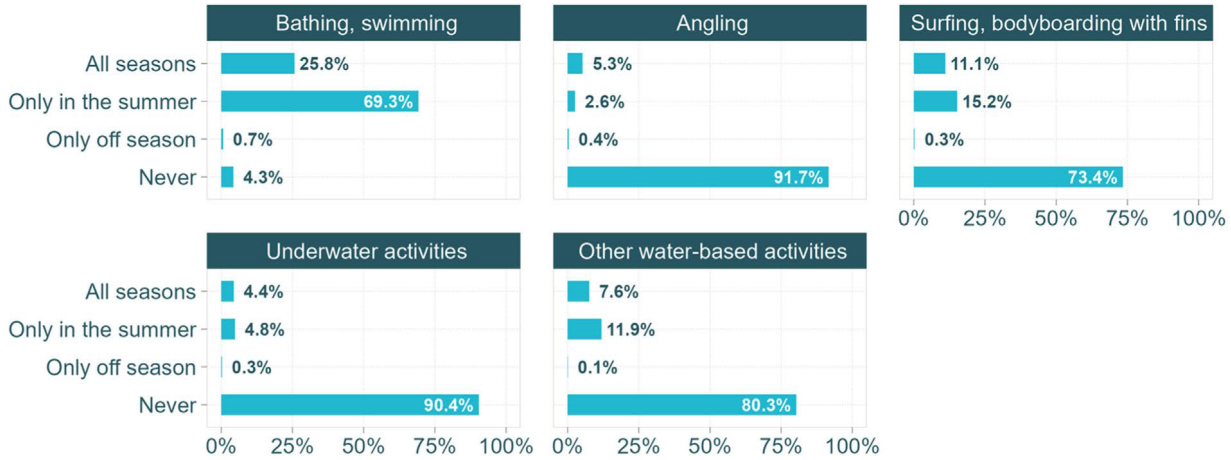

Fig. 2. Frequency of beach related activities. Frequencies responses to question Q13 (In which season do you practice each of the following activities at the beach?). Each bar indicates the proportion of individuals who chose one of the four proposed frequency categories.

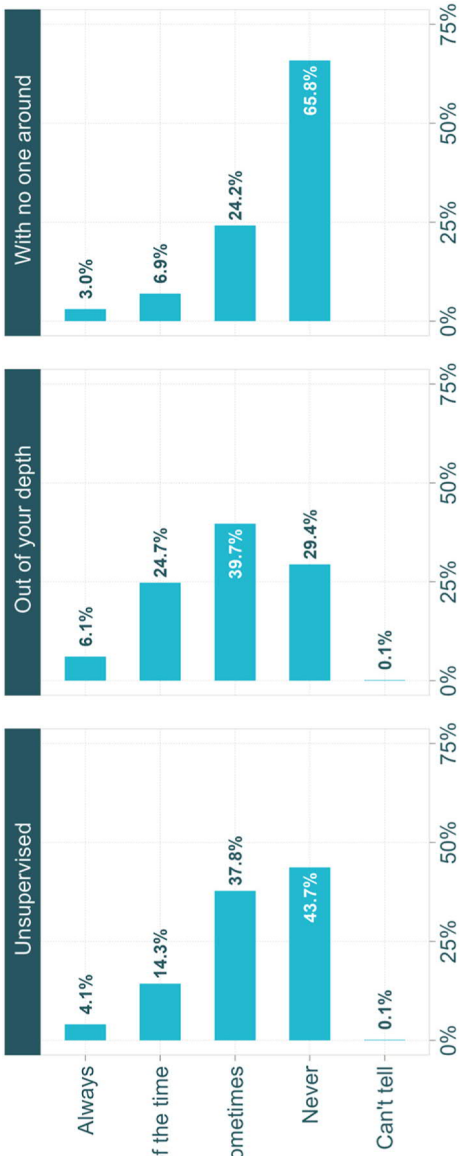

Fig. 3. 'Risky' bathing behaviours. Frequencies responses to question Q13_baign (I am going to present several situations and you will tell me in each case if you have been in this situation: always, most of the time, sometimes, never, or if you don't remember). Each bar indicates the proportion of individuals who chose one of the four proposed frequency categories.

