

Tourism in times of Pandemics: When to stop?

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In 2020, tourists were the main vectors for the rapid geographical spread of SARS-CoV-2, which in its first six-months caused more than half a million fatalities worldwide. In this context, we investigated when, and if, tourism should be interrupted to delay pandemics. We did this by considering the temporal and geographical spread of COVID-19 and related fatalities, the World Health Organization's official guidelines and travel advices, the perspectives of tourists and tourism workers regarding the economic and social impacts caused by tourism interruption, and that these interruptions can be minimised by the implementation of efficient strategies. Opinions from the tourism community were collected through an online questionnaire that was circulated during the 2020-pandemic, with 229 responses from 29 countries and all continents except Antarctica. Based on these and the risks of virus-diseases predicted to emerge in the future, this study concludes that, ideally, travel restrictions should be implemented at two levels: first and urgently tourists should be diverted to and from infected areas; secondly and if necessary, essential travellers (such as workers and migrants) should be restricted as well. Resumption of tourism activities should await scientific evidence to ensure disease outbreaks can be contained. These conclusions oppose the current official position of the WHO, which asserts that travel restrictions should only be implemented in exceptional circumstances. Another conclusion of this research is that under the proposed rapid shutdown approach, tourism would be frequently interrupted with associated economic and social impacts. Therefore, it is fundamental to further research on how to better manage tourism in times of pandemic.

Keywords – tourism, pandemic, Covid-19, SARS-CoV-2.

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Viruses are one of the most peculiar forms of beings. They are believed to have ancient origins (Domingo & Perales, 2020) that may date back as far as the beginning of life evolution (Tuncer & Le, 2014) and have, since then, been consistently evolving (Sharp, 2002). Therefore, a significant variety of viruses currently exist. As viruses' evolution is constantly taking place and follow a random process (Woolhouse et al., 2012), every now and then viruses with the capacity to harm humans emerge (Ahmad et al., 2009). In this context and with the objective of avoiding pandemics, understanding and modeling the processes by which such viruses emerge and spread has attracted considerable research attention. It is consensus among virologists and community health professionals that travel restrictions do delay, but not necessarily prevent, the geographical spread of viruses among humans (ICAO, 2020a, Cooper et al, 2006). Still, the World Health Organization (WHO) frequently advises countries not to implement measures that unnecessarily restrict trade and travel (Wilson et al., 2010; Schwehm et al., 2009) in the interest of limiting major socio and economic impacts (WHO & UNWTO, 2020).

Interrupting tourism, due to pandemics, is indeed something extremely difficult to be done, especially because globally 1 in 10 people were working with tourism related activities when the 2020-pandemic started (WTTC, 2020), but also because interrupting tourism is, to a certain degree, a restriction on people's freedom, which tends not to be socially acceptable.

Being difficult or not, at least every couple of years a potentially dangerous virus emerges and to manage its dissemination the WHO is constantly making delicate calls regarding whether to apply or not travelling restrictions (WHO, 2020a). The rationale used by the WHO to make such decisions seems to have largely worked until 2019, up to when it helped to contain the dissemination of highly deadly viruses, such as the Ebola for example, which at certain places and times has annihilated as much as 90% of those infected (WHO, 2020b). This advisory approach, however, has not been effective in containing the rapid spread of the SARS-CoV-2: a virus transmitted aerially and directly and indirectly through physical contact. As such, it is relevant to evolve knowledge on how to better manage tourism in pandemic times, which involves re-examining the question of

when, and if, tourism should be interrupted to retard dissemination of viruses. This is the objective of this article.

I. Methods

This research aims at re-examining the question of when, and if, tourism should be interrupted or restricted to retard pandemic. To achieve this objective, four sources of information were used.

First, this research builds on the existing literature, especially on a previously developed literature review that analyzed, using Google Scholar, articles published to December 2019 and that had the words ‘pandemic’ and ‘tourist’ or ‘tourism’ or ‘travel’ in their titles (Sinay, 2023). Using the same method, we here analyzed the 53 new articles published between 01 January 2020 to 20 June 2020, when this review was performed and when half a million people had confirmedly died from COVID-19). Articles that could potentially be related to the question of when to interrupt tourism to avoid pandemic-related chaos were further analyzed.

Second, following a snowball approach, the WHO’s official documents were used to describe the international framework currently used to guide responses related to travel restrictions in the context of the pandemic and to examine the WHO’s advisories.

