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Meeting public health objectives and supporting the resumption of tourist activity through COVID-19: a triangular perspective

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ABSTRACT

Non-pharmaceutical interventions (NPIs) implemented during the COVID-19 pandemic (and previous health crises) have included measures to restrict interaction between people and minimize non-essential mobility. Therefore, tourism travel is one of the main areas affected by the restrictions. Even when the majority of the population is vaccinated, some risk of infection will remain, and governments are obliged to consider NPI measures that balance the health risk of outbreaks against the economic and social benefits of resuming tourist activity. This study analyzes the effect of each of four categories of NPIs (Social Distancing; Public Healthcare-System Improvements; Tourist Controls; and Capacity and Opening-Hours Regulation) on three major objectives (the resumption of tourism activity; tourist travel intention; and the minimization of public health risk), taking a triangular perspective (destination managers, domestic tourists, and public healthcare managers, respectively). While it is difficult to fulfil public healthcare objectives while simultaneously responding to the economic interests of tourism-industry stakeholders, the study finds that, under vaccinated-population conditions, tourist controls (e.g. COVID Certificate) alongside improvements to the public healthcare system (e.g. adequate resourcing and an efficient epidemiological monitoring system) could constitute a viable combination of measures.

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Tourism; non-pharmaceutical interventions; COVID-19; triangulation approach

1. Introduction

The COVID-19 pandemic has infected more than 200 million people, causing more than 4 million deaths worldwide (WHO, 2021). The loss, in terms of tourist numbers, caused by this pandemic far exceeds the combined loss deriving from all the other public health crises of the twenty-first Century, such as SARS in 2003 (Bustelo & Isbell, 2003) or the H1N1 outbreak in 2009 (Leggat et al., 2010).

As the pandemic spread around the globe, all countries adopted Non-Pharmaceutical Interventions (NPIs) to mitigate the recurring outbreaks. NPIs are controversial due to uncertainty about their effectiveness in preventing contagion and containing outbreaks, and their negative economic effects (Rinaldi et al., 2020). Thus, in May 2020, the World Health Organization (WHO) published an evaluation of NPIs for COVID-19, which it updated in December 2020. That report highlights the need

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to evaluate—together with the effectiveness and feasibility of the measures – their economic impact and social acceptability. Sectors that are dependent on human contact and interaction, such as tourism, have been hit heavily by the crisis, and they are likely to continue experiencing these unprecedented shocks for some time (De Vet et al., 2021). This characteristic underlines the concern of governments over the recovery of the tourism sector, in which firms must attempt to weather this storm with the help of different aid programmes, considering the severe restrictions placed on tourism activity by some of the NPIs (Shih-Shuo, 2021).

While it is clear that COVID-19 caused severe economic disruption (Baldwin & Weder di Mauro, 2020; Gopinath, 2020), its future impact on the global economy and particularly the tourist industry remains unknown. The COVID-19 virus continues to evolve, and infectious variants can lead to hospitalization or death, even among vaccinated individuals. Furthermore, worldwide, many people remain unvaccinated or immunocompromised, meaning that, hospital services can quickly become overwhelmed by sudden outbreaks. Hence, public health services may wish to maintain NPIs to prevent or mitigate these risks, remain vigilant through monitoring, or maintain the legal and logistical flexibility to implement NPIs to respond to outbreaks as the need arises.

The pandemic is making a tremendous impact (both directly and indirectly) on the tourism sector (Gössling et al., 2021). Therefore, making sustained NPIs can create an opportunity for international/domestic tourism to recover and even expand (Hall, Scott, et al., 2020; Da Silva Lopes et al., 2021), as they provide reassurance to the tourist that any risk is being managed (Kement et al., 2020). However, as part of this recovery process, it is important to analyze how the NPIs may impact the respective objectives of the different publics concerned – primarily tourists, destinations, and the public healthcare system. While NPIs play a crucial role in kerbing the spread of diseases, given their characteristics (which are mainly of a restrictive nature in terms of free movement), they do directly affect tourism activity (Hall, Prayag, et al., 2020; Ryu et al., 2020). That said, not all these measures are equally drastic across all countries, with some areas experiencing greater restrictions – and thus a greater cooling effect on travel and tourism – than others (Seyfi et al., 2020).

In studies that analyze the impact of NPIs, different approaches and theories have been used to explain their adoption. For example, taking an Optimal Control Theory perspective, some works endeavour to determine the most efficient combination of NPIs to reduce the length of sick leave taken by a person who contracts influenza (Lin et al., 2010) or to control the spread of an epidemic (Bussell et al., 2019). As the function to be optimized has an objective variable, these studies provide valuable conclusions regarding that variable but they do not take into account the effects on other variables or publics other than the one under analysis. Other theories used to explain the effects of NPIs include Protection Motivation Theory (Rogers, 1975), which has been employed to support changes in tourist behaviour as a result of measures to control COVID-19 (e.g. Itani & Hollebeek, 2021) or in tourism employee satisfaction (e.g. Lee et al., 2022). Since this theory focuses on analyzing the adoption of particular measures, it primarily focuses on the target audiences that are required to adhere to them.

More generally, Iwamoto (2021) uses a model to relate economic activity to the ability of an epidemic to spread, based on measures that maximize social welfare. Welfare economics provides the theoretical foundations for instruments that a government can use to solve an economic, social, or, in this case, public health issue. Adopting NPIs has a cost–benefit effect that needs to be analyzed simultaneously (Iwamoto, 2021), although the models that attempt to maximize social welfare have some important limitations in this regard, such as their focus on describing the past or their working assumption that immunity persists, when this is not currently occurring with COVID-19. The present study addresses this drawback by analyzing the effect of NPIs on tourism supply and demand together with the impact on public health risk, based on the expert opinions of the main agents involved and a vaccinated-population scenario, together with those of tourists. The findings will provide a complementary point of view to the current state of the art.

The present study examines 15 NPIs grouped into four categories: Social Distancing, Public Healthcare-System Improvements, Tourist Controls, and Capacity and Opening-Hours Regulation.