Table 4
Risks concerns in everyday life.

Q12. On a 0-10 rating scale, how concerned are you about each of the following accident risks for yourself?	Stats
Driving accidents	Mean (sd) : 6.3 (2.5) min < med < max: 0 < 7 < 10
Choking/suffocations	Mean (sd) : 4.4 (3) min < med < max: 0 < 5 < 10
Drownings	Mean (sd) : 5.5 (3) min < med < max: 0 < 6 < 10
Fallss	Mean (sd) : 4.9 (2.6) min < med < max: 0 < 5 < 10
Poisoning	Mean (sd) : 4.1 (2.6) min < med < max: 0 < 4 < 10
Burns	Mean (sd) : 4.6 (2.7) min < med < max: 0 < 5 < 10

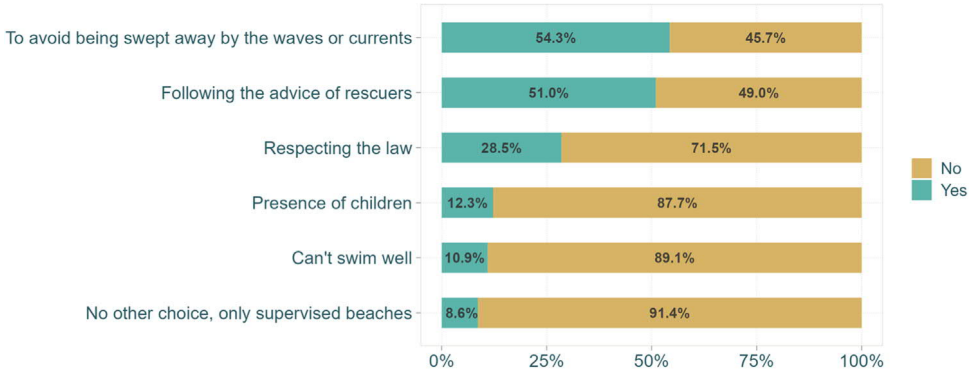

Fig. 4. Reasons for bathing in the supervised area. Frequencies responses to question Q13_baign_surv (Why do you choose to bath in the supervised area?). Each bar, corresponding to one reason to go bathing in the supervised area, is divided into two sub-bars stacked end to end, with each one corresponding to a yes/no choice.

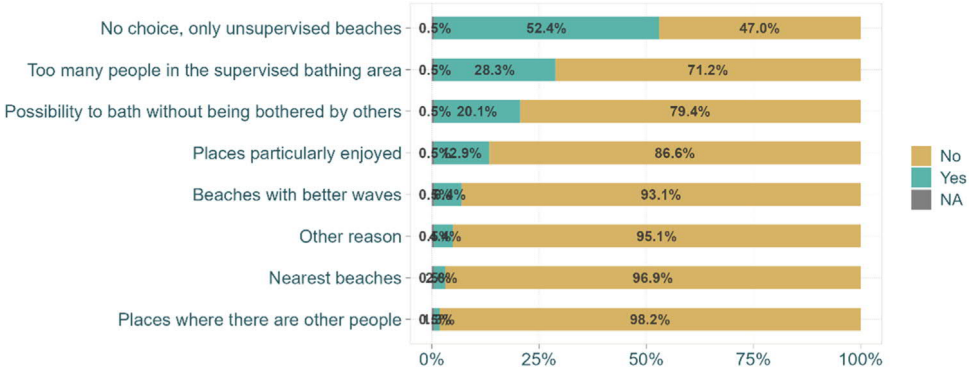

Fig. 5. Reasons for bathing outside the supervised area. Frequencies responses to question Q13_baign_NoSurv_a (Why do you choose to go bathing without supervision?). Each bar, corresponding to one reason to go bathing without supervision, is divided into two sub-bars stacked end to end, each one corresponding to a yes/no choice.