Third, information from the WHO and from newspapers was used to illustrate the current crisis from 18 December 2019 (which corresponds to when the SARS-CoV-2 was first identified and reported in Europe) to 28 June 2020. Unless otherwise specified, data on the number of fatalities were collected from the Worldometer Coronavirus Death Toll platform (Worldometer, 2020b), and data on geographical dissemination were assembled from the BBC Global Corona Track platform (BBC News, 2020). These sources were preferred over others, such as the Johns Hopkins University platform, because they present analyzed data on the issues that are relevant to this work.

Fourth and finally, data were collected through a voluntary online survey that was available from 8 May 2020 to 1 June 2020. Recruitment was through email invitations and personal and paid Facebook post/advertisement. The objective was to collect opinions of when it would be socially acceptable by tourists and tourism workers to interrupt tourism.

Facebook’s paid advertisement was set to appear globally to people 18 years and older and interested in travelling. It consisted of a post that simply asked if the reader had been affected by the current tourism crisis. People who clicked the post were sent to the questionnaire, which was available in English, Spanish and Portuguese (28% of the world’s population). Because this research was developed without sponsorship, choice of languages was opportunistic and reflects languages in which the researchers are fluent.

As the questionnaire was shown to random people and filled-in by self-selected respondents, the number of participants per country varied. To mitigate bias potentially initiated by the geopolitical context of respondents, answers to the question of when to interrupt tourism was also considered per country. Alternatives given were: interruption of tourism should be immediate, should follow scientific evidence and should continue to follow current protocols. Respondents could mark more than one alternative. Those that did not mark any of the given alternatives but answered the following questions, were considered not to support any of the options presented; hence, not to support the idea of interrupting tourism to delay virus dissemination.

II. Research limits

Following the realist paradigm (Sinay, 2008), this research is built based on hard data, such as number of infected people and fatalities over time, on legal instruments and on stakeholders’ beliefs and values. Beliefs and values are culturally shaped and tend to change over time and with experiences. Therefore, if this research were applied in different contexts, say, before the current pandemics or after, when the trauma had eased, the answers of respondents could be different. Thus, the conclusions of this work are not presented as final answers to the research question, but as a well-informed prospect reached while most participants were still suffering the effects of the 2020-pandemic. Also, this research is focused solemnly on the tourism component of pandemic, excluding, though, epidemiological aspects.

Scholarly literature on tourism in times of pandemics

By the time the SARS-CoV-2 emerged (i.e., December 2019), there was abundant research focused on modelling viruses’ dissemination through travelling (Sinay, 2023). The consensus was that travel restrictions may delay the spread of viruses that are transmitted mainly among humans, and that the time gained may prove fundamental for preparation and for vaccine development (Tuncer and Le, 2014). While so, it was also consensus that, if implemented isolated from other responses (such as isolation and implementation of sanitary protocols), travel restrictions would unlikely avoid pandemic (Eichner et al., 2009; Ferguson et al. 2006). This is because the movement of certain groups of people - such as workers, migrants and militaries - is unlikely to

be interrupted. While modelling virus dissemination was a common focus of research published prior to 2020, most of the analyzed work was focused on the virus, not on the ethical issues associated with trading-off economic loss from closures against social impacts and the endangerment of human life and wellbeing (Sinay, 2020 and 2023).

During the first six months of the 2020-pandemic (i.e., up to June 2020), 54 new articles were added to the Google Scholar database with the terms ‘pandemic’ and ‘tourism’ or ‘tourist’ or ‘travel’ in their titles. While only one directly addresses if and when tourism should be stopped to delay pandemics, others indirectly contribute with this discussion. Hoarau (2020), for example, analyzed the role of international tourism in the dissemination of the SARS-CoV-2 and concluded there is a “positive and significant relationship between COVID-19 prevalence and inbound tourism arrivals per capita. Thus, international tourism is demonstrably one of the main responsible factors for the recent pandemic” (Hoarau, 2020, p.1). Also, Xue et al., (2020) who considered Hong Kong’s response to the pandemic, highlighted the findings of Cooper et al. (2006) according to which 99% suspension of travel with improved hygiene measures may result in up to a 10-month delay in viral dissemination and a 40% reduction in transmission (Xie et al., 2020).