The work analyzes the effect of each of these categories of NPIs on (i) the generation of a high level of tourist travel intention (from the perspective of domestic tourists); (ii) the capacity of the tourism sector to recover rapidly (from the perspective of local or regional destination managers); and (iii) the minimization of public health risk (from the perspective of healthcare managers). Therefore, this triangular perspective is adopted to capture the different dimensions of one single phenomenon, namely, a public health crisis (Heale & Forbes, 2013).

Given the importance of NPIs for tourism and the recovery of the sector, the study addresses the following research question (RQ1) is: Is there a particular set of NPIs that would enable tourism activity to continue while simultaneously keeping the public healthcare system under control in a vaccinated-population scenario?

Responding to this research question is helpful because NPIs provide a foundation on which to build actions to reactivate the tourism sector post-pandemic. More specifically, due to their major impact on the sector and its primary characteristic – mobility – they help support (a) those countries that have vaccinated the majority of their population and that are currently considering how to restore tourism activity (e.g. Spain, France, or the US), (b) those that are still in the vaccination roll-out process and are seeking to bring forward the recovery of the tourism sector by adopting measures that are efficient in epidemiological terms but less harmful to tourism (e.g. Thailand or Costa Rica) and (c) authorities dealing with future public health crises classified as Public Health Emergencies of International Concern by the WHO.

2. Literature review

2.1. NPIs from the perspective of tourists, destination managers, and public healthcare managers

Ensuring traveller health and wellbeing is a major consideration for tourism management and public health (Wang et al., 2019). To contain any pandemic, the first step is to implement a series of NPIs, with the primary aim of protecting the public's health. But such measures have economic consequences. The initial adoption of NPIs may be partly explained by Protection Motivation Theory, which holds that such a response is based on individuals' perceptions of health-risk and self-efficacy in coping. This is because their appraisal of both threats, on the one hand, and their capacity to cope, on the other, can help improve their protection motivations and the decisions they make (Wang et al., 2019). Regarding COVID-19, this theory may help explain the adoption of the different NPIs by healthcare personnel (Bashirian et al., 2020) as well as by the general population (Prasetyo et al., 2020). It may even explain how trust in the different authorities that impose the measures affects the destination visit intention (Hsieh et al., 2021). However, it is necessary to better understand this dynamic, including the economic concerns of individuals (Rosman et al., 2021) and tourist behaviour in the face of these measures (Matiza, 2022).

In the context of COVID-19, studies dealing with how a pandemic may affect travel intention are acquiring even greater relevance (Hall, Prayag, et al., 2020; Ram et al., 2022). Global pandemics have made a significant contribution to increasing levels of fear among travellers regarding travel-related risks (Gupta et al., 2021), and even continued exposure to pandemic-related media reports can impact travel intention (Seyfi et al., 2021). According to Lehto et al. (2008), for effective crisis management, such as in the case of the COVID-19 pandemic, it is essential to gain an understanding of the perceptions (and changes in perception) of tourists. This will provide insights into their travel intention (Isaac & Keijzer, 2021).

Since the 1990s, tourism researchers have studied perceived risk and its impact on travel decision-making and tourist behaviour (Huang, Dai, et al., 2020; Jeon & Yang, 2021). In particular, since serious diseases such as SARS, bird flu, and MERS have affected the tourism industry severely, the economic impact of pandemics in tourism and their influence on travel intention have been widely discussed in the literature (Floyd et al., 2004; Lee et al., 2012). However, the COVID-19 pandemic has impacted the

world to an unprecedented extent, in that it is far more infectious and has generated a much greater degree of vulnerability for people than the previous crises of SARS or MERS, which activated people's health-protective behaviours (Bae & Chang, 2020). The spectre of COVID-19 has reduced visitor intention, which has slashed income in the tourism sector as a whole (UNWTO, 2020a) and has changed travel behaviours among tourists (De Vos, 2020).

Some researchers have examined tourists' health-protective behaviours, such as prevention (Hartjes et al., 2009) or health-seeking behaviours during travel (El-Ghitany et al., 2018). However, NPIs are relatively under-studied in the tourism literature (Chung et al., 2021; Kim et al., 2022). Among the few studies that *have* addressed this topic is that of Lee et al. (2012), which deals with the impact of NPIs on potential international tourists' travel intentions.

More recent articles, dealing with COVID-19, suggest that NPIs are an important component of society, as means to help prevent further outbreaks (Lai et al., 2020), improve destinations, enhance business and consumer resilience, and support the recovery of the tourism sector following the pandemic (Gössling et al., 2021; Hall, Scott, et al., 2020; Huang, Makridis, et al., 2020; Ran et al., 2020). Furthermore, they do not only play an important role on the level of personal and environmental hygiene measures to prevent the spread of the virus – they also encourage tourists to overcome psychological barriers and feel motivated to travel (Chi et al., 2021; Chung et al., 2021), exerting an effect on tourist decision-making (Hidalgo et al., 2021) and travel intention (Chung et al., 2021; Ram et al., 2022). On this point, Das and Tiwari (2020) found that adapted behaviour (that is, regulated by NPIs) in pandemic situations can modify tourists' trip intention. In a study whose findings resemble more closely our vaccinated-population scenario, Xu et al. (2021) analyze how NPIs – both those adopted by tourism operators and those that tourists can implement personally – may affect travel intention both during the COVID-19 pandemic and once it is over. Their results show that the NPIs implemented by tourism operators have a positive effect on travel intention during the pandemic, while those implemented by the tourists themselves exert this same effect both mid- and post-pandemic. Other studies seek to identify how NPIs may affect tourist consumer behaviour and decision-making (Hall, Prayag, et al., 2020). Moreover, Williams et al. (2021) have demonstrated that, if tourist perceived threat is high, there is a greater propensity among tourists to adopt the protection measures.

