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## Working Paper

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# Differentiated territorial effect of Covid-19 on the tourism sector in Morocco

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## ABSTRACT

We exploit data from an accommodation web platform to highlight the territorial impact of Covid-19 on Morocco's tourism. We noted a cancellation rate leading to a fall in prices with greater severity in the vulnerable territories of the foothills of the Atlas and the Ultra Atlas. We noted a resilience for unclassified and higher rated hotels, and for those have built notoriety with customers in the past. Consequently, the measures to support tourism sector should privilege territories who are socioeconomically vulnerable with high level of cancellation rates, and, within regions, middle to lower class hotels.

## KEYWORDS

Covid-19, tourism, territory, vulnerability, public policy.

## 1. Introduction

Since its appearance in Wuhan on December 31, 2019, covid-19 has been diagnosed by wave to reach Morocco on March 2, 2020 (MH, 2020), by cases imported by air (Chinazzi et al., 2020), consecutively to its main partner countries (France (25/01/2020), Spain, United Kingdom and Italy (31/1/2020), Germany (27/1/2020)...) (JHU, 2020). One of the first sectors to be impacted by covid-19 was the tourism industry following the affection of the main origin countries and the suspension of international flights and passenger maritime traffic by Morocco on 15 March 2020 (MFAACME, 2020).

The impact of the pandemic on the tourism sector is estimated on the international level with, in particular, a drop in the arrivals of international tourists in 2020 by 20 to 30% (UNWTO, 2020) and a loss of \$ 314 billion in revenues passenger of air transport in 2020 (-55% compared to 2019) (Pearce, 2020). However, its differentiated effect on the territories remains to be identified. Nevertheless, given the declaration of the health emergency, since March 20, 2020 and the total containment decreed in Morocco (MAP, 2020), it is difficult to conduct field surveys to identify this effect. Thus, we are using massive data from the web for tourism activity in order to appreciate the differentiated effect of Covid-19 on territorial tourism activity in Morocco.

Thus, we have collected around forty variables of different types (digital, alphanumeric, binary, geodesic ...) from Booking covering the twelve regions of Morocco. The data were collected in two stages. The first, on February 3, 2020, at the same time as the declaration of the first cases of Covid-19 in the area of influence of Morocco. The second collection was carried out on 04/03/2020, two months later, which

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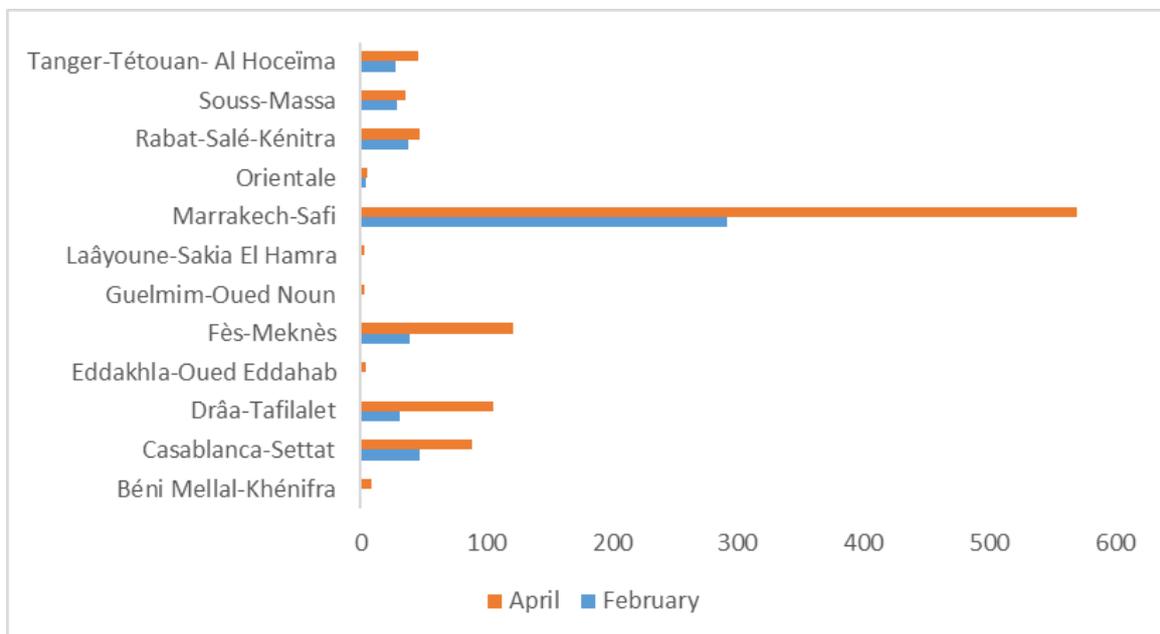
coincides with the rise of the five main tourist-emitting countries in Morocco to the top 10 of cases detected internationally (Johns Hopkins, 2020).