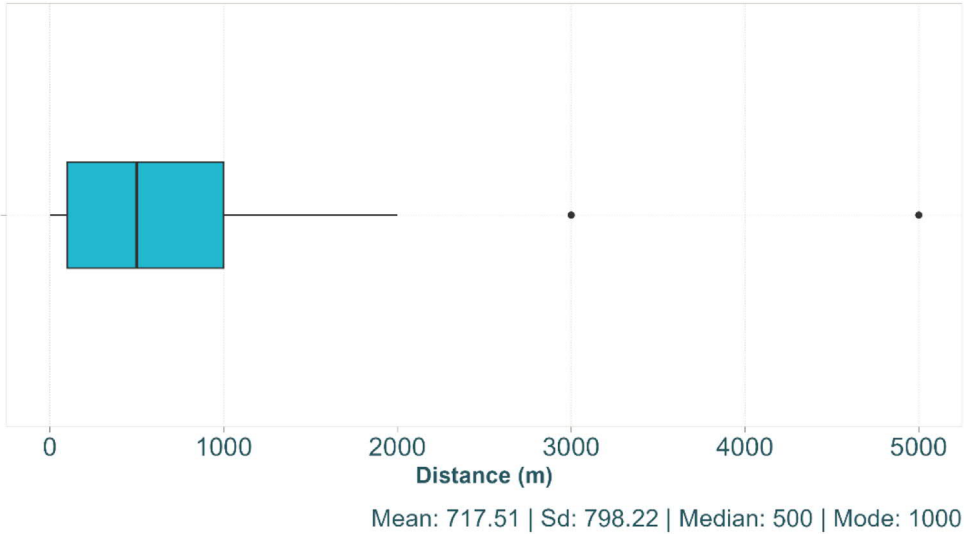

Fig. 6. Distance in meters from the supervised area. Responses distribution to question Q13_baign_Nosurv_b (In these cases, on average, how far (in meters) away from the surveillance zone do you think you bath?). The box extends from the first quartile value to the third quartile, with a central line marking the median value. Lines extend from each box to encompass the extent of the remaining data, with dots placed beyond the edges of the line to indicate outliers. The diamond indicates the mean value of the distribution.

The last question in this section (Q14), asked respondents to evaluate their ability to swim in a pool and at sea [10,11]. The level of assessment was measured on a 0-10 rating scale, where the value 0 means 'Very poor' and the value 10 means 'Very good' (Fig. 7).

A second set of questions, related to beaches in southwest France, complemented this section dedicated to the participation in recreational beaches activities and individual exposure in general. Table 5 shows the frequencies of the five questions related to the experience of ocean beaches in South-West France.

The first question in this set (Q15) asked respondents about their frequency of visits to these beaches. Subsequently, respondents were prompted to evaluate their level of capability to cope with rip currents [10], on a 5-point Likert scale (Q16): (1) *Very confident*, (2) *Confident*, (3) *Unsure*, (4) *Anxious*, (5) *Very anxious*. Q17 asked respondents to choose what they would do if they were accidentally caught in currents. Lastly, respondents were questioned to declare which issues [12] they have encountered at the beach (Q18), and in this case, how they cope with these difficulties (Q18a).

In this section, questions were specific to visitation at La Lette-Blanche beach. They were designed to test the hypothesis of that familiarity with this particular beach influences local individual risk perception. The first question 'Have you ever been to this beach?' (Q19) asked about respondents' experience of this beach. The response options were: (1) *No, this is your first time*, (2) *Yes, you have been there a few times* and (3) *Yes, you often come to this beach*. In the following questions, respondents had to indicate the three main reasons why they chose to visit La Lette-Blanche beach (Q20) and whether they were alone or accompanied by adults and/or children (Q21). Then, questions Q22 and Q23 addressed bathing behaviour on the day the respondent was interviewed. Questions concerned the whole beach and the supervised area more specifically. For both questions, the response options were: (1) *Yes*, (2) *No* and (3) *Not sure*. In the case they chose to bath outside the supervised area, respondents had to evaluate the distance they plan to bath away from the beach flags. The four suggestions (1) *nearby, right next to the flags*, (2) *at a certain distance from the flags, but you see them*, (3) *at a distance from*

