

# Minimising perceived travel risk in the aftermath of the COVID-19 pandemic to boost travel and tourism

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## Abstract

**Purpose** – This study aims to confirm the expected impact of coronavirus (COVID-19) related to perceived travel risk on the likelihood of tourists to visit a destination. It then aims at identifying the key predictors of perceived travel risk in the aftermath of the COVID-19 pandemic. A theoretically grounded framework is proposed which can be further improved to understand and predict international travel behaviours within the context of global pandemics.

**Design/methodology/approach** – A mixed-methods design is adopted. In the first phase referred to as Study 1, a cross-sectional design is used based on a sample of 217 international outgoing tourists surveyed at the Mauritian International Airport and data is analysed using hierarchical regression. In Phase 2, referred to as Study 2, a purposive sample of tourists around the world are interviewed and data is analysed using the thematic analysis technique.

**Findings** – The results show that amongst those tourists who are willing to travel in the aftermath of the COVID-19 crisis, the related perceived risk is likely to influence their travelling intention. Several key predictors of perceived travel risks are uncovered, those are categorised as COVID-19 status; transportation services; national sanitary measures; health-care services; accommodation services; ecotourism facilities. Moreover, the potential effects of those factors on perceived COVID-19 related travel risk are likely to be moderated by the trustworthiness of the information.

**Practical implications** – The implications of the study are important for researchers and policymakers to better understand and predict travellers' behaviour in times of pandemics. These implications are also important to tourism marketers and transport and hospitality service providers to more effectively manage and mitigate the effect of such events.

**Originality/value** – The study provides an original comprehensive model grounded in the social cognitive theory and protection motivation theory to understand the predictors of perceived travel risks in relation to COVID-19 at a destination.

**Keywords** COVID-19, Travel intention, Hierarchical regression analysis, Tourists' risk perception

**Paper type** Research paper

**设计/方法/途径**：本文采用了混合的研究方法设计。在研究1的第一阶段中，本文采用了横向比较研究设计，对在毛里求斯国际机场进行调查收集的217名国际出境游客样本，使用分层回归分析了数据。在第二阶段（研究2）中，采用了立意取样的抽样方法，采访了来自世界各地的旅游者，并使用主题分析技术对数据进行了分析。

**目的**：这项研究证实了与COVID-19相关的感知旅行风险对游客访问目的地的可能性的预期影响。然后，它旨在确定COVID-19大流行后感知的旅行风险的关键影响因素。

**结论**：结果表明，在COVID-19危机之后愿意旅行的那些游客中，相关的感知风险很可能会影响他们的旅行意图。感知的旅行风险的几个关键影响因素分为：COVID-19状况；运输服务；国家卫生措施；医疗服务；住宿服务；生态旅游设施。而且，这些因素对与COVID-19相关的感知旅行风险的潜在影响可能会受到信息的可信度的调节影响。

**实践意义**：该研究对于研究人员和决策者更好地了解 and 预测大流行期间旅客的行为，以及旅游营销人员以及运输和酒店服务供应商提供有效管理和减轻此类事件的影响具有重要意义。

Received 6 May 2020  
Revised 26 June 2020  
24 September 2020  
4 December 2020  
Accepted 4 December 2020

原创性/价值：该研究提供了一个原创且全面的模型，以了解与目的地 COVID-19 相关的感知旅行风险的影响因素。

关键词：COVID-19, 游客风险感知, 出行意愿, 分层回归分析

文章类型：研究型论文

**Diseño/metodología/enfoque (límite 100 palabras) :** *Se adopta un diseño de métodos mixtos. En la primera fase, denominada estudio 1, se adopta un diseño transversal basado en una muestra de 217 turistas internacionales encuestados salientes del Aeropuerto Internacional de Mauricio y los datos se analizan mediante regresión jerárquica. En la segunda fase, denominada estudio 2, se entrevista a una muestra intencional de turistas de todo el mundo y se analizan los datos mediante la técnica de análisis temático.*

**Propósito (límite de 100 palabras) :** *Este estudio confirma empíricamente el impacto esperado de la percepción del riesgo de viaje relacionado con COVID-19 sobre la probabilidad de que los turistas visiten un destino. A continuación, tiene por objeto identificar los principales factores de predicción del riesgo percibido de los viajes tras la pandemia de COVID-19.*

**Hallazgos (límite de 100 palabras) :** *Los resultados muestran que entre los turistas que están dispuestos a viajar tras la crisis de COVID-19, es probable que el riesgo percibido relacionado influya en su intención de viaje. Se han descubierto varios predictores clave de los riesgos percibidos de los viajes, que se clasifican como: Situación de COVID-19; servicios de transporte; medidas sanitarias nacionales; servicios de salud; servicios de alojamiento; instalaciones de ecoturismo. Además, es probable que los posibles efectos de esos factores en la percepción de los riesgos de viaje relacionados con COVID-19 se vean moderados por la fiabilidad de la información.*

**Consecuencias prácticas (límite de 100 palabras) :** *Las repercusiones del estudio son importantes para que los investigadores y los encargados de formular políticas comprendan y prevean mejor el comportamiento de los viajeros en épocas de pandemia y también para que el mercado turístico y los proveedores de servicios de transporte y hostelería gestionen y mitiguen más eficazmente el efecto de esos acontecimientos.*

**Originalidad/valor (límite 100 palabras) :** *El estudio proporciona un modelo original y completo para comprender los predictores de los riesgos percibidos en los viajes en relación con COVID-19 en un destino.*

**Palabras clave :** *COVID-19 percepción del riesgo de los turistas intención de viaje análisis de regresión jerárquica*

**Tipo de papel :** *Trabajo de investigación*

## Introduction

The world has been hit by several pandemics episodes in its history, including the Spanish flu of 1918 followed by the Asian influenza of 1957, the Hong Kong flu of 1968, the 2003 Severe Acute Respiratory Syndrome (SARS) coronavirus and more recently the 2009 H1N1 Swine flu epidemic. Identified in December 2019, the novel coronavirus (2019-nCoV) has caused a recent eruption of respiratory illness that started in Wuhan, the capital city of Hubei province in the People Republic of China (PRC). In just one month and during the Spring Festival of 2020, the outbreak of novel coronavirus spread from storm centre Wuhan to the whole PRC. The outbreak of COVID-19 in China is an unprecedented event and it has quickly spread around the world, particularly in this air transportation era [1]. The World Health Organisation (WHO) declared the 2019-nCov outbreak an international public health emergency on 30th January 2020 and officially a pandemic on 11th March 2020. The WHO official figures speak for themselves as the number of worldwide contaminated people increased from 14,500 (304 deaths) from Feb 1<sup>st</sup> to nearly 1 million (49,233 deaths) by April 1<sup>st</sup> and 6.33m by June 1<sup>st</sup> (385,000 deaths). It crossed the 10 million cases by July 1<sup>st</sup> (524,000 deaths) and more recent figures, as at end of November 2020, reveal that the number of cases is over 60 million (over 1.5 million deaths).