The global rationale for travel restrictions in the context of pandemics

Because of previous experiences with other viruses such as Influenza A (H3N2 in 1968), bird flu (H5N1 in 1997), SARS (SARS-Cov in 2002) and swine flu (H1N1 in 2009-10), when the SARS-CoV-2 emerged there were previously tested and utilized guidelines on how to respond globally to these sorts of threats. The official and central document in use at the time was the *International Health Regulations (IHR)* (WHO, 2005). The IHR aims “to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade” (WHO, 2005, p.10). The IHR provides “the legal basis for important health documents applicable to international travel and transport and sanitary protections for the users of international airports, ports, and ground crossings” (WHO, 2005, p.2).

The IHR was the result of intensive discussion and negotiation among the 194 signatory members of the WHO and was preceded by the *Health Assembly* (1969) and the *International Sanitary Regulations* (1951) (WHO, 2005). The 2005 update was formally requested by the WHO in 1995 due to the recognition of “the growth in international travel and trade, and the emergence or re-emergence of international disease threats and other public health risks” (WHO, 2005, p.1). In this same year, the UN World Tourism Organization (UNWTO) reported 500 million international arrivals (Roser, 2017), while during the year before the 2020-pandemic, this number had risen to 1.8 billion (UNWTO, 2020a).

In the 84-page IHR, the term *tourist* is not used; instead, *traveler* is used 86 times. *Traveler* and *tourist*, however, are not synonymous. *Traveler* is defined in the IHR glossary as a “person undertaking an international voyage” (WHO, 2005:10), perhaps implying the inclusion of international tourists but excluding domestic travelers and tourists. Tourists, by definition, are people that voluntarily transit from their place of usual residency to another place and, then, in more than 24 hours and in less than one year, return to their place of residency (UNWTO, 2020b). Therefore, anyone travelling for non-voluntary reasons and or that does not return to their place of residency for longer than one year or for less than one day is not a tourist but a traveler.

While the word *tourist* is not used in the IHR, *tourism* is, but only in Annex 2, which presents the decision framework for evaluating health issues of international concern. This framework has four core questions that determine if the public health impact of an event is serious, unusual or unexpected and the risk of international spread of a virus and of the need of implementation of travel and trade restrictions.

In its article 18, the IHR lists a series of general guidelines to manage the spread of viruses through travelers (Table 1), but does not set clear parameters for when or if travel restrictions should be recommended (WHO, 2005). It does identify, however, that for “issuing, modifying or terminating” such recommendations “the [WHO] Director General shall consider... the views of the States Parties directly concerned” (WHO, 2005, p. 16).

Table 1: Relevant recommendations to travelers (IHR Article 18)

Recommendations issued by WHO to States Parties with respect to travelers
No specific health measures are advised.
Review travel history in affected areas.
Review proof of medical examination and any laboratory analysis.

Require medical examinations.
Review vaccination or proof of vaccination or other prophylaxis.
Place suspect persons under public health observation.
Implement quarantine or other health measures for suspect persons
Implement isolation and treatment where necessary of affected persons
Implement tracing of contacts of suspect or affected persons
Refuse entry of suspect and affected persons
Refuse entry of unaffected persons to affected areas
Implement exit screening and/or restrictions on persons from affected areas

Source: WHO, 2005.

The key document that specifically instructs on travel restrictions is entitled *Guidelines for States Concerning the Management of Communicable Disease Posing a Serious Public Health Risk* (ICAO, 2020a). In recommendation 24, it asserts that “States should not interrupt air transport for health reasons”, unless in exceptional circumstances (ICAO, 2020a, p.7). What constituted ‘exceptional circumstances’, however, is not described.

The exceptional circumstances of SARS-CoV-2

The exceptional story of SARS-CoV-2 apparently commenced in Wuhan, China (WHO, 2020c), a city with 10 million inhabitants (Worldometer, 2020a) and a major domestic and international travel hub with flights connecting to 101 destinations in 17 countries (Flight Connections, 2020). The first sign of COVID-19 was a cluster of people presenting pneumonia-like symptoms (WHO, 2020c). Suspicions of a new virus being responsible were reported first in the Chinese media on 31 December 2019 (WHO, 2020d), which, for the purpose of this research, is Day 0 of the 2020-Pandemic. By Day 7, researchers had isolated the virus and by Day 12 China made public SARS-CoV-2’s genetic sequence, so that other countries could start developing specific diagnostic kits (WHO, 2020d).