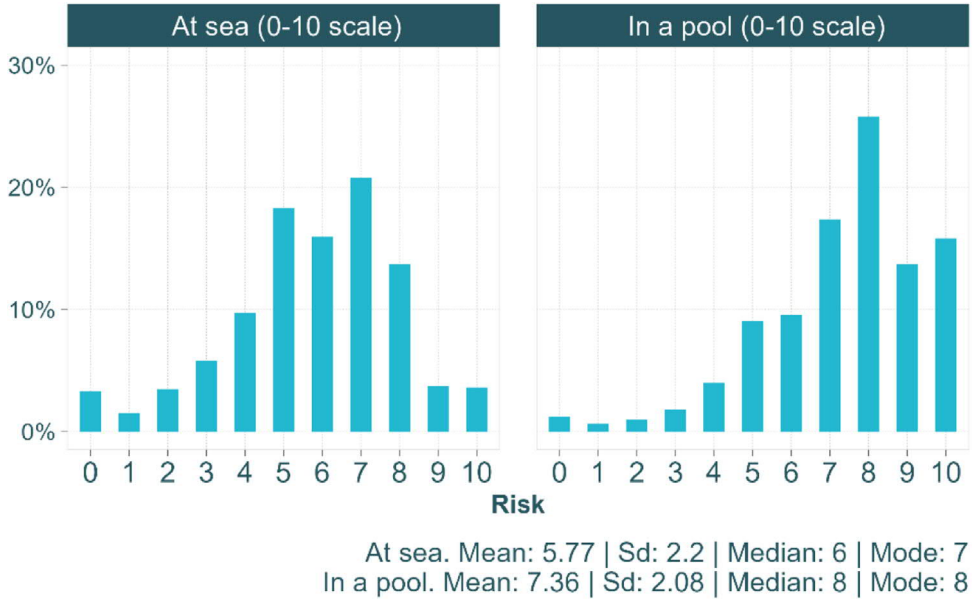

Fig. 7. Self-assessment of the swimming ability. Frequencies responses to question Q14 (On a 0-10 rating scale, how would you rate your ability to swim?). Each bar indicates the proportion of individuals who selected each level on the 0-10 rating scale.

the flags, you can no longer see them and (4) *anywhere, there is no surveillance zone*, portrayed a distance gradient. The distributions of responses to Q19 to Q23 are summarised in Table 6.

The last two questions were used to analyse beachgoers' risk perception [13,14]. In order to measure the degree of risk perceived by visitors, they have been asked directly at the time of the questionnaire completion, facing the ocean. First, respondents had to indicate the bathing risk they perceived at the time of the interview on a 0-4 rating scale, where the value 0 means 'Not at all dangerous' and the value 4 signifies 'Extremely dangerous' (Q24). This general question was completed with two additional more precise questions, about the risky nature of (1) rip currents (Q25_1) and (2) shore break waves (Q25_2). For both risks, respondents were required to choose a value on the same 5-level scale and evaluate the risk for (i) themselves, (ii) for the children who came with them and (iii) for the others adults who came with them. Fig. 8 and Fig. 9 (a) illustrate the differences in perception depending on the considered hazard and the exposed person.

Lifeguard estimated hourly beach crowds and the levels of rip current and shore break waves hazards during patrolling hours. To complete their daily routine, hour by hour, the lifeguards received the following instructions: 'Using a five-point scale, 0 being the minimum and 4 being the maximum, how hazardous do you think the rip currents (resp. the shore break waves) hazards are at the moment?'. The distribution of their estimates, corresponding to the hours and days for which at least one questionnaire is collected, is displayed in Fig. 9 (b).

The last series of questions is dedicated to risk prevention and awareness [15,10,16]. First, respondents had to answer two general questions on information about bathing risks: 'Do you think you have enough information about bathing risks at the beach?' (Q27) and 'Would you like to receive more information on bathing risks and prevention instructions?' (Q28). For this question (Q29), worded as 'In your opinion, which means should this information be disseminated?', respondents could choose up to three of the nine following options: (1) *Among the lifeguards, the rescue teams*, (2) *Information brochures/leaflets*, (3) *Demonstrations on the beach*, (4) *Signage, information boards at the beach*, (5) *TV*, (6) *Radio*, (7) *Daily press*, (8) *Internet, social net-*

Table 5
Behaviour and conditions of beach use in South-West France.