We started by making a comparative analysis of the tourist offer on the web of the twelve Moroccan regions before and after the dissemination of covid-19 by noting the changes in the tourist offer, the prices and the level of cancellation. Then, we made the parallel with the level of vulnerability of the regions to assess their resilience capacity. The ultimate objective of our analysis is to better support public aid measures (MEFAR, 2020) by making targeting elements available to public authorities at the territorial level.

## 2. Method

We started by collecting data from 1548 accommodations of the twelve regions of Morocco from Booking, a tourist accommodation web platform (Data Miner, 2020). The data relate to 1548 reservations made on February 3, 2020 (509) and April 2, 2020 (1039) for the same 6-night stay (from August 1 to 7, 2020) of two adults.

The data concerns around forty variables of different types (numeric, alphanumeric, binary, geodesic ...) for each accommodation. In order to identify the region of each establishment, we built a geographic information system of the 12 regions of Morocco (Souris et al., 1984). Next, we used a geo-belonging module to collect the regional location of each establishment. This approach made it possible to inform nearly 90% of the establishments, the rest which are close to the borders between the regions (Example of Mireleft's accommodations between the regions of Souss-Massa and Guelmim Oued Noun) or on the coast (example of accommodation at Essaouira) have been entered manually. Shapefiles with a precision less than 10 meters would have facilitated the complete automation of georeferencing.



**Figure 1. Regional structure of reservations established in February and April 2020**

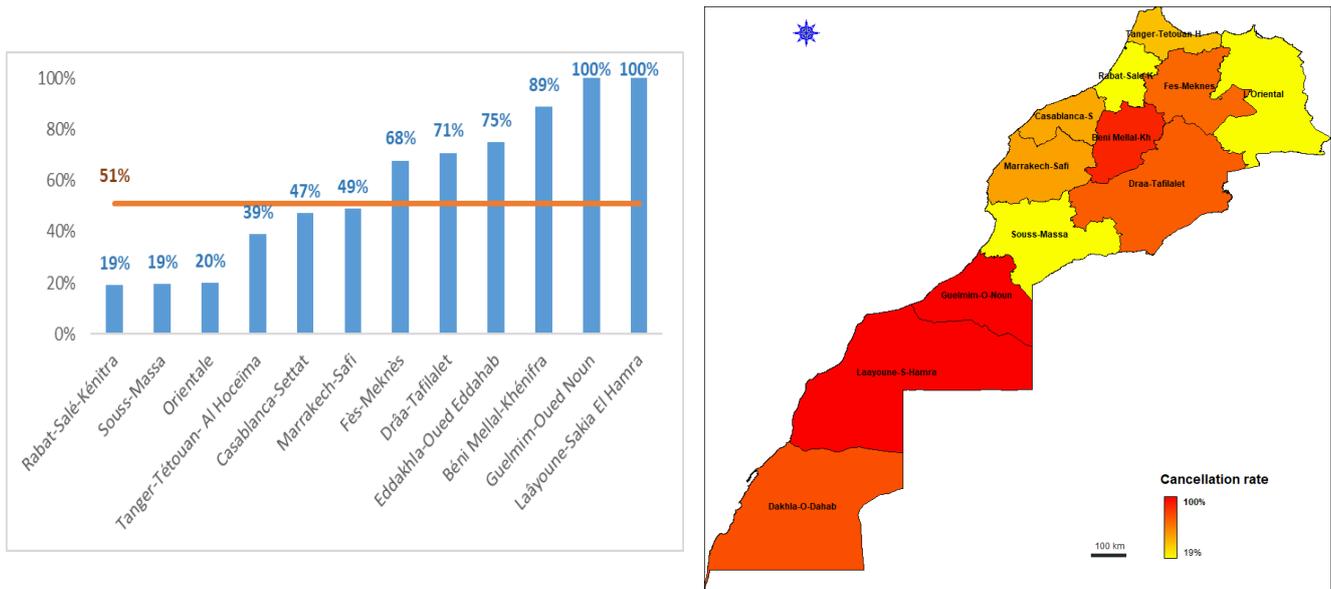
The estimate of the cancellation rate by region is based on the ratio between the number of accommodations available for reservations made in February compared to those of April:

$$CR_i = 1 - \frac{A_i^F}{A_i^A}, \quad (1)$$

where  $CR_i$ : Cancellation rate in region “i” with  $i \in \{1; 12\}$ ,  $A_i^F$ : Number of accommodations available for reservations made on February 3, 2020, and  $A_i^A$ : Number of accommodations available for reservations made on April 2, 2020.