Hyams *et al.* (2002) posited that an unknown deadly virus usually instils a high level of stress, fear and risk in the community, often comparable to the reactive psychological effects of biological and other terrorism threats. The new pandemic has already resulted in

panic as many people have been equating the perceived risks associated with the COVID-19 to those of Spanish influenza in terms of its virulence and the health severity, especially in a situation where till date a vaccine is yet to be confirmed and where health authorities are facing an acute lack of antivirals supply and overwhelming health-care pressures.

While Coronavirus (COVID-19) is creating much health uncertainties, hitting all the economies globally and exacerbating financial markets volatility, the pandemic is particularly shaping up to be the biggest test that the modern travel industry has ever faced (UNWTO, 2020). The spread of the coronavirus is invariably linked to travel (Joppe, 2020) and the tourism industry worldwide has seen major shifts. The WTTC (2020) [2] initially announced that international travel is predicted to be negatively impacted by 25%, an equivalent to 3 months travel, this year, leading to an estimated 12–14% reduction in jobs in the global tourism sector. Scenarios for the year 2020 point to declines of 58% to 78% in international tourist arrivals for the year (equivalent to as much as over a trillion USD loss in export revenue from tourism), depending on the speed of the containment and the duration of travel restrictions and shutdown of borders, although the outlook remains highly uncertain (UNWTO, 2020) [3].

While recent empirical studies on COVID-19 have been focussing on its impact on the economy, oil price, stock volatility (Albulescu, 2020; Estrada *et al.* 2020), biosecurity risk management (Melly AND Hanrahan, 2020) and on the expansion of the disease (Chinazzi, 2020; Gilbert *et al.*, 2020) amongst others, yet not much is known about prospective tourists' risk-taking tendencies and their travel intentions and behaviours when considering overseas trips in the aftermath of a pandemic, particularly in the context of the COVID 19. Empirical research on perceptions and behaviours related to infectious diseases and pandemics at large, let alone to reactive travel attitudes, behaviours and intentions, has been scarce in the empirical literature (Brug *et al.*, 2009).

This study aims to contribute to the literature in two ways: first by empirically assessing tourists' risk perception and their intention to visit a destination following the COVID-19 outbreak pandemic; and secondly by identifying the key factors that are expected to influence their perceived travel risk in the aftermath of the COVID-19 pandemic. Results and insights gained are expected to be useful not only in the context of the present COVID-19 crisis but for any future such pandemics. The research adopts a mixed-methods design and in the first phase, a cross-sectional design is used based on a sample of 217 international outgoing tourists and data analysed using hierarchical regression. In phase 2, a purposive sample of tourists around the world are interviewed and data are analysed using the thematic analysis technique.

The rest of the paper is organised as follows: Section 2 dwells into a brief review of the related literature, Section 3 discusses the methodology and analyses the results while Section 4 concludes.

## Theoretical background and related literature

This section focusses on the theoretical underpinnings of and the related literature with respect to this research. Firstly, the concept of perceived travel risk is examined. The theoretical underpinnings of the link between risk evaluation and the travelling behaviour of tourists in the context of the COVID-19 pandemic are then discussed. Finally, the theoretical link of potential antecedents of perceived risk is explained. The two main theories which inform the conceptual framework of this study are the social cognitive theory and the protection motivation theory.

### *The concept of perceived travel risk*

Slovic *et al.* (1982) explained that people in most cases use their intuitive risk judgement to assess risky situations and this is commonly referred to as risk perception. Under such

circumstances, researchers have observed how people judge, characterise and evaluate activities which are considered as hazardous to them. A study by [Dowling \(1986\)](#) assessed various types of perception of risk in terms of social, physical and psychological. [Bauer \(1960\)](#) on the other hand, has proposed a two-dimensional structure of risk perception. The first is uncertainty, which refers to probabilistic beliefs and the second dimension is opposing consequences which relate to the importance of loss while endeavouring to achieve a set of buying goals. [Henthorne et al. \(2013\)](#) highlighted the concept of assessing perceived risk from the consumer's perspective; in another study by [Mitchell et al. \(1999\)](#), it is argued that absolute risks have more implications for consumers in general. Admittedly, the significance of both kinds of risks should not be overlooked.

In the context of tourism, the tourists' perceived risk in travelling is critical in moulding their decision-making process ([Lindqvist and Bjork, 2000](#); [Roehl and Fesenmaier, 1992](#); [Sirakaya et al., 1997](#); [Sönmez and Graefe, 1998a, 1999b](#)). More specifically, when making travel decisions, potential tourists normally pass through a sequence of stages, moving from interests to considerations to taking the actual decisions ([Milam and Pizam, 1995](#); [Sönmez and Graefe, 1998b](#)). Perceived risk is an influential element that may affect individuals' considerations, as potential tourists often tend to avoid risky situations and to visit destinations that in their perceptions are safe ([Sönmez and Graefe, 1998b](#)).

Travellers' decision-making is consistently weighted between constraints and the benefits of leisure. A constraint is an important key factor in travellers' leisure activity ([Jackson, 1988](#); [Jackson, 1991](#); [Fyall and Garrod, 2004](#)). A study by [Carneiro and Crompton \(2010\)](#) has identified health, fear and safety as important constraints by travellers in their decision-making ([Um and Crompton, 1999](#)). [Um and Crompton \(1999\)](#) suggested that although constraints (for instance, poor health) were an important factor in travel decision making, travellers' could still outweigh it through successful constraints negotiations and still participate in their leisure activities. Some studies also highlighted that safety and security also remained key perceived inhibitors in travellers' decision-making ([Kim and Chalip, 2004](#); [Pizam, 1999](#)). Risk perceptions have been found to be one of the most significant determinants of individuals' behavioural changes in risky situations.