Question	Values	Counts (%)
Q15. Do you visit the beaches of the South-West…	Never	1 (0.1%)
	Only in summer	423 (58.6%)
	Whatever the season	298 (41.3%)
Q16. To what extent do you feel able to cope with rip currents?	Anxious	148 (20.5%)
	Confident	147 (20.4%)
	Unsure	280 (38.8%)
	Very anxious	124 (17.2%)
	Very confident	23 (3.2%)
Q17. What would you do if you were accidentally caught in currents?		
You signal your presence by calling for help	No	469 (65.0%)
	Yes	253 (35.0%)
You swim directly to the beach	No	683 (94.6%)
	Yes	39 (5.4%)
You swim parallel to the beach	No	653 (90.4%)
	Yes	69 (9.6%)
You let the current carry you	No	186 (25.8%)
	Yes	536 (74.2%)
You don't know	No	661 (91.6%)
	Yes	61 (8.4%)
Other	No	714 (98.9%)
	Yes	8 (1.1%)
Q18. Still on the French South-West ocean beaches, have you ever been in any of the following situations?		
You have been caught in a rip	No	504 (69.8%)
	Yes	218 (30.2%)
You have had an illness, sunstroke	No	673 (93.2%)
	Yes	49 (6.8%)
You have been hit by a shore break wave	No	348 (48.2%)
	Yes	374 (51.8%)
You were held underwater by waves	No	419 (58.0%)
	Yes	303 (42.0%)
You have suffered from fatigue or cramps	No	591 (81.9%)
	Yes	131 (18.1%)
You have been hit by a surfer, a board, or someone	No	590 (81.7%)
	Yes	132 (18.3%)
You have been injured by marine animals (jellyfish, weever fish, etc.)	No	605 (83.8%)
	Yes	117 (16.2%)
None of the above	No	527 (73.0%)
	Yes	195 (27.0%)
Q18a. In this case…		
You have been taken care of by the lifesavers	No	462 (87.7%)
	Yes	65 (12.3%)
You were rescued by someone present on the beach (other than the emergency services)	No	507 (96.2%)
	Yes	20 (3.8%)
You have managed on your own	No	88 (16.7%)
	Yes	439 (83.3%)
You don't remember	No	524 (99.4%)
	Yes	3 (0.6%)

works, smartphone application, (9) *Other*. Finally, in the last question 'And finally, would you be interested in participating in…': (1) *a presentation on bathing risks at the beach*, (2) *training on how to avoid drowning* and (3) *training in first aid*, respondents were asked about their intention to engage in prevention. The distributions of responses to these four questions are displayed in Table 7.

The survey dataset is completed with environmental data, used to contextualize beachgoers' perceptions. These variables were significant tidal level, wave height, wave period, wave direction, wind speed, wind direction, insolation and outdoor temperature. The distributions of these numerical variables are summarised in Table 8.

Table 6
Behaviour and conditions of La Lette-Blanche beach use.

Question	Values	Counts (%)
Q19. Have you ever been to this beach?	No, this is your first time	185 (25.6%)
	Yes, you have been here a few times	154 (21.3%)
	Yes, you often come to this beach	383 (53.0%)
Q20. What are the main reasons why you choose this beach over another?		
This is the nearest beach (to home / Holiday destination/ family, friends)	No	430 (59.6%)
	Yes	292 (40.4%)
This is a beach you have heard of (family, friends / social networks)	No	660 (91.4%)
	Yes	62 (8.6%)
This is a quiet place, away from the crowd, the people	No	399 (55.3%)
	Yes	323 (44.7%)
This is a supervised beach	No	679 (94.0%)
	Yes	43 (6.0%)
This is a beach that attracts you for its landscape	No	535 (74.1%)
	Yes	187 (25.9%)
This is a place where there are good waves, where the waves are more beautiful	No	670 (92.8%)
	Yes	52 (7.2%)
This is a beach where you can park easily	No	662 (91.7%)
	Yes	60 (8.3%)
This is about being with relatives and friends	No	679 (94.0%)
	Yes	43 (6.0%)
Other	No	697 (96.5%)
	Yes	25 (3.5%)
Q21. Today, on this beach...		
You are alone	No	633 (87.7%)
	Yes	89 (12.3%)
You are with adults	No	114 (15.8%)
	Yes	608 (84.2%)
You are with children	No	562 (77.8%)
	Yes	160 (22.2%)
Q22.Have you been or are you planning to go bathing today?	No	222 (30.7%)
	Not sure	35 (4.8%)
	Yes	465 (64.4%)
Q22_baign. Have you gone or are you going to bath in the supervised area?	No	91 (18.2%)
	Not sure	18 (3.6%)
	Yes	391 (78.2%)
Q22_baign_NoSurv. In this case, you will...	anywhere, there is no surveillance zone	19 (17.4%)
	at a certain distance from the flags, but you see them	43 (39.4%)
	at a distance from the flags, you can no longer see them	24 (22.0%)
	nearby, right next to the flags	23 (21.1%)
Q23. The supervised bathing area is marked with 2 flags. What colour are they?	Blue	39 (5.4%)
	Don't know	87 (12.0%)
	Green	4 (0.6%)
	Purple	1 (0.1%)
	Red	20 (2.8%)
	Red and yellow	546 (75.6%)
	Yellow	25 (3.5%)