### 3. Results

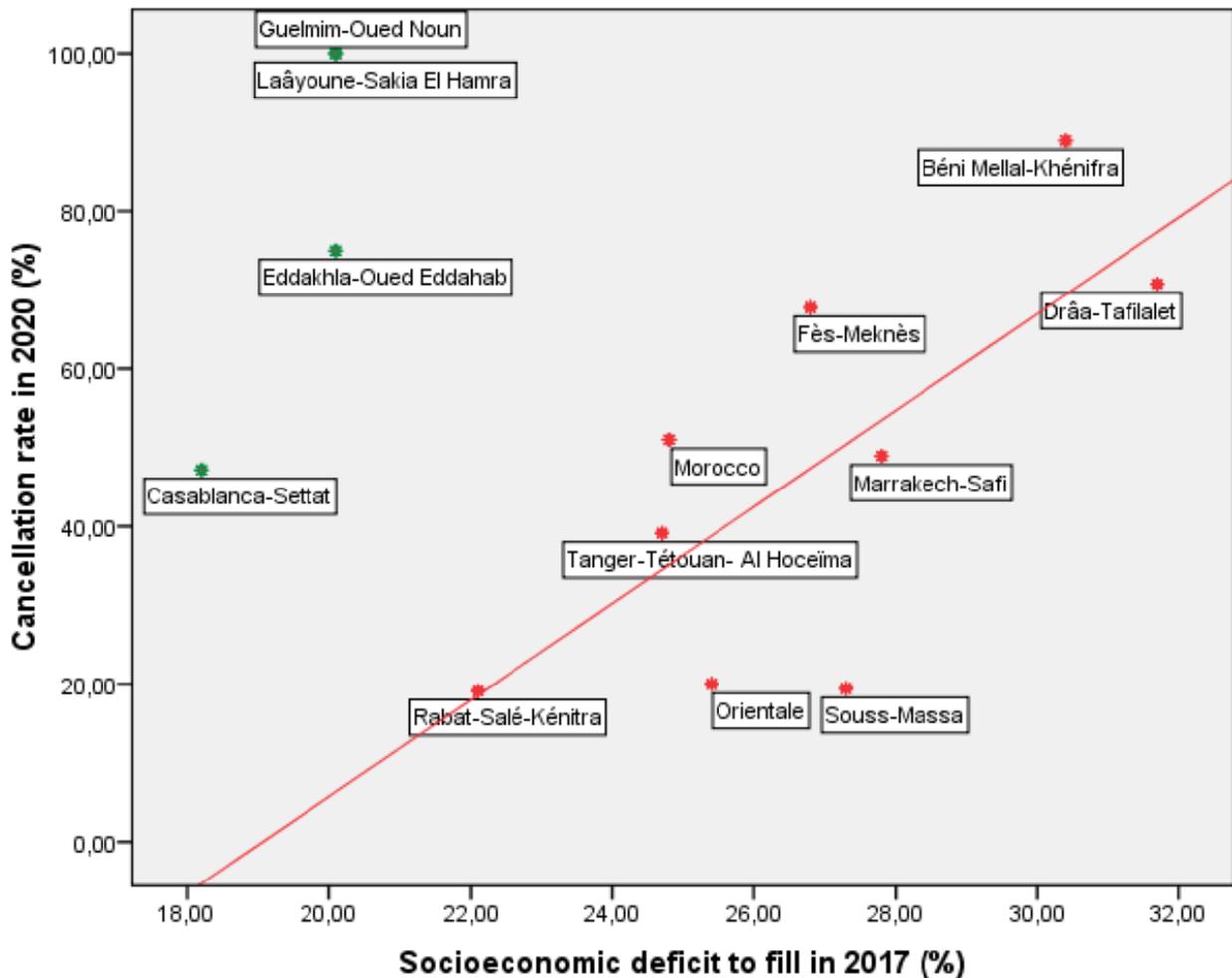
The booking cancellation rate reached 51% with very high rates in the vulnerable tourist areas of the foothills of the Atlas (Fès-Meknès and Béni Mellal-Khénifra) and the Ultra Atlas, in particular, Drâa-Tafilalet.