#### ***Related literature***

A number of studies in the field of marketing and consumer science offer very strong evidence that perception of risk was directly related to purchasing intentions ([Henthorne et al., 2013](#); [Yüksel and Yüksel, 2007](#); [Mitchell and Vassos, 1997](#)). Studies have examined the effects of risk perception on tourist satisfaction and their intention to return to the same destination and it was found that risk perception led to more cautious behaviours amongst travellers ([Yüksel and Yüksel, 2007](#); [Reisinger and Mavondo, 2005](#)). According to [Dowling \(1986\)](#), risk perceptions has a negative effect on travel behaviour. The authors based their argument on the fact that persons who are less inclined to take risk may usually attempt to dampen the perceived risk, whereas those who have more likelihood to take risk tend to ignore the risk consequences and increase risk of their actions.

Tourism remains a very sensitive industry and the slightest risk, especially with regard to human safety or health safety would result in adverse publicity surrounding that tourist destination ([Lee and Chen, 2011](#)). Many studies have commonly identified infectious diseases as one of the very common perceived health risks for potential tourists when choosing a destination ([Page, 2009](#); [Steffen et al., 2003](#); [Rosello et al., 2017](#)). In general, if a destination contains a high level of infectious disease, tourists will be normally less likely to travel to these countries.

The existing literature also suggests that difference in gender has a significant influence on the degree of risk perceived by individuals ([Finucane et al., 2000](#); [Garbarino and Strahilevitz, 2004](#)). In particular, for the case of the travel industry, a systematic review of the literature by [Yang et al. \(2016\)](#) observed that gender matters with regard to perceived travel

risks. [Reisinger \(2009\)](#) also reported that female perceived international travel as riskier, felt less safe and were more anxious and intended to travel less as compared to their male counterparts. [Qi et al \(2009\)](#) confirmed that perceived risk factors were found to be gender-related. As such the level of perceived risk also varies with other socio-demographics such as age, culture and income level amongst others within the tourism and travel world ([Boksberger et al., 2007](#); [Simpson and Siguaw, 2008](#); [Reisinger, 2009](#); [Kim et al., 2016](#)). The theoretical reasoning behind risk perception and travelling behaviours of tourists is discussed next.

### *Perceived (COVID-19) travel risk and international travelling behaviours*

International travelling behaviour relates to the action of moving from one country to another at a given point in time and in a specific context within a certain purpose ([Hsing, 2002](#)). If the travelling destination was perceived as risky areas, tourists would tend to avoid taking the risk of travelling to that particular destination ([Sönmez and Graefe, 1998](#)). Two key theories help explain the expected link between perceived travel risk and travel behaviours of tourists, namely, the social cognitive theory and the protection motivation theory.

The social cognitive theory (SCT) developed by [Bandura \(1977, 1992, 2000\)](#), posits that outcome expectations precede goal setting which relates to the adoption to adopt a certain behaviour. Outcome expectations refer to the beliefs that an individual has with regard to the consequences of his/her actions. The consequences may be in terms of physical, social or self-evaluative outcomes ([Bandura, 2000](#)). In the context of COVID-19 risk evaluation, the physical, social and self-evaluative expected outcomes would relate to the possibility of getting infected and severely ill; be seen as a societal threat by fellow citizens or hosts because and be stigmatised; and feel guilty of potentially spreading the virus, respectively. According to the SCT, those expected outcomes would shape the intended travel behaviours of tourists (goals) and consequently their actual travelling behaviours.

The link between perceived travel risk and intention to travel can also be explained by the protection motivation theory (PMT). The protection motivation theory developed by [Rogers \(1975\)](#) suggests that an individuals' appraisal of threat would contribute to their motivation to protect themselves. Individuals vary in the way they cope with potential threats, more specifically they differ with regard to their perceptions of the severity of and their vulnerability to, the threat ([Rogers, 1983](#)). In the context of the COVID-19 pandemic, this would imply that the tourists' motivation to travel would depend on their assessment of the degree of severity of their potential illness state and their vulnerability to it.

Many established studies in the field of marketing and consumer science offer empirical evidence that perception of risk is directly related to behavioural intentions ([Henthorne et al., 2013](#); [Yüksel and Yüksel, 2007](#); [Mitchell and Vassos, 1997](#)). In the context of tourism, studies have examined the effects of risk perception on tourist satisfaction and their intention to return to the same destination and it was found that risk perception led to more cautious behaviours amongst travellers ([Yüksel and Yüksel, 2007](#); [Reisinger and Mavondo, 2005](#)). Many studies have commonly identified infectious diseases as one of the very common perceived health risks for potential tourists when choosing a destination ([Page, 2009](#); [Steffen et al., 2003](#); [Rosello et al., 2017](#)). In general, if a destination contains a high level of infectious disease, tourists will be normally less likely to travel to these countries. Amongst the few important studies, including those from [Lau et al. \(2004\)](#) and [Lee et al. \(2006\)](#), which assessed travellers' preventive and risk behaviours. Their study offers insight into how travellers' tend to delay travel during a pandemic crisis. In light of the above theoretical and empirical support, it is hypothesised that the riskier tourists perceive travelling to be in relation to COVID-19, the less likely they are to consider travelling in the aftermath of the COVID-19 crisis.

## *Antecedents of perceived risk during COVID-19*

According to the protection motivation theory, the threat appraisal process depends on the information received by the individuals regarding the potential harmful conditions which are referred to as fear appeals (Rogers, 1975, 1983). In the context of travel and tourism, Kozak *et al.* (2007), argued that risk perception of a destination implies information search to minimise the perceived risks which bear a major role in influencing travel intention. Another study by Helfenberger *et al.* (2010) found that travellers would often seek for information regarding influenza which was an important factor which in determining their travelling behaviour and this was particularly so in pandemic regions. Findings from Leggat *et al.* (2009) also indicated that travellers who were concerned about pandemics were more likely to report or cancel their travelling in light of information received about the destination. Sempinar-Brunner *et al.* (2009) study have evaluated how air travellers would respond to pandemic diseases. Their results indicated that most travellers in general found a pandemic outbreak to be dangerous. They also stressed on the role of information regarding disease characteristics, pandemic status, to support their decisions on whether to travel or not. The specific fear appeals which tourists are likely to consider important when going through the cognitive appraisal of risks of destinations in relation to COVID-19 are not well understood and need to be further explored. Study 2, therefore, also aims to identify those potential antecedents of perceived travel risk.

## **Methodology**

### *Study 1: Testing for the effect of perceived travel risk on tourist behaviour intention in the aftermath of the COVID-19 pandemic*

Data were collected using a questionnaire that was designed in an interactive electronic format and a self-administered approach was adopted which was in line with the social distancing protocols in place at the airport. The questionnaire was translated into French and German to cater to the diversity of tourist nationality.