4. Experimental Design, Materials and Methods

For beachgoers survey, the sampling strategy has been defined with strict selection criteria for individuals based on weekdays, weather and environmental conditions, to obtain the most diverse sample possible. Individuals were interviewed across various times of the day (i.e. morning or afternoon), on various days of the week (i.e. weekdays or weekends) and during various

Table 7
Preventing behaviour.

Question	Values	Counts (%)
Q27. Do you think you have enough information about bathing risks at the beach?	No	79 (11.0%)
	Yes	640 (89.0%)
Q28. Would you like to receive more information on bathing risks and prevention instructions?	Absolutely	30 (4.3%)
	Not at all	256 (36.6%)
	Rather no	285 (40.8%)
	Rather yes	128 (18.3%)
Q29. In your opinion, by which means should these informations be disseminated?		
Among the lifeguard, the rescue teams	No	561 (77.7%)
	Yes	161 (22.3%)
Information brochures/leaflets	No	654 (90.6%)
	Yes	68 (9.4%)
Demonstrations on the beach	No	608 (84.2%)
	Yes	114 (15.8%)
Signage, information boards at the beach	No	250 (34.6%)
	Yes	472 (65.4%)
TV	No	647 (89.6%)
	Yes	75 (10.4%)
Radio	No	654 (90.6%)
	Yes	68 (9.4%)
Daily press	No	674 (93.4%)
	Yes	48 (6.6%)
Internet, social networks, smartphone application	No	487 (67.5%)
	Yes	235 (32.5%)
Other	No	697 (96.5%)
	Yes	25 (3.5%)
Q30. And finally, would you be interested in participating in...		
a presentation on bathing risks at the beach	No	391 (54.2%)
	Yes	331 (45.8%)
training on how to avoid drowning	No	296 (41.0%)
	Yes	426 (59.0%)
training in first aid	No	289 (40.0%)
	Yes	433 (60.0%)

Table 8
Weather and bathing conditions.

Variable	Stats
Tide level (m)	Mean (sd) : 0 (0.9)
	min < med < max: -1.9 < 0 < 2
Wave height (m)	Mean (sd) : 1.1 (0.4)
	min < med < max: 0.4 < 1.1 < 2.1
Wave period (sec)	Mean (sd) : 8.3 (2.3)
	min < med < max: 3.3 < 8.4 < 14
Wave direction (degree)	Mean (sd) : 300.4 (15.4)
	min < med < max: 256.3 < 299.9 < 340.1
Wind speed (m/sec)	Mean (sd) : 4.5 (1.4)
	min < med < max: 1.1 < 4.5 < 9.7
Wind direction (degree)	Mean (sd) : 279.8 (84)
	min < med < max: 10 < 310 < 360
Hourly insolation (min)	Mean (sd) : 40.6 (22.9)
	min < med < max: 0 < 54 < 60
Outdoor temperature (°C)	Mean (sd) : 24.5 (3)
	min < med < max: 18 < 23.8 < 35.3