However, many of these works analyze the NPIs as a whole, without taking into account that the implementation of different measures leads to different responses from the tourist. Thus, it is observed how the population, in general, seems to show a certain consensus regarding the acceptability of these NPIs, so long as they contribute to reducing the risk of a collapse in the public healthcare system (Sabat et al., 2020). Regarding the relaxation of such measures, a study conducted in the Netherlands concludes that a return to normal business operation is key to the reactivation of the economy and that reduced opening hours in the hospitality industry would pose no problem to the public if it meant that certain measures could be relaxed, such as social distancing. The Dutch public is also willing to do without certain facilities if this means avoiding more drastic measures such as another lockdown (Chorus et al., 2020). More generally, there is also a public consensus regarding the need to assimilate the wearing of surgical facemasks (Nohl et al., 2021) or keep the social distancing (Sánchez-Pérez et al., 2021), whereas those measures that entail the transfer of personal and sensitive data pose a greater problem (Kim & Kwan, 2021). Other means, such as border control and monitoring, the prohibition of meetings that present a certain risk, or the control of positive cases are also accepted by the general population, while there is greater resistance to the imposition of curfews, monitoring via mobile phone apps, or the suspension of public transport (Sabat et al., 2020). Considering the economic impact of the NPIs, this acts as a moderator of the acceptability, among the general public, of the measures that are implemented in a given territory (Sabat et al., 2020).

Alongside tourists, destination managers form another public involved in the economic impact of NPIs on tourism. Among destination managers, studies have found that tourist control measures are the most widely accepted type of NPI, especially in the case of international tourists – such as

requiring them to prove a negative PCR[1] result on arrival or departure (Li et al., 2022). Steps that the tourist may personally take to protect the spread of the virus (such as frequent hand-washing), as well as limiting the venue capacity of enclosed spaces and ventilating such spaces with fresh air are also considered acceptable by destination managers (Li et al., 2022). That said, destination managers are found to be particularly concerned about the economic consequences that the imposition of NPIs, in general, may bring about, especially if they are highly restrictive and kerb the arrival of visitors excessively, so the frequency of the application of several NPIs differs according to their dependence on service or touristic sectors (Segarra-Blasco et al., 2021). Managers are also calling for strong economic incentives to assist the recovery of firms in the sector (Sánchez-Rivero et al., 2021), but, so long as limited public funds are being targeted at mitigating the health effects of the pandemic, tourism will have to face fierce competition to achieve the injection of economic support it so urgently needs.

Finally, the aim of reducing public-health risk is also of concern to healthcare managers, and, among this collective, there seems to be a high degree of consensus regarding the need to maintain PPE[2] measures (Nohl et al., 2021). Other actions, such as controlling the movement and whereabouts of those infected with the virus or routes of transmission, are also considered necessary (Chen et al., 2021). Finally, social distancing between healthcare professionals (based on a stipulated 'safe distance' and strict hygiene protocols) (Iftekhar et al., 2021) may start being relaxed, as and when high vaccination quotas are achieved, and this group is in favour of such a move (Fontenot et al., 2021).

We can see, then, that these three stakeholder groups involved in the tourism activity of a destination evaluate the situation from different perspectives, which are shaped by their respective objectives.

2.2. Research questions

According to experts, in countries where the majority of the population had access to the vaccine, increased indoor activity might accelerate the spread again. A moderate, adaptive level of NPIs will thus remain necessary (Iftekhar et al., 2021). That study, which was based on the Delphi method and centred on Europe, concludes that epidemiological aspects *combined with* economic, social, and health-related consequences provide a more holistic perspective on the future of the COVID-19 pandemic.

The impact of the NPIs adopted may not be uniform across all the actors of the same tourism stakeholder group, as Sigala (2020) notes. According to this author, for example, the pandemic and the NPIs have different impacts on tourism operators depending on their characteristics, such as the nature of the tourism sector they deal with (intermediaries, event organizers, transportation, accommodation type, or attraction-provider) and their size, location, management, and ownership style. Thus, for countries whose GDP relies on tourism activity, the conundrum lies in how to implement an appropriate combination of measures to keep public health risk under control while at the same time reviving tourism activity. As the literature review has shown, there are studies that analyze the acceptance of different measures by the various publics involved, but it is necessary to address the following research overarching question:

> RQ1: Is there a particular set of NPIs that would enable tourism activity to continue while simultaneously keeping the public healthcare system under control in a vaccinated-population scenario?

To address the research question, we conducted a study taking a triangular approach comprising three publics (tourists, destination managers, and public healthcare managers) and a variety of measures (15 NPIs). This methodology is appropriate 'when researchers intend to best understand a phenomenon by obtaining different but complementary data on the same topic, allowing researchers to enhance the validity of their findings if they compare their qualitative with the quantitative results' (Kwok, 2012). This technique enables several RQs to be validated through the

comparison of different data-sets relating to the same topic, followed by a synthesis of the results to interpret the research findings (Creswell & Clark, 2007).

We therefore approached RQ1 via three specific research questions relating to these three publics: RQ1.1 – Do supply and demand preferences match, with respect to NPIs?; RQ1.2. – Are decision-makers in tourism and public health in agreement over which NPIs to adopt?; RQ1.3 – Which NPIs reduce public-health risk *and* boost travel intention? The research structure is synthesized in Figure 1.

The studies published to date carry out a single analysis for each of the publics involved (Lee et al., 2012; Li et al., 2022), mainly adopting an epidemiological perspective (Haug et al., 2020), while those that focus on the economic impact on the tourism sector analyze the NPIs as a whole (Chung et al., 2021), without considering that each type of measure has a different impact on the sector.

As the context was that of the COVID-19 pandemic, and given the need to plan for the future of the tourism sector, rather than simply cataloguing the past, the perspective taken here is that of a 'vaccinated population' scenario. This is defined as one in which at least 70% of the population of a country is vaccinated (Fine et al., 2011), although this does not imply reaching herd immunity, as noted in the Introduction, so some NPIs do need to be maintained.

3. Methods

This study focused on Spain, where the pandemic has had a major impact on tourism, this being the country's principal sector in terms of its contribution to GDP (Sánchez-Cañizares et al., 2020).