**Figure 2. Booking cancellation rate by region in 2020**

Notes: Five regions have a booking cancellation rate higher than the average of the country (51%).

These regions have the highest socioeconomic deficits to fill in Morocco, which reach 31.7% and 30.4% respectively for Drâa-Tafilalet and Béni Mellal-Khénifra against a national average of 24.8% (HCP 2018).

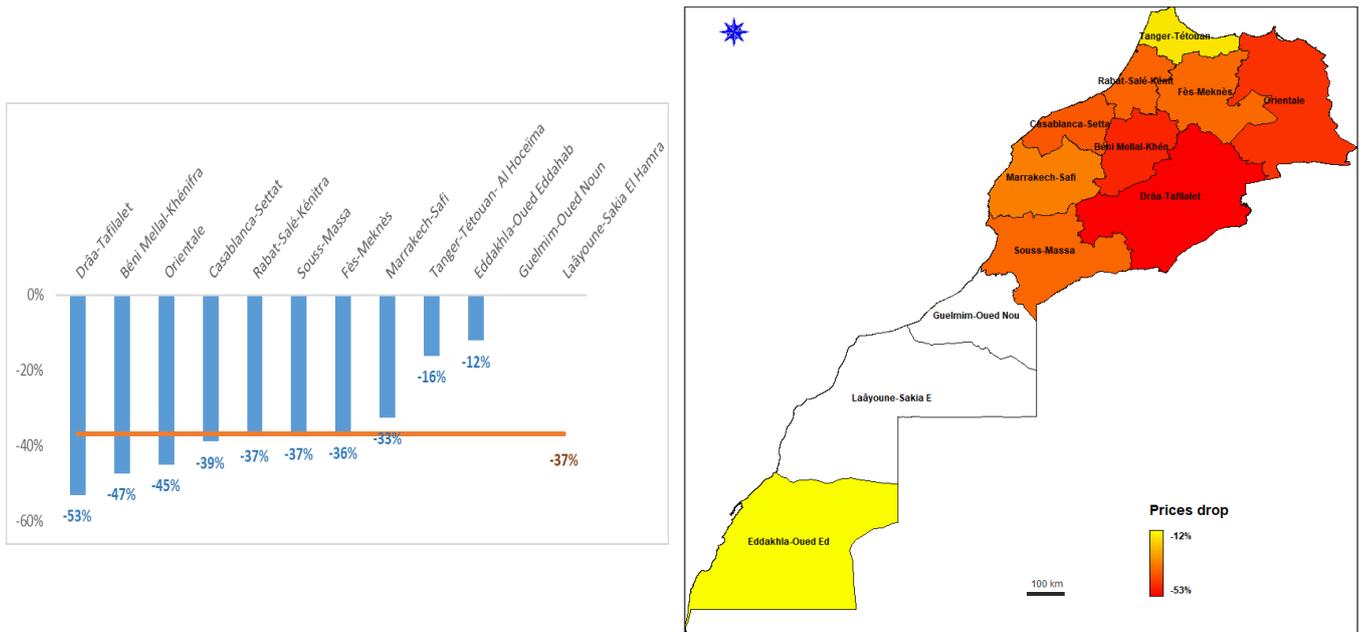


**Figure 3. Adjustment of the booking cancellation rate in 2020 to the socio-economic deficit of the most vulnerable regions**

Notes: The booking cancellation rate is high for vulnerable regions with a high socioeconomic deficit to fill (designated in the figure by red stars).

These cancellations affect classified accommodations (64%) more than unclassified accommodations (48%). The highest rates are recorded by the lower categories (2 stars (70%) and 3 stars (68%)). This situation is likely to worsen given that, in February, when only 28% of accommodation offered free cancellations for reservations for stays from 1 to 7 August 2020, all accommodation offered free cancellations for reservations made in April.