The targeted population of the study was outgoing international tourists at the SSR International Airport of Mauritius, which is the only airport in Mauritius. The aim was to principally gauge their general travel reactions and attitudes in the time of COVID-19. The study was conducted during a 4-week period from February to March 2020. After securing permission to access the airport departure lounge from Airports of Mauritius and the other relevant authorities, potential respondents were contacted and interviewed after they completed their immigration formalities. An intercept method was used and tourists were encouraged to participate in the survey by receiving a token as a gift. The survey form was designed in an interactive electronic format and administered via means of three tablets. Interviews took around 5 min per respondents and the interviewers attempted to have, as far as possible, tourists from various origin countries to have a good representation.

*Measures.* All the measures comprising five-point multi-item Likert scales. Travel intention (TI) was measured using two items, namely: if permissible, I shall be willing to travel and tour countries during the next year (TI1); if permissible, there is a high possibility that I would travel and tour within countries during the next year (TI2). These two items were derived and adapted from the existing works of Jang *et al.* (2009) and from Lim *et al.* (2015). Perceived Risk of Travel (PRT) was measured by borrowing and adapting existing scales from the works of Alghamdhhi *et al.* (2014) and Adou *et al.* (2019). Perceived Risk of Travel (PRT) consists of the following two items: I think that there is minimal risk of getting the infectious coronavirus disease during my travel to affected countries (PRT1); I think that travel does not increase the risk of me getting infected by the coronavirus disease if I am in good health (PRT2). The scores of the latter were reversed so that a higher score represents a higher level of perceived travel risk. Perceived Health Risk due to COVID-19 was

measured using the following two items: I believe I can protect myself against the novel COVID-19; I believe I can protect myself against the COVID-19 better than other people.

*Data and analysis.* The data collection phase which was conducted from February to March 2020 resulted in a total of 217 valid responses from the tourists. Absence of common method variance (CMV) was verified using the Harman's single-factor test, which revealed that less than 50% variance was accounted for by the common factor. The latter shows that the risk of common method variance is relatively low (Chang *et al.*, 2010).

The sample consists of a total of 217 international tourists surveyed at the Mauritian International Airport during February-March 2020. The sample comprises of 106 (48.8%) male tourists and 111 (51.2%) female tourists. A majority of 143 (65.9%) of tourist came from European countries. The most represented European countries are the UK (24%), France (19.4%) and Germany (9.7%). Amongst the non-European tourists, the majority are of South African (12.4%) and Indian (6%) nationality. The majority of tourists (93.1%) reported that they travel for holiday's related purpose, while the remaining 6.9% for a work-related purpose. Regarding the age of the respondents, 22.6% are below 30 years old, a majority of 28.1% are between 30 years old and 39 years old, 12% are between 40 and 49 years old, 14.3% between 50 and 59 years old, 17.1% between 60 and 69 years old and 6% above 70 years old.

The statistical technique of hierarchical linear regression was adopted to analyse the data. This particular method has opted as it allows to statistically control for specific variables such as gender, age and nationality while testing the prediction value of the variables based on the theoretical model such as "Perceived Health Risk" and "Perceived Travel Risk". The full model tested is as follows:  $TI = \beta_0 + \beta_1G + \beta_2A + \beta_3N + \beta_4PT + \beta_5PHR + \beta_5PTR$ , where, G represents Gender, A represents age, N represents Nationality, PT represents the purpose of travel, PHR represents a perceived health risk and PTR represents perceived travel risk.

### ***Study 2: Identifying the expectations of tourists for minimising perceived travel risks in the aftermath of the COVID-19 pandemic***

For the second phase of the study, given that the aim was to gain an in-depth understanding of the tourists' expectations, an exploratory design and qualitative approach were adopted (Saunders *et al.*, 2012). In total, 24 in-depth interviews were conducted with a sample of international tourists through video conference. A purposeful sampling technique was used to select tourists who would be willing to provide us with detailed narratives. Obtaining detailed information is important so as to compare and contrast views and develop relevant themes (Sekaran and Bougie, 2016). Data saturation which occurs when no new codes are identified was achieved after 24 interviews (Saunders *et al.*, 2016; Teeroovengadum and Nunkoo, 2018). Care was taken to have participants from around the world to capture the views of tourists globally. Representation in terms of gender and age was also considered. Given the sensitive nature of some responses, participants were assured that their confidentiality would be kept and pseudonyms are used. The profile of the respondents is provided in Table 1. Given geographical limitations and confinement laws in place, a combination of telephone and video conferencing tools (Zoom, Google meet) were used to conduct the interviews. The interviews lasted for approximately 30 to 45 min each.

Data analysis was carried out using the thematic analysis technique as prescribed by Braun and Clarke (2006, 2013) was used. Thematic analysis is considered to be appropriate when the goal is to extract novel concepts which are grounded in the data by defining, organising and structuring themes (Braun and Clarke, 2006). The focus was to extract those themes that logically group similar predictors of perceived travel risk to a particular destination.

## Results for Study 1: Survey findings

### Univariate descriptives and inferences

Table 2 below, provides the univariate and inferential statistics for tourists' future travel intention. The skewness (0.502) and kurtosis (−0.423) values are both relatively low, thus indicating no severe departure from a normal distribution.

As can be seen from Table 2 above, the mean value for travelling intention is quite low. The *t* value further shows that the mean score is significantly lower than the neutral value of 3. The results indicate, that on average, tourists are unlikely to travel during the next year even if permissible.

Table 3, presents the results for the perceived risk of travel in the aftermath of the COVID-19. With a skewness of −0.71 and kurtosis value of −0.379, the distribution is close enough to a normal distribution for mean values to be considered unbiased.

On average tourists perceived travel risk is quite high with a mean score of 3.263. The statistic further confirms that overall tourists visiting Mauritius are likely to consider travel to be risky.