The previous day (Day 11), the Chinese government announced the first fatality (Taylor, 2020) and, by the end of the first month (Day 31), 259 people were confirmed as having died from COVID-19 (Worldometer 2020b), the illness caused by the SARS-CoV-2. The first 2,000 deaths were reported worldwide by Day 40 and the first 10,000 by Day 79 (Worldometer, 2020b). By Day 100, the first 100 thousand deaths were confirmed and by Day 179, the first half a million (Worldometer, 2020b).

While the SARS-CoV-2 appears to have emerged in China, it rapidly spread to other countries (WHO, 2020c). The first countries to report COVID-19 cases were Thailand (Day 13), Japan (Day 15), Republic of Korea (Day 20), Taiwan and USA (Day 21), all attributed to travelers from Wuhan (BBC News, 2020).

On Day 23 authorities locked down Wuhan, but before that and since Day 0, “at least 5 million residents had left [the city], travelling across the country as well as overseas before the lunar new year holiday” (Kuo, 2020). During this Holiday, 3 billion trips were expected to take place within China (Pasley, 2020). Many of these tourists were from or were going to go to Wuhan (Kuo, 2020). Consequently, the number of confirmed cases of infections grew exponentially from 1,000 to 10 million in just 156 days (Table 2).

Table 2. Growth of reported COVID-19 cases worldwide and selected countries

Global reported COVID-19 cases	Reported COVID-19 cases in selected countries	Day	Locations
1,000		24	920 in China.
10,000		31	9,802 in China, 6 in Europe.
100,000		66	80,537 in China, nearly 5,000 in Europe, fewer than 300 in the Americas.
1,000,000		96	This was the first month that most new COVID-19 cases were not in China, which had started to control the spread of the virus and reported only 2,000 new cases for the month. Cases increased

			mostly in Europe (more than 100,000 confirmed cases) and in the Americas (336,802 cases reported for the USA).
	1,000,000	120	Cases reported in the USA.
	1,000,000	173	Cases reported in Brazil.
10,000,000		180	Of these, only 0,7% are in China.

Sources: BBC News, 2020; Worldometer, 2020b,c.

These numbers, it is worth stating, refer only to confirmed cases through appropriate tests and reported by national health authorities to the WHO. Actual numbers are likely to be much higher. Research of The Brazilian Intelligence Agency concluded that the actual number of infections in the country is likely to be up to 10 times higher than officially reported (Previdelli, 2020). The difference between actual and reported cases was sometimes due to the limited number of appropriate kits available to test the population. In these cases, preference was often given to those more ill so that test results could guide treatments (Amorim, 2020). The difference, however, may also be due to political manipulation of data (Sakamoto, 2020).

The impacts of SARS-CoV-2 have resulted in much research attention of the virus’s pathology, transmission, treatment and geographic and temporal spread. Hence, as time passed, new factors were discovered. For example, by Day 170 Rosa et al. (2020) reported sewage samples collected in Italy 13 days before Day 0 (i.e. 18 December 2019) had traces of SARS-CoV-2, indicating that the virus was circulating in different continents before authorities even suspected its existence. The same day, another research article was published showing that the ‘herd immunity’ approach was not going to work, because naturally produced antibodies are only traceable up to 90 days after infection ends (Long, 2020; Ansa, 2020).

WHO’s advice on travelling in the context of the 2020-pandemic

The WHO is the United Nations’ agency responsible for facilitating international coordination and for providing technical advice and guidance on health matters to reduce the risks of health-related crises. Thus, the WHO is responsible for coordinating the response of the 194 signatory countries to reduce health related risks associated with SARS-CoV-2. As stated in the *Guidelines for States Concerning the Management of Communicable Disease Posing a Serious Public Health Risk*, it is the WHO’s responsibility to officially advise peoples and countries about travel restrictions (ICAO, 2020a).

In the first 150 days of the SARS-CoV-2 pandemic, the WHO published seven official statements (WHO, 2020d-i; WHO and ICAO, 2020), but in none of those did the agency recommended to restrict travel (Table 3). Rather, it advised countries “against the application of any restrictions of international traffic” and international travelers to “practice usual precautions” (WHO, 2020d-i). In its second advisory release, Day 24, the WHO warned countries to prepare for containment as “new confirmed cases will continue to appear in other areas and countries” (WHO, 2020e). It also recommended implementation of health measures to mitigate the risk of dissemination via international traffic (Table 4).