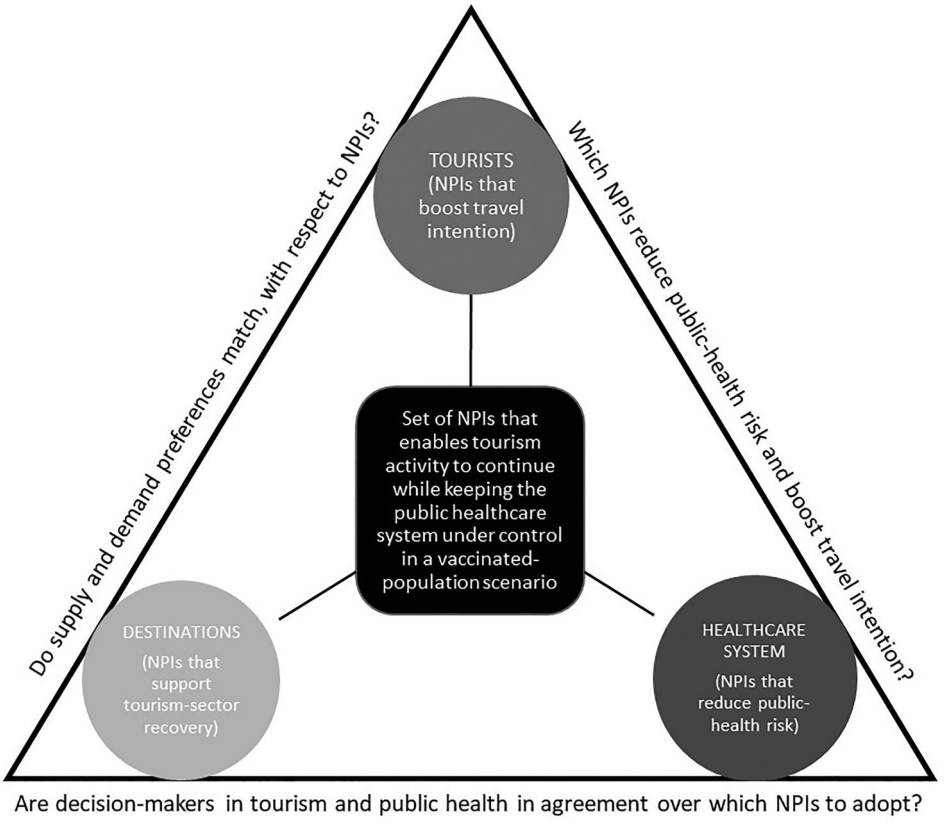

Figure 1. Triangular research structure.

The research on the three publics under analysis (tourists, destination managers, and public healthcare managers) was conducted by survey. For the first group, a telephone survey was conducted in which 250 Spanish tourists were interviewed, using a random sample based on calls made to landlines and mobile phones during April–May 2021. The participants had to be of legal age and to have undertaken at least one tourism trip per year prior to the COVID-19 pandemic. The average age of the sample was 46.64 years (SD = 16.84); 50% were women; 38% had studied to intermediate (post-compulsory) level; 40% had studied to university level; and 55.6% were employed.

In the case of the second group, destination managers, a self-administered survey was distributed, following an explanatory online meeting for participants. The survey was sent to destination managers (in technical or political posts) at local or regional level from 47 destinations, covering both municipalities and provinces. The profile of the destinations was as follows: urban-cultural (44.7%); sun and sand (25.5%); and rural and adventure/sports (29.8%). The average population of the destinations was 135,612 inhabitants and the average approximate number of tourist arrivals was 723,284 tourists per year (in 2019). This study was completed in May 2021.

Finally, using the same survey procedure, twenty-nine public healthcare managers (72.4% hospital directors or healthcare-centre managers; 27.6% hospital heads of service or doctors; 72.4% from metropolitan areas and 27.6% from rural areas) were asked about the need to continue or not with the NPIs once the population had been vaccinated, and about the risk that their respective healthcare settings would reach saturation-point due to COVID-19 in that scenario. This study was carried out in May 2021.

The range of NPIs implemented throughout the world to control COVID-19 is wide and varied in terms of the gradation of the measures, depending on the country in question (e.g. different maximum permitted venue capacity or different opening hours for the same type of business). For example, Haug et al. (2020) catalogued 6,028 NPIs carried out by 79 countries in response to the COVID-19 pandemic and reduced these down to 46 NPIs. They then evaluated them according to their ability to reduce the transmission rate of COVID-19. In the present study, from this list, we selected 15 measures (see Appendix 1). In making this selection, we applied the following criteria:

– The NPI was implemented during the COVID-19 pandemic in the country under study. This helped ensure that the different publics would be familiar with it and could more accurately assess its impact in a vaccinated-population scenario.
– It should be feasible to implement the NPI in question in a vaccinated-population scenario (which would discount any measures such as lockdowns or border closures, for instance). This aspect was evaluated by a panel of four experts (2 working in health economics and 2 in public healthcare) whose profile is shown in Appendix 2. Contact with this panel was made through online meetings that were recorded and subsequently analyzed by the researchers.
– The NPI can make a direct impact on the tourism sector. Although all the measures can be associated in one way or another with travel and tourism, clearly the link between some of them is more direct (maximum permitted capacity of restaurants vs. capacity of schools, for instance).

To validate our selection, the measures that were operative in Spain in May 2021 were compared to the series of NPIs included in Appendix 1. Only one measure (referring to 'restrictions at the regional or local level of mobility') was found to sit outside our selection. It is also understood to be an exceptional measure applied only in the event of major outbreaks. The rest of the European Union countries propose measures very similar to those included in our selection, according to the information published on https://reopen.europa.eu/en/ in May 2021.

To reduce the number of factors to be worked with, a principal component analysis was performed on the 15 NPIs selected and for the biggest sample (tourists). Both the KMO index (0.89) and Bartlett's Test of Sphericity (p-value = 0.00) indicated that the interventions could feasibly be synthesized into homogeneous groups. Four components were identified that retained 68% of

the variance, all the extraction communalities being greater than 0.50. It can be observed that each of the 15 NPIs clearly correlates with a single component. On that basis, aspects such as the use of facemasks or the number of people who are permitted to gather make up the component we call Social Distancing (SD); issues related to the improved staffing and equipment of hospitals and epidemiological monitoring make up the Public Healthcare-System Improvements (HI) component; data records, PCR tests, and other personal controls form the Tourist Controls (TC) component; and all matters related to opening times and permitted venue/location capacity come under the Capacity and Opening-Hours Regulation (CAP) label (see Table 1). The measures were grouped in this way in order to analyze their effect on the respective aims of the three publics under study.