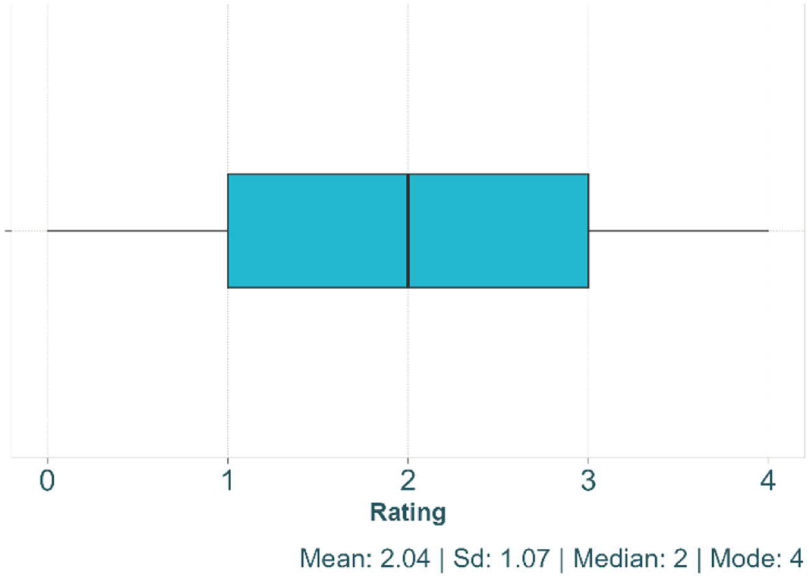

Fig. 8. Perceived bathing risk at La Lette-Blanche beach at the time of the interview. Responses distribution to question Q24 (On a scale from 0 to 4, with 0 being the minimum ('Not at all dangerous') and 4 being the maximum ('Extremely dangerous'), how risky do you think entering the water is for you at the moment?). The box extends from the first quartile value to the third quartile, with a central line marking the median value. Lines extend from each box to encompass the extent of the remaining data, with dots placed beyond the edges of the line to indicate outliers.

wave and weather conditions. Additionally, surveyors were instructed to survey every third individual encountered to avoid any selection bias on their part. The survey was advertised on local news websites and in local newspapers. Surveyors directly filled out the beachgoers' responses using SphinxMobile, specifically designed for conducting face-to-face surveys on offline mode on tablets, which was necessary to conduct as La Lette Blanche did not have reliable mobile phone reception. The survey took approximately 10-20 minutes to complete. Survey refusals were recorded. Each time a questionnaire was completed, date and time were recorded. All surveys were administered at the same location, i.e. in close proximity to the lifeguard unit, from a high vantage point.

Environmental variables were estimated at the time of each interview using nearby monitoring stations. The environmental condition dataset is described previously by [17] and [3]. Significant wave height, peak wave period and angle of incidence were measured by a directional wave buoy located approximately 80 km north of La Lette-Blanche beach which is representative of the wave conditions of the study site given the open and straight nature of the coast. Mean wind speed and insolation were collected at a Meteo France weather station located approximately 50 km south of La Lette-Blanche beach. A tidal component analysis of a 10-minute interval 3-month time series of continuous, storm-free, Socoa tide gauge data was performed. The average phase lag between the Socoa tide gauge located approximately 50 km further south and La Lette-Blanche beach was estimated using tide charts from the Service Hydrographique et Océanographique de la Marine (France). Errors due to the (time-varying) phase lag and amplitude difference between real and predicted tide resulted in an estimated maximum error in tide elevation of 0.3 m [18]. The resulting time series of astronomical tide level at 10-minute intervals was further used.

For this study, the chief (or co-chief) lifeguard was also requested to provide an hourly estimate of the importance of the rip current hazard, and shore break wave hazards during the