Table 3: WHO’s advices on travelling restrictions

Day	Context	Advice	Reference
10	The day before the 1 st confirmed fatality was officially reported, when there were only reported cases in Wuhan and before knowing that dissemination was taking place between humans (which was officially confirmed by WHO in Day 21).	WHO then recommended international travelers to “practice usual precautions” and no restrictions to international traffic.	(WHO, 2020c)
24	41 people had already died of Covid-19 (confirmed deaths)	WHO continued to recommend travelers to “practice usual precautions”, but advised that specific health measures to mitigate the risk of dissemination via international traffic should be implemented, such as: temperature screening at international and domestic airports in countries/areas with and without transmission of SARS-CoV-19, ports, railway stations and long-distance bus stations in the affected areas; interview passengers with Covid-19 like	(WHO, 2020d)

Day	Context	Advice	Reference
		<p>symptoms leaving affected areas to discover possible source of infection; place under medical observation travelers that have had contact with infected people or animals; avoidance of travel by those who have “had high-risk contacts “for the duration of the incubation period (up to 14 days)””; and implementation of “health information campaigns at points of entry to raise awareness”.</p> <p>Following these recommendations, WHO concluded again to be “against the application of any restrictions of international traffic”.</p>	
27	<p>More than 100 people had reportedly died of Covid-19. There were nearly 3,000 confirmed cases of infections, 95% of which in China</p>	<p>As “new confirmed cases will continue to appear in other areas and countries”, WHO again recommended implementing control measures as the ones previously described, but continued to explicitly advise “against the application of any restrictions of international traffic”; “international travelers should [just] practice usual precautions”.</p>	(WHO, 2020e)
42	<p>More than 1,100 people had reportedly died of Covid-19</p>	<p>WHO published a document entitled “key considerations for repatriation and quarantine of travelers in relation to the outbreak of” SARS-CoV-2.</p> <p>WHO continued to “not recommend any travel or trade restrictions”. Instead, it recommended countries to be prepared for containment, reminding countries that “States Parties must inform WHO about additional health measures that significantly interfere with international traffic”.</p>	(WHO, 2020f)
60	<p>More than 3,000 people had died of Covid-19 and more than 85,000 people had been reportedly infected with SARS-CoV-2.</p>	<p>The main new recommendation for international travelers was “for travelers who are sick to delay or avoid travel to affected areas, in particular for elderly travelers and people with chronic diseases or underlying health conditions”.</p>	(WHO, 2020g)
71	<p>More than 100 thousand people infected and nearly 5,000 fatalities.</p>	<p>WHO “underlined the importance of travelers’ awareness in preventing the transmission of COVID-19”.</p>	(WHO, 2020h)
120	<p>130 thousand people infected and more than 10,000 fatalities</p>	<p>WHO published a joint communication with the International Civil Association in which they reminded “all stakeholders of the importance of following existing regulations and guidance”.</p>	(WHO and ICAO, 2020)

Source: BBC News (2020) and Worldometer (2020b)

Table 4: Health measures to mitigate the risk of dissemination via international traffic, according to WHO

Actions
Temperature screening at international and domestic airports in countries/areas with and without transmission of SARS-CoV-19, ports, railway stations and long-distance bus stations in the affected areas.
Interview passengers with Covid-19 symptoms leaving affected areas to discover possible sources of infection.
Place under medical observation travelers that have had contact with infected people or animals; avoidance

of travel by those who have “had high-risk contacts for the duration of the incubation period (up to 14 days)”.

Implementation of “health information campaigns at points of entry to raise awareness”.

Source: WHO, 2020e

In these travel advices, the WHO recognized that travel restrictions “may allow affected countries to implement sustained response measures, and non-affected countries to gain time to initiate and implement effective preparedness measures” and may also gain time to advance studies and research on appropriate vaccines (WHO, 2020h). Travel restrictions, however, were not recommended because they might “interrupt needed aid and technical support, may disrupt businesses, and may have negative social and economic effects on the affected countries” and are “ineffective in most situations”, unless when implemented before virus dissemination (WHO, 2020h). To demonstrate the last point, in Day 42, the WHO advised that “several countries that denied entry of travelers or who have suspended the flights to and from China or other affected countries, are now reporting cases of COVID-19” (WHO, 2020h). The WHO, however, failed to mention that symptoms of COVID-19 commonly take up to two weeks to manifest, hence, the infected people could have travelled before flight control was imposed.