4. Results

4.1. The demand- and supply-side perspectives on the NPIs

The economic consequences of implementing NPIs to control the pandemic are reflected in both the demand- and the supply-side of the tourism industry. Therefore, the opinions of both tourists and destination managers were analyzed to answer RQ1.1, formulated as: Do supply and demand preferences match, with respect to NPIs?

Both publics were presented with the vaccinated-population scenario. Drawing on previous research (Das & Tiwari, 2020; Lee et al., 2012), a 7-point scale was used to measure participant perceptions of the capacity of each of the 15 NPIs to impede or boost tourism activity. These measures were then grouped (based on mean scores) into the four types of NPI identified: Social Distancing (SD), Public Healthcare-System Improvements (HI), Tourist Controls (TC), and Capacity and Opening-Hours Regulation (CAP).

To analyze the data, two linear regressions were conducted. For each group, the dependent variable reflected its objective in relation to tourism activity. Thus, for tourists, 'intention to undertake domestic tourism' was the dependent variable ('In a vaccinated-population scenario, please indicate the strength of your intention to take a holiday in Spain'). This was measured with two items on a 7-point scale (very low–very high; very unlikely–very likely), which presented a Cronbach's alpha of 0.87. For destination managers, 'tourism sector recovery' was the dependent variable: 'Please indicate the extent to which you believe that, assuming a vaccinated-population scenario, tourism demand will experience a rapid recovery and return to pre-pandemic figures (where 1 = totally disagree and 7 = totally agree)'. For both publics, the explanatory variables were the four groups of NPIs.

Prior to the analysis, the assumptions were checked, as follows: normality of the residuals using the Jarque–Bera test (tourists' p-value < 0.01; destinations' p-value = 0.8); homoscedasticity using the

Table 1. Matrix of rotated components for the PCA.

	Component			
NPIs	1 (CAP)	2 (HI)	3 (TC)	4 (SD)
NPI 1	0.19	−0.02	0.00	0.83
NPI 2	0.25	0.19	0.16	0.63
NPI 3	−0.03	0.76	0.25	0.16
NPI 4	0.03	0.78	0.21	0.09
NPI 5	0.15	0.82	0.06	0.05
NPI 6	0.17	0.81	−0.05	−0.07
NPI 7	0.01	0.65	0.45	0.09
NPI 8	0.22	0.24	0.80	0.06
NPI 9	0.28	0.20	0.78	0.09
NPI 10	0.73	−0.01	0.09	0.09
NPI 11	0.71	0.28	0.22	0.11
NPI 12	0.86	0.02	0.09	0.09
NPI 13	0.79	0.03	0.25	0.05
NPI 14	0.84	0.07	0.01	0.19
NPI 15	0.78	0.14	0.12	0.25

Breusch–Pagan test (tourists' p-value < 0.01; destinations' p-value = 0.8); and absence of multicollinearity (VIF <5). In the case of the tourist sample, given that the assumptions of the linear regression model were not met, a robust estimation of the confidence intervals was deemed necessary, using wild bootstrapping (Pavlidis et al., 2008). The results for both publics are shown in Table 2.

According to the results we obtained, tourists present a greater intention to carry out domestic tourism if the destination has social distancing measures in place ($\beta_{SD} = 0.29$) along with improved public health measures for the control and monitoring of the pandemic ($\beta_{HI} = 0.46$). Therefore, regarding SD and HI measures, what matters to tourists is not the drawbacks these generate but rather the protection they provide for touristic activity. However, with regard to the NPIs restricting capacity and opening hours, their operation in the destination (in a vaccinated-population scenario) constitutes a disincentive to the intention to undertake tourism ($\beta_{CAP} = -0.34$). This result may be explained by the uncertainty generated vis-à-vis the expectation of being satisfied with the stay, due to the fact that the activities that can be carried out at the destination are temporarily restricted (Li & Ito, 2020). Finally, tourist controls do not affect the intention to undertake domestic tourism, perhaps because the requirements for mobility *within* a country are less rigorous than those imposed for cross-border travel.

Concerning destination managers, neither the social distancing factor nor the capacity factor is significant, presenting a 95% confidence level. By contrast, the public healthcare-system improvements *are* significant, in this case negatively so, which is why, according to the destination managers, the continuation of these measures is detrimental to the recovery of tourism. One explanation may be the fact that it is precisely the interventions that are targeted at providing hospitals with additional materials and personnel and developing an adequate epidemiological monitoring system that require a greater share of public resources. The knock-on effect of this investment is likely a decrease in other areas of public spending, among which is tourism promotion. As an example, the cost of tests, tracing, and quarantines in Spain amounts to 9 million Euros per day (López-Valcárcel & Vallejo-Torres, 2021) and the incremental investment in the public health and social care system was 8,284 million Euros in 2020 alone, according to Spanish Government figures.[3] Turning to tourist controls, these were found to present a positive and significant relationship with the recovery of the sector, according to destination managers, which is why they are regarded as NPIs that will help the tourist sector to recover.

Regarding RQ1.1 (Do supply and demand preferences match, with respect to NPIs?), the results rule out any such match. While, for tourists, the combination of Social Distancing (SD) and Public Healthcare-System Improvements (HI) increase intention to undertake domestic tourism, for destination managers, it is Tourist Controls (TC) that help to generate a rapid recovery in tourism activity. Even those measures related to HI present opposite effects, depending on the public in question: positive, in the case of tourists, and negative, in the case of destination managers.

Table 2. Estimated model explaining the tourists' and destination managers' preferences among the NPIs.