**Table 1** Interview participant profiles

Alias	Gender	Age group	Nationality	Continent
Anil	M	36	Indian	Asia
Patrick	M	48	France	Europe
Andrea	F	56	S Africa	Africa
Lui	F	34	China	Asia
Bin	M	37	Australia	Australia
Chris	M	55	UK	Europe
John	M	62	Switzerland	Europe
Christine	F	56	Australia	Australia
Mansoor	M	59	Mauritius	Africa
Nisha	F	36	Mauritius	Africa
Darma	M	55	Mauritius	Africa
Davina	F	33	France	Europe
Paul	M	52	Kenya/Uganda	Africa
Teeven	M	48	UK	Europe
Carol	F	54	UK	Europe
Hema	F	45	Singapore	Asia
Mark	M	45	Germany	Europe
Keshav	M	31	UK	Europe
Jack	M	32	Malaysia	Asia
Ashley	M	55	UK	Australia
Harry	M	47	Australia	Asia
Jessica	F	36	India	Asia
Valerie	F	41	USA	USA
Alison	F	28	China	Asia

**Table 2** Descriptives and one-sample t-tests for future travelling intention

Variable	Descriptives		95% confidence interval		One-sample t-test (test value = 3)			Cronbach's alpha	
	Mean	Standard deviation	Standard error	Lower limit	Upper limit	Mean difference	t statistic		Sig.
T11	2.26	1.186	0.081	2.100	2.440	−0.737	−9.155	0.001	0.871
T12	2.29	1.183	0.080	2.120	2.450	−0.714	−8.894	0.001	
T1	2.27	1.115	0.076	2.122	2.429	−0.726	−9.591	0.001	



Table 3, below show, that the univariate statistics for the perceived health risk with respect to the COVID-19. The skewness value is  $-0.465$  and kurtosis value is  $1.137$ . While the kurtosis value is quite high, the low skewness value provides enough confidence in using the mean as an accurate estimator.

As can be observed from Table 4 above, the tourists' surveyed do perceive the COVID-19 to be a health hazard for them. Moreover, the t-test shows that on average tourists visiting Mauritius are likely to perceive the COVID-19 as risky for their health.

### *Effect of tourists' characteristics and perceived risks on future travelling intentions*

We perform a multiple linear regression analysis to test for the effects of tourists' attributes (gender, age, nationality and the purpose of visit) and perceived risk (travel risk, health risk) on their intention to travel in the aftermath of the COVID-19 pandemic. The results are the analysis is shown below in Table 4. We adopt a hierarchical approach so as to capture the variance explained by the tourists' attributes first. Perceived health risk and perceived travel risk are then added.

The assumptions are first verified to ascertain the validity of our results. VIF values range from  $1.112$  to  $1.010$ , all well below the threshold of  $3$ , and thus indicate the absence of multicollinearity. The Durbin-Watson statistic of  $1.818$  indicates that error terms are not highly correlated. However, we find that the assumption of normality of residuals is violated through visual inspection of the histogram and Q-Q plot. We, therefore, make use of a bootstrap analysis with  $1,000$  iterations to test for the statistical significance of the results (Field *et al.*, 2012).

The results from Table 5 above, based on a regression analysis of the data collected from our tourists' survey, show the importance and significance of factors that influence the future travelling intention of tourists in a post COVID situation. The perceived health risk is found to exert no significant effect on travel intention ( $\beta = -0.025$ ,  $p > 0.05$ , CI =  $[-0.248 - 0.170]$ ). Similarly, the effects of gender, age and nationality are insignificant. However, two predictors are found to have statistically significant effects on tourists' travelling intention. Perceived travel risk is most important predictor ( $\beta = -0.201$ ,  $p < 0.05$ , CI =  $[-0.371 - -0.030]$ ) followed by purpose of travel ( $\beta = -0.188$ ,  $p < 0.05$ , CI =  $[-1.178 - -0.466]$ ). The results, therefore, indicate that the more risky tourists perceive the travel to be, the less likely

**Table 3** Descriptives and one-sample t-tests for COVID-19 perceived risk of travel

Variable	Descriptives		95% confidence interval			One-sample t-test (test value = 3)			
	Mean	Standard deviation	Standard error	Lower limit	Upper limit	Mean difference	t statistic	Sig.	Cronbach's alpha
PRT1	3.278	1.203	0.081	3.116	3.435	0.278	3.393	0.001	0.836
PRT2	3.244	1.147	0.079	3.097	3.394	0.241	3.081	0.002	
PRT	3.263	1.089	0.074	3.111	3.396	0.259	3.495	0.001	

**Table 4** Descriptives and one-sample t-tests for perceived COVID-19 health risk

Variable	Descriptives		95% confidence interval			One-sample t-test (test value = 3)			
	Mean	Standard deviation	Standard error	Lower limit	Upper limit	Mean difference	t statistic	Sig.	Cronbach's alpha
PHR1	3.550	0.942	0.064	3.429	3.673	0.553	8.648	0.001	0.806
PHR2	3.390	0.917	0.062	3.276	3.520	0.392	6.291	0.001	
PHR	3.472	0.851	0.057	3.362	3.588	0.472	8.179	0.001	

**Table 5** Hierarchical regression analysis

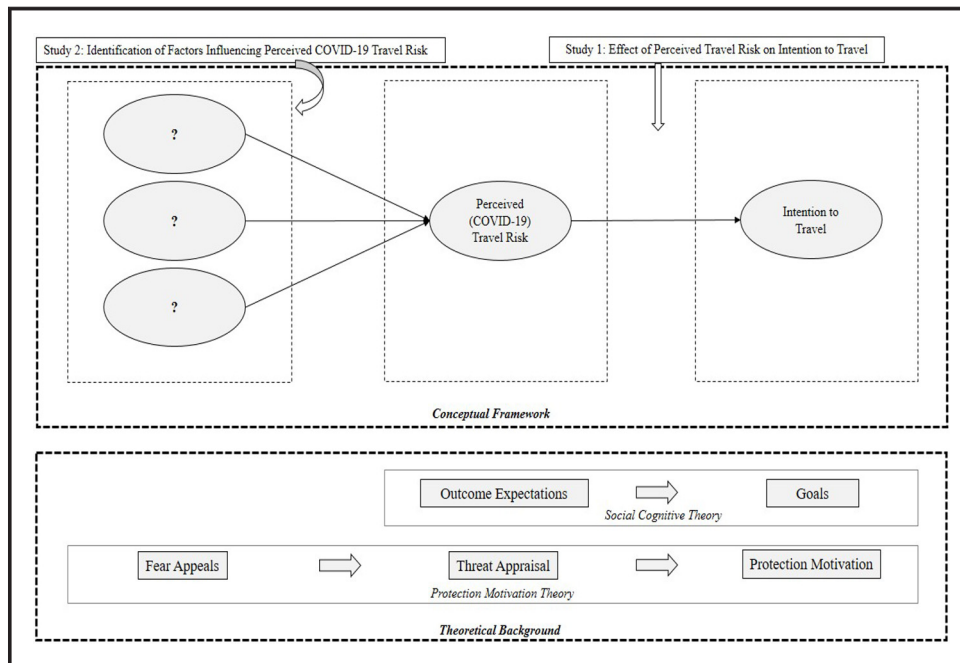
Model	$\beta$	B	Bias	Bootstrap		Sig. (two-tailed)	95% confidence interval		
				Std. error			Lower	Upper	
(Constant)		2.745	-0.021	0.298	0.001	2.116	3.299		Model 1:
Gender_D <sup>a</sup>	0.050	0.112	0.003	0.148	0.457	-0.166	0.396		$R^2 = 0.53$
Age	0.046	0.003	0.000	0.005	0.472	-0.006	0.013		F (4, 212) = 2.964
Nationality_D <sup>b</sup>	0.099	0.232	0.008	0.163	0.160	-0.077	0.554		Sig = 0.021
PT <sup>c</sup>	-0.202	-0.886	0.005	0.196	0.001	-1.273	-0.527		
(Constant)		3.666	0.003	0.615	0.001	2.465	4.856		Model 2:
Gender_D	0.037	0.082	0.002	0.147	0.595	-0.207	0.376		$R^2 = 0.89$
Age	0.004	0.000	0.000	0.005	0.949	-0.010	0.010		F (6, 210) = 4.02
Nationality_D	0.069	0.161	0.008	0.163	0.335	-0.151	0.502		Sig = 0.003
PT	-0.188	-0.824	0.007	0.183	0.001	-1.178	-0.466		
PHR <sup>d</sup>	-0.025	-0.033	-0.002	0.107	0.751	-0.248	0.170		
PTR <sup>e</sup>	-0.201	-0.206	-0.004	0.085	0.014	-0.371	-0.030		