Tourism in times of SARS-CoV-2

In 2019, the global commercial airline industry performed 38.9 million flights (Statista, 2020), in which they internationally carried 1.5 billion tourists (WTTTC, 2020b). These tourists, while abroad, spent 1.7 trillion dollars, which corresponded to 3.6% of the world’s GDP and 7% of exports (OECD, 2020). With this expenditure, tourism supported at least 330 million working positions distributed all over the world (UNWTO, 2020a); many of which would automatically disappear in the circumstance of no tourists. As such, the WHO recommended against travel restrictions.

Yet, ignoring the WHO’s travel advice, by the end of the first month (Day 31), 100% of the world’s tourism destinations had implemented some sort of travel restriction (UNWTO, 2020c). Consequently, tourism came to a stop - abruptly and without a plan. Hence, the impacts were enormous.

In 2020, the number of international air passengers diminished by 80%, which caused a global sharp drop on international tourism receipts with a loss estimated of up to 1.2 trillion dollars US (UNWTO, 2020a). This represented a 3% contraction in the world GDP (ICAO, 2020b), which endangered the livelihoods of 110 million people that were until 2019 working with tourism related activities (UNWTO, 2020c).

Results of the questionnaire

Two hundred and twenty-nine (229) people responded the online questionnaire. They reside in 29 different countries, located in all continents but Antarctica. Of the 229 people that participated, half were male and half female. Age of respondents varied between 20 and 79 years; the average age was 42 years old with a standard deviation of 13 years.

CEOs of large tourism companies operating globally, including in Antarctica, to tourist guides on the Himalayas, the Galapagos and Brazil were amongst those who responded to the questionnaire, as did tourists, students, retirees and unemployed people. Of the respondents, 61% advised that they had their tourism activities affected by the current crisis; 44% were impacted professionally and 12% were not directly affected but expressed their opinions anyway. Seventeen per cent indicated that their tourism activities were affected along with their work. Nearly half (46%) of the respondents professionally affected reported to have lost all their income due to the pandemic, while a third reported that their income had declined significantly.

Of the 229 respondents, only 20 (8%) did not answer the question of when tourism should be interrupted in case of pandemic, hence are likely not to support the idea of interrupting tourism in times of pandemic. These respondents reside in Argentina, Australia, Brazil, Cabo Verde, France, Indonesia, Morocco, Philippines, Portugal and Switzerland. While so, half of the 229 respondents (47%) supported the idea of interrupting tourism immediately after the discovery of new potentially threatening viruses to and from the place where new viruses emerge. This, in the case of the SARS-CoV-2 pandemic, would have meant halting tourism to and from China beginning on 9 January 2020. One forth (26%) indicated that tourism should only be halted to and from the place where the new virus emerged after scientific studies have proven the virus represents a significant threat; and about one fifth of respondents (19%) believe that, as currently recommended by the WHO, halting tourism to and from places affected by emerging viruses should be used as a last resource.

III. Discussion

There is consensus among those that scientifically study the issue, including the WHO, that travelers are key vectors for disseminating viruses transmitted between humans. Therefore, interrupting travel is a widely recognized measure to control the spread rate and reach of such viruses. While it would not alone avoid pandemic, it would most likely, delay the spread of viruses, giving essential time for States to prepare responses, for hospital systems to be improved, for medical equipment and medicines to be mass produced and for prophylactic and non-prophylactic research to advance. Hence, it could end up saving many lives.

While so, the WHO - based on an agreement reached before the emergence of the SARS-CoV-2 with the 194 signatory countries of the Organization - currently advises against travel restrictions based on the likely social and economic impacts and the relative ineffectiveness of the measure (when compared to the benefits). Impacts have been considerable in all economic sectors during the current pandemic, yet with efficient strategies, economic impacts can, at least in theory, be reduced. A Global Tourism Fund, for example, maintained with US\$ 10.00 per international tourist per trip would have collected in 2019 fifteen billion US dollars that could have been used to minimize the economic impacts of the current tourism crisis.

Regarding the aforementioned WHO advice on the relative ineffectiveness of travel restrictions to avoid pandemics, countries that in the context of the 2020-pandemic imposed early travel restrictions, and timely quarantining of potential virus carriers, social distancing and hygiene responses (e.g. Australia, New Zealand and Fiji) rapidly reduced the number of new cases and had nearly eradicated the SARS-CoV-2 from their territories (BBC News, 2020, Vally, 2020). Australia, for example, closed its borders when it had 176 new cases per day (Worthington and Snape, 2020); one month later, by 20 April, this number had dropped to 11 (Evershed et al, 2020). Travel restrictions, then, may not be as ineffective as previously thought, at least not in the context of the SARS-CoV-2.