NPI CATEGORIES	TOURISTS (travel intention for domestic tourism) Estimated coefficients (95% confidence interval–wild bootstrap)	DESTINATION MANAGERS (recovery of the tourism sector) Estimated coefficients (95% confidence interval)
Intercept	2.83** [1.69;3.96]	4.71** [2.32;7.11]
SD	0.29** [0.119;0.49]	−0.04 [−0.38;0.30]
HI	0.46** [0.26;0.62]	−0.66** [−1.08;−0.25]
TC	0.04 [−0.12;0.21]	0.53** [0.18;0.89]
CAP	−0.34** [−0.48;−0.16]	0.19 [−0.18;0.56]

**p-value < 0.01

4.2. The public-healthcare perspective on the NPIs

The NPIs share one primary purpose: to reduce public-health risk. However, the interaction between the different measures and tourism demand and supply is evident. Therefore, it is necessary to determine whether the preferences of the public healthcare managers match those of destination managers (RQ1.2: Are decision-makers in tourism and public health in agreement over which NPIs to adopt?) and those of tourists (RQ1.3: (Which NPIs reduce public-health risk *and* boost travel intention?). Starting with the four groups of NPIs already analyzed for tourists and destination managers, we then analyzed the extent to which the healthcare managers felt that the continuation of these four categories of NPIs (explanatory variables) would be useful in terms of controlling the risk that the public healthcare system could reach saturation-point (outcome variable: 'In your opinion, to what extent would your particular healthcare setting/centre be at risk of reaching saturation-point due to COVID-19, assuming a vaccinated-population scenario? (where 1 = extremely high risk and 5 = low risk/normality').

Due to the difficulty of obtaining a sufficient sample of healthcare managers to perform parametric analysis techniques (e.g. linear regression), a semi-qualitative technique – Fuzzy Set Comparative Qualitative Analysis (fsQCA) – was applied. This technique combines the logic of qualitative approaches, which are rich in information, with more generalizable quantitative methods (Ragin, 2014). According to Woodside (2013), fsQCA can be employed when there is asymmetry in the relationships under evaluation. According to this author, this would be fulfilled if the correlation between the outcome variable (risk faced by the public healthcare system) and each condition (SD, HI, TC, and CAP) does not exceed 0.7 (all four correlations are below 0.4).

Following the process suggested by Pappas and Woodside (2021), the data were first prepared in a tabular format with values of between 0 and 1, rescaling the original values into full membership, medium membership, and low membership (in line with the procedure presented by Calabuig Moreno et al., 2016 and Pappas et al., 2017). Prior to this step, we checked to ensure that there were no necessary conditions to be defined in the analysis (consistency coefficient <0.9) (Ragin, 2008). This technique is designed to extract a set of solutions from this data-matrix that achieve sufficient coverage (comparable with the R-square reported on regression-based methods) (Woodside, 2013) and consistency (the explicit connection between a combination of causal conditions and an outcome) (Rihoux & Ragin, 2008). In our case, the configurations gave us the set of NPIs that must be maintained once the population has been vaccinated to ensure that the risk of saturation in the public healthcare system is low. This technique has been widely used in other studies dealing with tourist activity (Carvajal-Trujillo et al., 2021) and was more recently used to determine the effect of COVID-19 on such activity (Cheng & Liu, 2021; Pappas, 2021).

Using fsQCA analysis, the combinations of NPIs that were helpful in terms of consistency and coverage were thus identified. Once the truth table had been estimated, we eliminated those solutions that did not achieve a level of raw consistency of more than 0.75 (Rihoux & Ragin, 2008). This

Table 3. Set of proposed solutions, from the perspective of public healthcare managers.

	SOLUTIONS		
NPI CATEGORIES	1	2	3
SD (social distancing)	○	[?]	○
HI (public healthcare improvements)	●	○	●
TC (tourist controls)	●	●	[?]
CAP (capacity restrictions)	●	[?]	[?]
Raw consistency	0.88	0.88	0.97
Raw coverage	0.78	0.42	0.29
Unique coverage	0.39	0.02	0.05
Overall consistency	0.86		
Overall coverage	0.87		

●: This NPI category is present in the solution; [?]: This NPI category is not present in the solution; ○: This NPI category does not influence the solution

delivered three proposed solutions (see Table 3) with a consistency of 0.86 and a coverage of 0.87, which indicates that the model is useful and can contribute to advancing the theory (Woodside, 2013).

The solution that converges in the greatest number of cases (coverage) is that which proposes a continuation of the NPIs relating to public healthcare improvements, tourist controls, and restricted venue capacity/opening hours (Solution 1). Meanwhile, as social distancing measures and maximum capacity limits are successively relaxed, tourist controls (second solution) should be maintained. Finally, healthcare improvements must be maintained if both tourist controls and capacity restrictions are relaxed (third solution). As this analysis technique is semi-qualitative, it provides no results regarding the size of the effect on the output variable.

The comparison of the results shown in Table 3 with those shown in Table 2 enables us to respond to RQ1.2 and RQ1.3. First, both destination managers and public healthcare managers identify measures the measures classified as Tourist Controls (TC) as suitable for achieving their respective aims. Second, it those NPIs related to Healthcare-System Improvements (HI) that combine the interests of tourists *and* healthcare managers, as they contribute to reducing public health risk while, at the same time, boosting tourists' intention to conduct domestic tourism.

5. Discussion of results

Considering the range of interventions that are typically applied to control health crises caused by highly-contagious pathogens in recent times (such as SARS, bird flu/H1N1, or COVID-19), for which effective pharmacological interventions are not initially available, a triangular approach was taken to identify the perspective of the three publics most directly involved in the recovery of the tourism sector following a health crisis: the tourists, destination managers, and public healthcare managers.

The results suggest that, once the spread of the virus among the population has been brought under control by means of a vaccination programme, the publics we consulted in the present study view the NPIs differently – quite logically so, given the different vantage-point each of the three profiles has on the health crisis (Sigala, 2020). Efforts to control the incidence of COVID-19 have sought to simultaneously address its impact on public health and its impact on the economy (Anderson et al., 2020; Chen et al., 2020). The present study analyzes the complex balance between these two aspects.

Regarding social distancing interventions, these only exert a positive effect on tourist travel intention, being regarded as irrelevant for the recovery of tourism (according to the destination managers) and in terms of the risk of public healthcare-service saturation (according to the managers of hospitals and health centres).