Notes: <sup>a</sup>Gender (female as dummy and male as reference); <sup>b</sup>Nationality (European as dummy and non-European as reference); <sup>c</sup>Purpose of travel (holiday-related as dummy and work-related as reference); <sup>d</sup>Perceived health risk; <sup>e</sup>Perceived travel risk

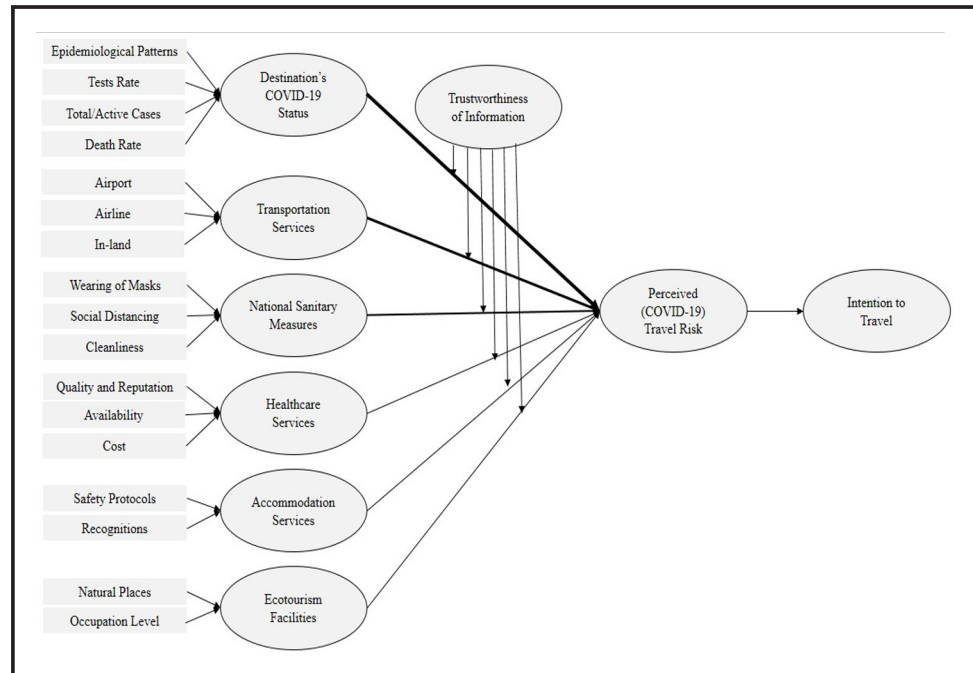
they are to travel during the forthcoming year. The results also demonstrate that tourists are much more likely to start travelling for work-related purposes when permissible.

### Results for Study 2: Interview findings

The following are the results obtained from phase 2 of the study which is based on 24 in-depth interviews with representative international tourists around the world. As illustrated in Figure 2 below, seven main themes were identified, namely, destination's COVID-19 status, transportation services, national sanitary measures, health-care services, accommodation services, ecotourism facilities and trustworthiness of the information.

**Figure 1** Conceptual framework

**Figure 2** New conceptual model proposed



### *Destination's COVID-19 status*

All the participants view that the extent to which the COVID-19 outbreak is under control in the destination country would influence their perceived travel risk. If tourists have a negative impression of a destination where they feel threatened or unsafe, they shall develop a negative attitude towards that particular destination, and therefore would be less likely to visit the destination. Tourists should be given sufficient official information including statistics on the COVID-19 pandemic and the situation in the destination to keep tourists aware of the pandemic situation at all time and the various measures which are taken to prevent the spread of the virus in the country. According to [Mawby \(2000\)](#), perceived risk has a great influence on the guest during their stay at a particular destination, therefore it is essential to understand the key COVID-19 related statistics which shape the traveller's perception towards travel risk.

One of the four indicators that were identified from the interviews with respect to the dimension of "COVID status" is related to the number of active cases in the destination country at the time of travel. In most cases, the interviewees mentioned that only a very low and contained disease spread, ideally a zero COVID active case scenario for a prolonged period of time, in the destination country, could make them consider travel. Mark pointed out that "the number of active cases in the target destination is a key element in assessing the level of COVID-19 related risk [...] I shall definitely choose destinations with no active cases in priority". Other indicators commonly cited when assessing travel risk were the number of COVID tests performed; death rate and the general epidemiological pattern. Harry argued that "something I would consider is whether the outbreak at the destination has followed the usually skewed bell-shaped epidemiological pattern as expected [...] if this is not the case, we might think that something is not normal". COVID tests performed on the population is also an element related to instilling trust in the destination as it indicates the seriousness of the authorities in truly identifying and containing the disease. *As Andrea puts it* "there should be a high enough of tests per million of individuals. Some country is reporting low COVID-19 cases but this is sometimes due to the limited number of tests being carried out".

## *Transportation*

Risks associated with transportation, both international and inland, were considered to be another important set of criteria in post COVID travel decision. Three main components relating to transportation emerged with the first one related to the appropriate security measures taken at the airports, both at departure and arrival, are expected and these include clear airport protocols duly communicated, as well as a rigid screening of incoming and outgoing passengers [4] (including mandatory pre-flight tests), even if it means delayed check-in or check out is expected. Ashley posited that “Travelling involves spending much time at the airport and interacting with people from a different country of origins. I think the airport is one of the riskiest places to visit”.