Despite the economic impacts of border closures and the WHO's apparent reluctance to advocate for them, within a month of the 2020-pandemic, most States had closed their borders and had applied internal travel restrictions. Also, the vast majority (92%) of the respondents surveyed support the resultant interruption of tourism and, among those that support the measure, half believe interruptions should take place immediately. The other half believes tourism should be stopped as last resource and/or based on sound scientific evidence.

Given the half a million lives that have been lost to the SARS-CoV-2 in the first six months of the pandemic, it is obvious that delayed implementation of travel restrictions may come with an extremely high price, and that unequivocal scientific evidence, while undoubtedly necessary, is unlikely to be available for making timely decisions to stem the international spread of virulent airborne viruses. To illustrate, by the time the SARS-CoV-2 caused its first confirmed fatality, it had already been circulating in Europe for at least 26 days, but this was only discovered by Day 170. It also took 170 days, enough time for 10 million people to be infected with SARS-CoV-2 and nearly half a million deaths, for science to confirm that natural antibodies only last for about three months (Long, 2020; Ansa, 2020); hence, natural herd immunity is unlikely to be ever achieved. As such, awaiting sound scientific evidence to support pandemic management strategies for new viruses, while needed, seems to be an inappropriate luxury to inform immediate action.

Based on the medical evidence and risk assessment, the immediate closure of borders and implementation of travel restrictions seems essential to slow spread; yet some people need to travel. Given that geographical dissemination is directly related to the number of people in transit in an affected area, an intermediary option to those that already exist could be to restrict tourist movements, because of volume and level of social interaction, but not essential travelers that are moving largely as individuals for work or humanitarian reasons. This could be achieved by a simple reduction in the number of flights to and from infected areas with seats reserved accordingly, while tourists can be diverted to local or regional destinations. As interrupting tourism is likely to significantly reduce the rhythm of virus dissemination, then the complete ban of travelling may occur as a second stage, and may, depending on the circumstances, wait for scientific evidence that suggests this would be necessary. While so, scientific evidence should also guide the resumption of the activity.

IV. Conclusion

The WHO guidelines for responding to pandemic threats were based on the lessons learnt from previous outbreaks. Because the SARS-CoV-2 has proven to be more virulent, these guidelines were inappropriate to address the associated health risks. As such, up to March 2023, nearly 7 million people died directly due to COVID-19 and, unfortunately, we are still counting. As such, there is an obvious need for the WHO guidelines to be updated with lessons learnt from the 2020-pandemic, but taking into account the warning of virologists that even more virulent viruses are probable. Clear guidance is needed for a staged international and national response.

This research suggests that the WHO's categorization of travelers insufficiently differentiates traveler characteristics to inform decisions regarding travel restrictions. They do not consider (1) that not all travel is essential and some can be easily redirected, (2) the behavior of travelers is motivated differently with different effects on disease transmission, (3) that the majority of the likely negative impacts of travel restrictions are manageable (e.g. tourists can be diverted to other destinations and economic losses can be covered by a fund created for this purpose and or governments can economically support tourism-workers), and (4) that countries and the tourism community seems to support interruptions that will avoid pandemics' related chaos. Therefore, categorizing 'travelers' into 'essential travelers' and 'tourists', and developing and implementing specific plans to halt and to resume tourism seem crucial.

There is also a need to identify categories for virulence, time status, levels of risk of transmission and impact, and align them with response actions at national and regional scales. Governments will need to have corresponding risk reduction strategies that will include border closures, internal travel restrictions, and social distancing regulations. These would reduce the uncertainty that characterized the uncoordinated situation regarding the spread of SARS-CoV-2 and minimize interruptions to tourism. For the tourism sector, a corresponding response strategy is needed that guides businesses in developing response strategies, ahead of those mandated. The purpose would be to demonstrate responsible contribution to mitigating disease transmittal and being ready for resumption of tourist flows. As most of these issues have not been scholarly studied (Sinay, 2023), it is also important to intensify support for knowledge development about how and when to interrupt tourism in the contexts of pandemics, so that interruption is not chaotic and can recurrently happen with limited distress.

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Figure 1: When to stop tourism according to respondents