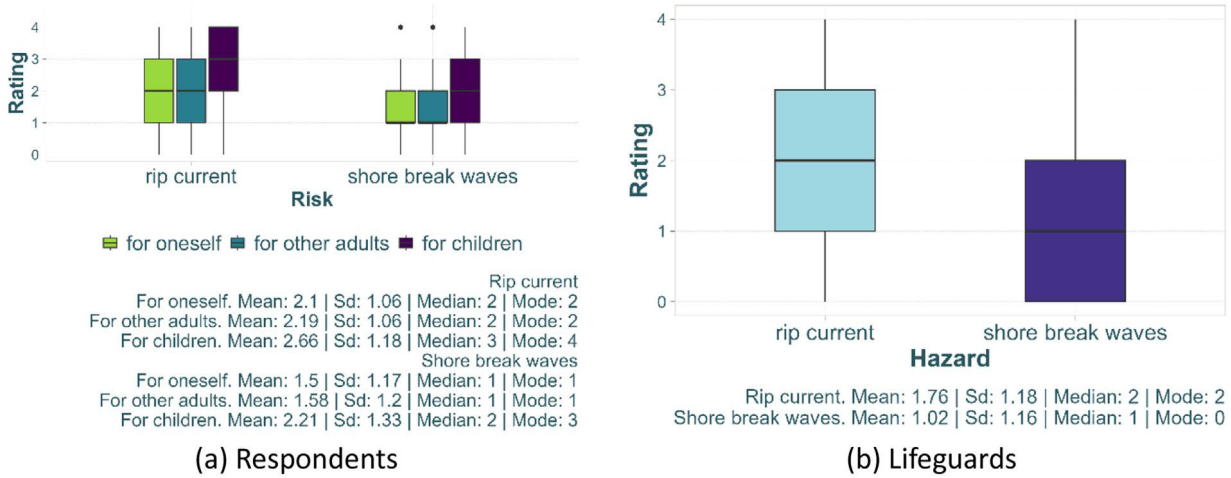

Fig. 9. (a) Perceived rip current and shore break wave risks at La Lette-Blanche beach by respondents, at the time of the interview. Responses distribution to questions Q25_1 (Still using the same five-point scale from 0 to 4, with 0 being the minimum and 4 being the maximum, how risky do you think... The rip currents are at the moment?) and Q25_2 (Still using the same five-point scale from 0 to 4, with 0 being the minimum and 4 being the maximum, how risky do you think... Shore break waves are at the moment?). (b) Estimated rip current and shore break wave hazards levels at La Lette-Blanche beach by lifeguards. Estimations distribution to rip current and shore break waves hazards levels, on the scale, also provided to respondents, from 0 to 4, with 0 being the minimum ('Not at all dangerous') and 4 being the maximum ('Extremely dangerous').

patrolling hours of 11 am to 7 pm, from July 1 to August 31. Lifeguards used a five-point scale rating, 0 being the minimum and 4 the highest level. The methodology is described further in [3].

Limitations

This study has some limitations from a methodological standpoint. Like all surveys, it suffers from a sampling bias, which is particularly linked to the fact that the survey took place at a single site, i.e La Lette-Blanche beach. Therefore, this study would merit being conducted on other types of beaches (beaches located in urban environments or unsupervised beaches), on different French coastlines, or elsewhere in the world. Moreover, we cannot guarantee that the collected sample is representative of the beachgoer population, because self-selection might have played a role in participation and we cannot assert that respondents have similar sociodemographic characteristics than non-respondents. Finally, even though we defined a sampling strategy with strict selection criteria for individuals based on weekdays, weather, and environmental conditions, regular users of La Lette-Blanche beach have a higher probability of being interviewed. Thus, we cannot be certain that this study is not affected by oversampling bias.

Ethics Statement

The data collection process was carried out in accordance with the General Data Protection Regulation (Regulation (EU) 2016/679, GDPR) in terms of protection of personal information. Respondents were informed of this procedure. The informed consent was obtained from participants before completing the questionnaire with the interviewer. Participant data has been fully anonymized.

Credit Author Statement

Sandrine Lyser: Methodology, Software, Validation, Formal analysis, Resources, Data curation, Writing - Original draft preparation, Visualization. **Jeoffrey Dehez:** Conceptualization, Methodology, Validation, Resources, Writing - Review & Editing, Supervision, Project administration, Funding acquisition. **Bruno Castelle**: Resources, Writing- Reviewing and Editing, Funding acquisition. **Jean-Philippe Savy**: Resources, Writing- Reviewing and Editing.

Data Availability

Survey data on beachgoers' perception of coastal bathing risks in South-West France (Original data) (Dataverse).

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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