Secondly, for those travelling by air, the sanitary measures taken by the airlines during the flight remain an important consideration. Jessica fears that “the risk of infection could be existent as we are confined in a closed space with air-conditioning on [...] if one person is infected and all the passengers are at risk”. Availability of direct flights and minimisation of the amount of time required to spend at the airport are also privileged. As *Davina puts it*, “we want to minimise the time at airports, given they can be a melting pot for different nationalities, thus increased risks”.

Thirdly, tourists would also expect to see appropriate measures taken regarding in-land transportation through metro, taxis, coaches etc., and many interviewees expressed their preference to avoid public transportation all-together altogether. As Andrea confessed, “a private rental car with or without chauffeur would be preferred over the usual public transport, as tourist bus/tour operators or organised tours which are crowded with A/C running all the time”.

## *National sanitary measures*

The national sanitary measures put in place at the destination is yet another important factor as the many interview participants reported that they would look for information about the measures being taken at the destination that would limit the risk of a resurgence. More importantly, an evaluation of the adherence level to those measures would also be assessed. Chris made it clear that “anyone sensible will need to assess the level of Post COVID sanitary measures at the national level as well as its level of adherence. This is also a reflection of the level of commitment of both the government and its citizens to eradicate the virus/prevent its resurgence”.

Amongst the most prominent expected sanitary measures are: wearing of masks, social distancing measures and cleanliness at public and tourist spaces. Valerie posited that “I expect that people will be wearing masks there [...] I read that studies found that wearing of masks drastically reduces the risk of contamination, it is, thus, a must until we have a vaccine”. As *such Alison added that* “we want to see measures that ensure the cleanliness of public and tourist places that help to reduce the risk of disease’s propagation. This should include regular disinfection with a clear protocol amongst others”.

These findings corroborate with the recent study of [Nazneen et al. \(2020\)](#), who indicated that safety and hygiene perceptions were a significant factor in travel decision and that tourists were more concerned about these at recreational sites and public transport in the wake of a pandemic crisis.

## *Health-care services*

Participants appear to view a destination as being less risky if they have good health-care services in place. Given that the risk of infection is still existent even in the aftermath of the pandemic, prospective tourists would want to be sure that, in case they get infected and fall ill, they will receive adequate health-care. Amongst the three main criteria that travellers are

likely to consider when rating health-care services are: quality and reputation, availability and cost. The view that quality and availability of health-care services remain an important prerequisite in the travel risk perceptions and destination choice in the immediate post-COVID era, is put forward by a large number of interviewees. As Jessica puts it “in case I do catch the virus, I would most likely require treatment in the country [...] the availability of quality health-care is something I shall consider before travelling [...] definitely [...] the health-care services need to be of a high standard”. *Mansoor, a medical doctor added that “being myself a hospital Doctor, one of the prerequisites would be to ensure that the destination country has proven medical experience, appropriate equipment and medication for any eventually infected case”*. Potential travellers also weighted the availability of high-end medical services with the associated cost and many of them highlighted this element during the study, for instance, Alison *remarked that “affordability of health-care is something I would consider important as well [...] some countries have overpriced health services and this can be an issue, especially if one is critically ill”*.

A recent study by the World Economic Forum, Bloom Consulting and D2-Analytics (2020) [5], which assessed travellers’ potential behaviour for the coming year, reported that the majority of these travellers (53%) confirmed they would switch their destination for one that had a good health system.

### ***Accommodation services***

Another element which is likely to be considered by the potential traveller is the capacity of the accommodation operators to minimise sanitary and safety risks. Participants highlighted that they intend to check for information about the safety measures and protocols put in place at the accommodations before their booking. Finding the accommodations too risky will adversely impact on the perceived safety of the destination as well. Two main criteria which the participants are likely to use when assessing the risk of accommodations are safety protocols in place and recognition by national and international bodies. With respect to safety, Ashley posited that “hotels need to ensure that adequate mechanisms are put in place to cater for the safety of guests [...] with the risk of COVID-19 infection persisting for some time, it is important to maintain precautionary measures [...] instead of luxurious services at hotels, first-class safety is what I’m looking for”. Harry added that “there should be a system in place to officially recognise that accommodations are adhering to safety standards during the pandemic as well as post-pandemic phase”. A number of travellers interviewed also flagged the fact that they are likely to consider location and crowds when making their accommodation booking as well. World-famous “Conde Nast Traveller” magazine has campaigned its potential travellers with respect to the careful selection of accommodation services during this COVID time [6].

[Nazneen et al. \(2020\)](#) also recently confirmed that travellers were quite sensitive to the hygiene and safety levels in hotels amongst others and such perceptions are significant factors in travel decisions during sanitary crisis situations. [Beirman \(2002\)](#) yet discussed the fact that, under circumstances of uncertain risks, travellers will be heavily influenced by safety issues.

### ***Ecotourism facilities***

The interviews also reveal that there is likely to be a shift of tourists’ preferences from destination with busy city life to those having less crowded nature spaces in the short term at least. The latter being perceived to be much less risky. Mansoor confessed that “for my own peace of mind, for the first couple of travel, I’d rather lay my choice on destinations which are less crowded and busy, thus will privilege mostly those destinations offering green and ecotourism products”. *Anil is categorical by stating that “I will definitely avoid top popular destinations/cities for my first post COVID travel”*. *Valerie echoed by confirming that*

“for my next travel, I am definitely looking for eco-friendly places. The pandemic has made us realise how important it is to live in harmony with nature [...] moreover, such places are much less risky”.

The World Economic Forum, Bloom Consulting and D2-Analytics (2020) [7] study reported that around 40% of the potential traveller polled were likely to select less crowded or different types of destinations.

### ***Trustworthiness of information as a moderating variable***

Throughout the interviews, it became apparent that all the factors that are expected to minimise perceived travel risk would only be effective if tourists have enough trust in the information they receive prior to their travel. Thus, the trustworthiness of relevant information related to COVID status, sanitary measures and enforcement, accommodation, health-care services and transportation is a crucial moderating factor. For instance, with regard to the destination's COVID-19 status, John related that “the COVID data dashboard should be trustworthy and reliable as travellers will for sure make their risk assessment of the potential destination by analysing data related to number active cases as well as the proportion of the test done on the population”. *Harry added that* “there should readily available and reliable information from government sources about the COVID-19 situation at the destination”. Finally, Alison posited that “in many countries, sanitary measures are being taken but reports show that many of those are not being respected in some places. It is important to have reliable information on the extent to which the safety measures are being adhered to”.