Turning to NPI concerned with improved control and monitoring of public health, this was considered relevant by all three publics analyzed in our study, but not always in the same sense. Thus, rather than aiding the recovery of the tourism sector, it is thought to have a cooling effect, as it requires significant consumption of economic resources that, consequently, cannot be used to promote tourist destinations (Sánchez-Rivero et al., 2021). It is undoubtedly the most costly package of measures: for example, the UK's track-and-trace system has been allocated a budget of 38 billion pounds[4] (more than 40% of the total additional expenditure forecast for the UK national health system), which is an extremely significant amount if compared to the cost of the vaccination process in the UK, which amounts to 4.7 billion pounds.[5] However, to encourage domestic tourists to travel while simultaneously keeping the public health situation under control, an effective disease-monitoring system is required (Chen et al., 2021).

Tourist controls have a positive effect both on the recovery of the sector (according to the destination managers) (Li et al., 2022) and in terms of keeping the public health situation under control (according to healthcare managers). However, from the perspective of the tourist, no effect on their intention to undertake domestic tourism was identified. As noted earlier, as domestic tourist trips do not involve border crossings, there are far fewer such controls in this scenario. Specifically, in the case

of Spain, measures to restrict internal mobility are only imposed in exceptional cases and have to be endorsed by the courts.

Finally, regarding restrictions placed on venue capacity and opening-hours in tourist establishments and attractions, here, too, we find different views depending on the public in question. While, according to destination managers, such measures do not seem to affect the recovery of the tourism sector, to healthcare managers, they *are* important for keeping the disease under control (Chorus et al., 2020). Meanwhile, for the tourists themselves, these restrictions generate the opposite effect, cooling their travel intention (Da Silva Lopes et al., 2021).

In sum, the few studies that analyze the effect of NPIs on tourism show that they positively affect tourist travel intention (Chung et al., 2021; Hidalgo et al., 2021; Lee et al., 2012), but these studies do not consider the differences between the categories of NPIs and do not analyze the consequences for other publics involved, such as destination managers and healthcare managers, in dealing with a public health crisis. Addressing this gap, the present study identified important differences in the relevance attached to NPIs by different publics in terms of the three objectives analyzed (travel intention, the resumption of tourism activity, and the reduction of the public health risk) in the context of COVID-19.

6. Conclusions and implications

The main conclusion that can be drawn from the analysis of the preferences of the three publics involved in tourism activity during a pandemic-induced crisis is that there is no single strategy for implementing measures that simultaneously fulfils the objectives of all three. It can be observed

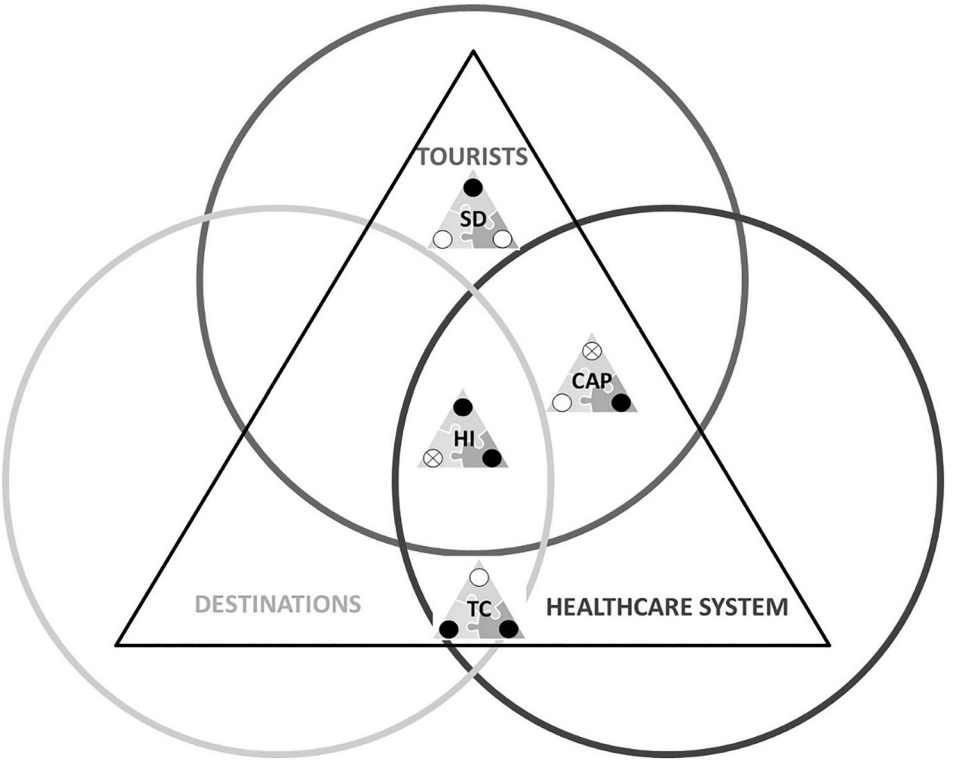

Figure 2. Results summary using the triangular research framework. **N**ote: In the case of public healthcare managers, the first solution (with the higher raw coverage) is used for the figure. ●: This NPI category has a significant positive impact; ?: This NPI category has a significant negative impact; ○: This NPI category does not exert an influence

from the results represented in Figure 2 that the only set of measures that appears at the intersection of the three publics are those related to Healthcare-System Improvements (HI). However, this has a contradictory effect on the objectives of the different audiences, increasing travel intention and allowing public health-risk to be kept under control, but *not* supporting rapid sector recovery. Indeed, destination managers consider that allocating resources to these measures undermines the achievement of a rapid recovery in tourism activity. The knock-on effect of the high investment in the healthcare system is likely a decrease in tourism promotion. This enables us to answer our overarching research question: there is no combination of NPIs that favours the interests of both tourism supply *and* tourism demand *and* the need to maintain a low public-health risk. If policymakers maintain, and even increase, the resources targeted at recovery, promotion, and innovation of the tourism sector, the negative effect of HI measures noted by destination managers in terms of sector recovery will likely become insignificant in the medium term. At present, the combination of measures that aligns with the greatest consensus is that relating to Tourist Controls (TC), on which both destination managers and healthcare managers agree and which do not represent a barrier for domestic tourists.

