Perceptions of the risk of COVID-19 infection outdoors: a comparative study of green and blue spaces

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Introduction

For many people who have experienced lockdowns and restrictions on indoor activities during the COVID-19 pandemic, outdoor recreation has provided one of the few opportunities to get out of the house, exercise and relax. On May 27th 2020, the European Commission announced its long-term recovery strategy (NextGenerationEU), which will guide and support EU member states as they recover from the impacts of the pandemic. The fundamental policy framework for the recovery is a combination of the EU Green Deal, a strengthening of the EU Single Market and adaptation to the digital age, and an inclusive recovery. One of the objectives of the programme NextGenerationEU is: "Working with nature to protect our planet and health". It is therefore important to understand how people think about and connect with natural environments in order to further increase the impact of this policy. While many studies have documented the changes in outdoor activities that have taken place during this pandemic, few have examined people's perceptions of the associated risks.

It is now widely recognised that risk perception has a major influence on an individual's behaviour when exposed to a hazard, whatever its nature (financial, professional, natural, etc.), and that this perception is dependent on multiple parameters (Sjöberg 1999). The context in the first year of the COVID-19 pandemic proved to be a breeding ground for diverse representations and beliefs regarding the risk of infection when outdoors. The scientific knowledge base was still under construction during this period, the permitted activities (walking, relaxing, running) were generally not considered 'risky' (unlike other sports such as climbing or shooting), and the potential for infection by such viruses had, from a European perspective at least, only previously been associated with travel to 'exotic' destinations and certainly not with the familiar places frequented during lockdowns.

In addition, there has been an assumption that people have considered outdoor environments taken as a whole (Landry et al. 2021) to be less dangerous than enclosed environments taken as a whole (Kim and Kang 2021). However, we believe this assumption to be too generalised as some previous works have shown that many people do not seem to perceive naturals environments in the same way (Nutsford et al. 2006).

In this presentation, we propose to examine this question by analysing recreational users' perceptions of the risk of COVID-19 infection in several natural environments in France.

Methods

Our study was conducted in late 2020 (December 7th-15th) and comprised two telephone surveys carried out on a sample of 500 individuals living in the southwest of France each. A professional polling company conducted the surveys. Interviews lasted between 13 and 14 minutes on average. The surveys sought to develop a retrospective overview of 2020 by identifying the respondents' behaviours, attitudes and expectations concerning the options open to them with regard to spending time outdoors in local natural spaces. Each survey focused on a setting in particular, namely forests and Atlantic Ocean beaches. Questions cover activities, motives and trips conditions (time and place), among other things. The respondents were also asked to give their assessment of the risk of infection in each of these two

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target spaces relative to other destinations, in other words relative to the other target space (i.e. forest or beach) as well as to mountains, urban parks/green spaces and pedestrian zones. To test the possible influence of exposure on perception, the same questions were put to individuals who had and had not visited these places in 2020. Several Socio-demographics were finally included. The statistical analyses were based on Chi-square pairwise comparisons.

Results

Our findings confirm not everyone had the same access to nature during the pandemic. There are important socio-demographic differences between individuals who visited one type of natural environment, both types of natural environments or neither.

The results also showed differences in several variables that characterised the respondents' exposure to the two natural environments, namely times and frequencies of visits, means of travel, composition of groups on the outing and activities engaged in.

Motivations were very varied in both cases. For example, 'contact with nature' was more frequently cited in relation to forest visits, while the need to 'see people' was more frequently reported in relation to beach visits. Compared to the beaches, the restorative function of the forest seems to have received greater recognition therefore.

Finally, forest seemed to be viewed much more positively than the beach in terms of risk perception (Table 1). Neither residential environment (size of hometown, housing type, presence of a garden) nor individual characteristics (gender, age) was statistically significant in explaining these differences, but exposure (i.e. frequentation of one or more natural spaces) was found to be a significant factor.

Discussions and conclusion

Our findings suggest that people enjoying the outdoors make significant differences between potential benefits provided by "green" and "blue" spaces respectively. In the short term, planners can use these results to adapt the conditions of access to both type of natural spaces, favoring those for which there is the greatest demand. In the long term, promotion about the benefits of blue health should be enhanced further.

Although access to nature in France is mostly free, social inequalities persist. Under these conditions, it is necessary to target disadvantaged populations that accumulate inequalities.

Generally speaking, it seems important to continue the research on this subject in order to better understand how individual representation and risk perceptions are constructed with respect to new risks and to anticipate associated behaviours.

As the number of studies on this subject grows, international comparisons should also be made given that, on the one hand, cultural specificities mean populations do not react in the same way to epidemics (de Zwart et al. 2009) and, on the other, different health measures (some more restrictive than others) are imposed on different populations.

Table 1 Perception of risks of infection associated with visiting forests and beaches

Variable	Forest	Beach	p-value
Urban parks and gardens			***
Less risky	87.03	39.00	
Same	7.58	39.40	
More risky	0.80	11.80	
Don't know	4.59	9.80	
Pedestrian zones			***
Less risky	91.62	57.20	
Same	3.59	23.80	
More risky	1.00	12.00	
Don't know	3.79	7.00	
Forests			
Less risky	NA	18.60	
Same	NA	37.60	
More risky	NA	38.20	
Don't know	NA	5.60	
Beaches			
Less risky	65.27	NA	
Same	24.15	NA	
More risky	2.59	NA	
Don't know	7.98	NA	
Mountains			***
Less risky	29.14	17.00	
Same	56.09	44.20	
More risky	5.79	30.60	
Don't know	8.98	8.20	
Place of work			***
Less risky	47.70	33.00	
Same	8.18	13.60	
More risky	0.60	12.80	
Don't know	43.51	40.60	

Note: 87.3% of respondents answered that forests were less risky than urban parks/green spaces from the point of view of COVID-19 infection. Chi-square tests of independence significance levels: ns = not significant; * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.
Source and field: Frequentation of natural spaces in Aquitaine - Forest 501 respondents & Beach 500 respondents (INRAE 2020).

Selected references

de Zwart O., Veldhuijzen I., Elam G., Aro A. R., Abraham T., Bishop G. D., Voeten H. A. C. M., Hendrik Richardus J., Brug J. (2009), Preceived Threat, Risk Perception, and Efficacy Beliefs Related to SARS and Other (Emerging) Infectious Diseases: Results of an International Survey, International Journal of Behavioral Medecine, 2009(16), p.30-40.

Kim Y.-J., Kang S.-W. (2021), Perceived Crowding and Risk Perception According to Leisure Activity during COVID-19 Using Spatial Proximity, International Journal of Environmental Research and Public Health, 18(457, https://doi.org/10.3390/ijerph18020457).

Landry C. E., Bergstrom J., Salazar J., Turner D. (2021), How Has the COVID-19 Pandemic Affected Outdoor Recreation in the U.S.? A Revealded Preference Approah, Applied Economic Perspectives and Policy, 43(1), p.443-457.

Nutsford D., Amber A. L., Kingham S., Reitsma F. (2006), Exposure to visible blue space (but not green space) associated with lower psychological distress in a capital city, Health and Place, 39(2006), p.70-78.

Sjöberg L. (1999), Risk Perception by the Public and by Experts: A Dilemna in Risk Management, Human Ecology Review, 6(2), p.1-9.