The national tourism authorities or other tourism linked organisations of the destination should acknowledge the fundamental role that media plays in projecting a good image of a tourism destination. It is through clear and effective communication that the authorities will manage to reassure potential visitors of the level of safety available to the travellers which will instil trust in the latter and encourage them to visit the destination.

### **Discussion and conclusion**

The empirical results in this research were obtained from two distinct data collection and analytical procedures, we, therefore, refer to those as Study 1 and Study 2. Firstly, the findings provide empirical evidence with regard to the reluctance of tourists to travel in the aftermath of the COVID-19 crisis due to the perceived risk involved (Study 1). Secondly, the expectations of tourists to minimise perceived travel risk at a destination are identified (Study 2). In light of those, a few useful insights are gained for decision and policy makers in view of boosting travel rates and the tourism industry.

As expected, the findings of this present study reveal that the COVID-19 pandemic crisis is likely to have a persisting negative impact on tourist travels for the coming years. The survey results also show that tourists' travelling intention in the forthcoming year following the COVID-19 pandemic outbreak is significantly low. Importantly, the regression analysis confirms the hypothesis that the riskier a destination is perceived to be with regard to COVID-19, the less likely tourists visit it. The results, thus, confirm the theoretical link between perceived risk and travelling intention as suggested by the social cognitive theory and protection motivation theory. Our findings corroborate with [Leggat's et al. \(2009\)](#), who observed that travellers who expressed concern about the pandemic influenza were more likely to report or delay their travel. The findings are also in congruence with [Steffen et al. \(2003\)](#) and [Rosello et al. \(2017\)](#), who reported that infectious diseases were amongst the most commonly perceived health risk for potential travellers when choosing a destination and that the latter were less willing to travel to countries with various infectious diseases.

The study also found that tourists were much more likely to travel for work-related purposes in the aftermath of the COVID-19 and this could be explained by the fact that travellers on business trips tend to evaluate their willingness to take health-risk against a rational risk evaluation of other risks in life (Aro *et al.*, 2009). The findings of Aro *et al.*'s (2009) the study demonstrated that because holidays essentially had a hedonistic function, where people wanted to relax and free themselves from everyday life they were more likely unwilling to cancel or change their travelling although they could be at health risks. Travellers on business trips were observed to evaluate their willingness to take health-risk against a rational risk evaluation of other risks. Khan (2019) also reported that travel motivation has a moderating negative role in the link between perceived risks travel constraints and visit intention. While this is encouraging, we should, however, note that those destinations which heavily rely on the tourism industry, their main market remain holiday tourists.

Given the criticality of the COVID-19 related perceived travel risk, destinations aiming to quickly revive their tourism industry should endeavour to minimise those as far possible. This can be achieved by attenuating the fear appeals which according to the protection motivation theory would impact on the threat appraisal (perceived risk) and protection motivation (intention to travel). Six main fear appeals were found to potentially contribute to minimising COVID-19 related travel risk to a destination. Those are destination's COVID-19 status, transportation services, national sanitary measures, health-care services, accommodation services and ecotourism facilities. While presumably, most countries will find that not much can be done regarding the COVID-19 status other than what is already being done, the key here is to provide reliable and trustworthy information to the potential visitors. The trustworthiness of information received about COVID-19 statistics in a country such as epidemiological patterns, test rate, total/ active cases and the death rate is essential. It is, therefore, recommended that appropriate measures are taken by the governments and different service providers to always make use of official and reliable sources. Such sources should also be clearly visible on all communications such as websites and social media platforms amongst others. Tourists need to feel safe and have no fear to travel in the post COVID era and technology and ICT will be crucial to give relevant and reassuring information to potential tourist and also for tourism promotion and branding (Buhalis and Amaranggana, 2014; Xiang *et al.*, 2015).

Travellers need to make sure their hosts are taking the pandemic seriously and the hospitality industry needs to ensure that all measures are taken to protect their guests and their employees during the COVID-19 pandemic. Such measures to relate to decreased occupancy, frequent disinfecting, digital keys and check-in and 24-hour vacancy between guest departures amongst others. Most importantly, hotels and airlines should also ensure that relevant information about their safety protocols and measures are officially and clearly provided in all their marketing endeavours.

This study is not without limitations. First of all, the availability of a vaccine would completely change the expectations of tourists, but these "pre-vaccine" findings could be used for future pandemics. Secondly, in Study 1, the sample is limited to tourists' perceptions at one point in time during the outbreak and is also not fully representative of the global population of tourists. Future work is expected to further test the conceptual model developed using quantitative techniques. Notwithstanding the study's limitations, our finding does provide evidence that tourists' destination will need to carefully manage their marketing strategies in the future so as to build trust. The destinations which tourists perceive to be safer are the ones which are more likely to bounce back in the aftermath of the COVID-19 crisis.

## Notes

1. Ferguson *et al.* (2005) argued that the exploding international travel patterns represented a major threat of spreading a health hazard such as influenza worldwide. Indeed commercial airlines have been transporting over two billion travellers around the world in around 3,500 cities.

2. <https://wttc.org/COVID-19>
3. [www.unwto.org/impact-assessment-of-the-covid-19-outbreak-on-international-tourism](http://www.unwto.org/impact-assessment-of-the-covid-19-outbreak-on-international-tourism) (Mayedition)
4. A recent survey of 530 East Asian travellers during the months of June/July also confirmed similar findings. See <https://www.webintravel.com/survey60-of-asian-travellers-still-plan-to-travel-in-2020-but-travel-companies-should-not-wait-for-return-to-pre-covid-norms/>
5. [www.weforum.org/agenda/2020/07/top-factors-travellers-will-consider-post-covid-19-what-hard-hit-countries-can-consider/](http://www.weforum.org/agenda/2020/07/top-factors-travellers-will-consider-post-covid-19-what-hard-hit-countries-can-consider/)
6. [www.cntraveler.com/story/9-essential-steps-for-planning-a-family-trip-during-covid-19](http://www.cntraveler.com/story/9-essential-steps-for-planning-a-family-trip-during-covid-19)
7. [www.weforum.org/agenda/2020/07/top-factors-travellers-will-consider-post-covid-19-what-hard-hit-countries-can-consider/](http://www.weforum.org/agenda/2020/07/top-factors-travellers-will-consider-post-covid-19-what-hard-hit-countries-can-consider/)

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