Other sets of measures, such as those relating to social distancing (SD) or Capacity and Opening-Hours Regulation (CAP), do not achieve consensus between the three publics under analysis in terms of the merits of their application. Therefore, once the population is vaccinated, what *can* be identified is a *preferable* – even if not optimal – strategy, consisting of a combination of tourist controls (which favour the rapid resurgence of tourism activity and help reduce health risks) and improvement to the public healthcare system and monitoring measures (designed to sustain the recovery of the tourism sector in the medium term).

These results reflect an ongoing complaint among tourism firms and destination managers throughout the pandemic: the fact that governments have not taken economic interests into account alongside public health concerns. This study has therefore taken a multidisciplinary (triangular) approach to identify the perceptions and relative risks and benefits of resuming tourism activity in the pandemic, from the perspective of the three aforementioned stakeholder groups. Likewise, policymakers and stakeholders in different areas (health, consumer affairs, and industry) will need to work collaboratively, with a pluralistic mindset, to confront future crises.

Regarding the contribution of this study to the current state of the art, the theories that have supported the extant literature have mainly led researchers to analyze the adoption of the measures from the perspective of those who have to implement them (e.g. Itani & Hollebeek, 2021; Lee et al., 2022) or to conduct an efficiency analysis in terms of cost reduction (deaths, hospitalizations, sick leave, etc.) in public health (e.g. Bussell et al., 2019; Lin et al., 2010). However, it is also important to advance from a more general perspective that takes into account both costs *and* benefits in economic and public health terms, where the maximization models of social welfare offer only a partial view (Iwamoto, 2021). Although the literature has analyzed the influence of NPIs on tourist travel intention (Lee et al., 2012), on the risk of resurgence (Chen et al., 2021), and on destination managers' concerns over tourist arrivals and the economic impact that NPIs could have (Segarra-Blasco et al., 2021), no study, to date, has attempted to address this threefold predicament as one whole. The present work therefore complements previous results by factoring-in the perspective of three primary publics directly affected by the implementation of NPIs in the tourism sector, given the conditions that we will continue to see in the coming years in the vaccinated-population scenario.

Interpretation of the results of this study should take into account that they are scenario-based and that the samples of destination managers and healthcare managers were small, which affects the generalizability of the findings. That said, these two publics are particularly difficult to engage in external research, due to their high degree of specialization and, at the present time, their exceptionally high workload due to the pandemic. Finally, this study offers a relatively general and generalizable analysis because a study of these characteristics including all the measures that different countries have been adopting during the management of COVID-19 is not feasible, considering the specifics of each territory.

Notes

1. Polymerase Chain Reaction test, to detect the presence of a virus.
2. Personal Protective Equipment. This includes items such as surgical gowns, gloves, goggles, and visors.
3. https://tinyurl.com/n8d5w5jr
4. National Audit Office: https://www.nao.org.uk/covid-19/cost-tracker (Covid-19 cost summary-charts-DHSC).
5. Ibid.

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Appendix 1. NPIs analysed in the study

Dimension	NPI: measured from 1 (constitutes an impediment to tourism) to 7 (constitutes a driver for tourism)
Social Distancing (SD)	NPI 1: The number of people not living together who are permitted to meet in small gatherings and the organization of large-scale events is restricted
Social Distancing (SD)	NPI 2: The wearing of a facemask in public places is compulsory
Public Healthcare Improvements (HI)	NPI 3: Hospitals have been equipped with sufficient technical and human resources to deal with possible outbreaks
Public Healthcare Improvements (HI)	NPI 4: Beds allocated to COVID patients have been increased both on the ward and in the ICU
Public Healthcare Improvements (HI)	NPI 5: Management maintains close contact with experts to assess the measures to be taken
Public Healthcare Improvements (HI)	NPI 6: An effective warning system is in place for new outbreaks
Public Healthcare Improvements (HI)	NPI 7: Improvement of the contagion-detection system, PCR tests, and rapid communication of results
Tourist Controls (TC)	NPI 8: It is the obligation of the tourist to provide their personal contact information (telephone number, name, etc.), and the operators at the destination must register this for use in the track-and-trace system (also obligatory)
Tourist Controls (TC)	NPI 9: Checks are carried out at all access-points to the destination (PCR, vaccination passport, etc.)
Capacity (CAP)	NPI 10: Night curfew is imposed
Capacity (CAP)	NPI 11: Venue capacity and opening hours are restricted and social distancing measures are imposed in shopping centres and stores
Capacity (CAP)	NPI 12: Venue capacity and opening hours are restricted in entertainment venues, including bars and restaurants
Capacity (CAP)	NPI 13: The use of services related to wellness and beauty (spa, beauty salons, among others) is restricted
Capacity (CAP)	NPI 14: Capacity and opening hours and social distancing measures are imposed on beaches
Capacity (CAP)	NPI 15: Venue capacity and opening hours and social distancing measures are imposed on museums and monuments

Note: In Spain, the regulations stipulate that regional governments can impose local restrictions on mobility in their respective territories, if deemed necessary, pending ratification by a court. Given the exceptional nature of the measure, applicable only to municipalities with a very high incidence and the demanding legal requirements for its implementation, this NPI is not included in the analysis.

Appendix 2. Expert panel profile

	Profession	COVID-19 related expertise
Expert A	University Professor in Health Economics	Adviser to the Spanish Government (Ministry of Science) on the management of the pandemic
Expert B	University Professor in Health Economics	Member (Senior Management Board), Spanish Health Economics Association Author of several books, and of articles on COVID-19 Regular contributor to communications outlets on topics related to COVID-19
Expert C	Medical Doctor specializing in Preventive Medicine and Public Health	Heads the Health Service Research Area of a regional research centre in Spain Author of articles for the Spanish Government website regarding the management of the pandemic. Regular contributor to communications outlets on topics related to COVID-19
Expert D	Lecturer in Epidemiology and Public Health at the Andalusian School of Public Health (EASP)	Designed the course delivered throughout Andalusia (Spain), to train track-and-trace personnel Regular contributor to communications outlets on topics related to COVID-19