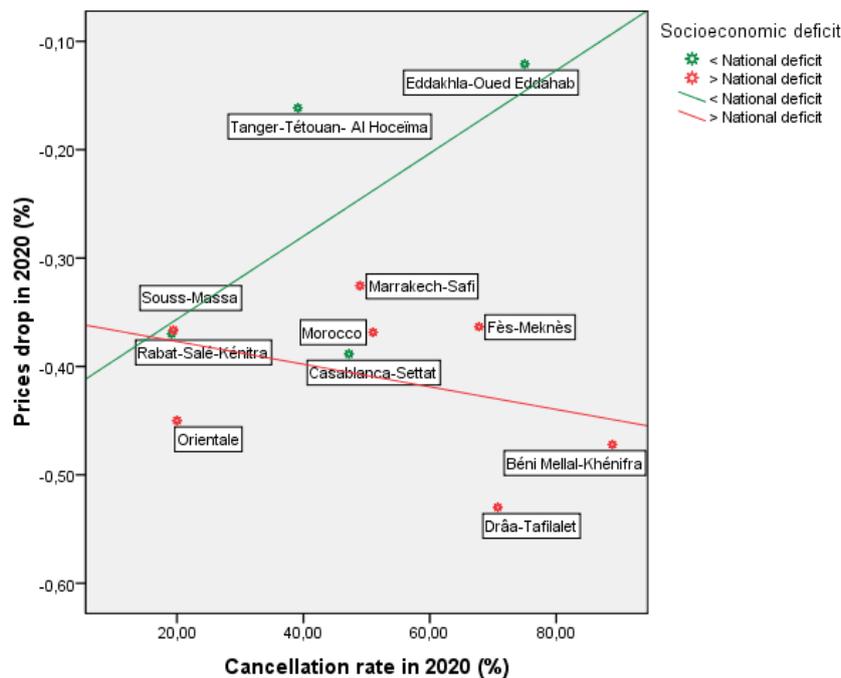
These cancellations, which increase the marketing of more accommodation, inflate the supply and put downward pressure on prices. This drop, which averaged 37%, concerned the interior regions of the foothills of the Atlas, Béni Mellal-Khénifra (-53%), the Ultra Atlas, Drâa-Tafilalet (-47%), and the seaside region from the Orientale (-45%).



**Figure 4. Prices drop for stays by region in 2020**

Notes: Four regions have a price drop more important than the average of the country (-37%).

As a result, prices in vulnerable regions tend to fall more quickly relative to the regions with the lowest socio-economic deficit. The latter can afford to keep prices at relatively higher levels despite high cancellation rates<sup>4</sup>.

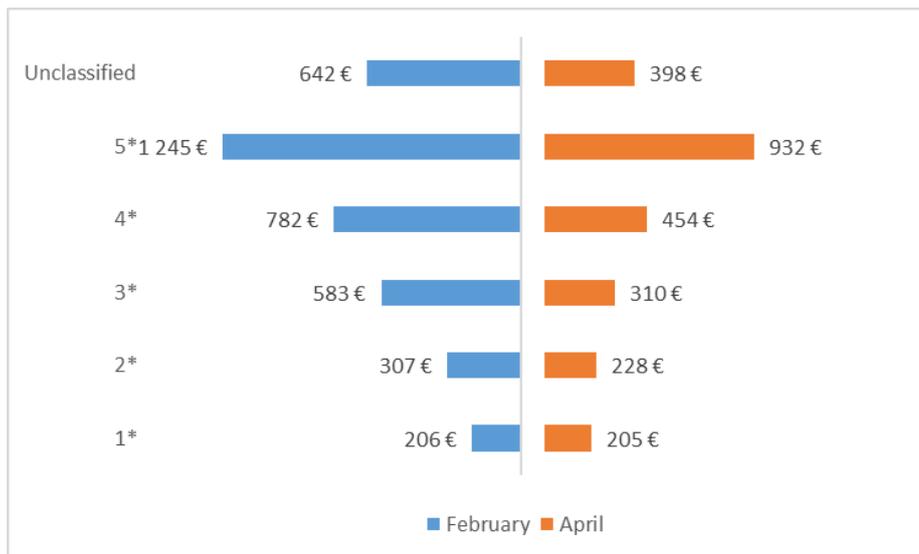


**Figure 5. Adjustment of prices to the cancellation rates for reservations in 2020 according to the socio-economic deficit of regions**

Notes: The adjustment of prices to cancellation rates is more noticeable downward for the seven regions with the highest socio-economic deficit (designated in the figure by red stars).

<sup>4</sup> The reduced sample size does not allow statistical inference.

On the other hand, the decreases concerned as much classified accommodations (-36%) as unclassified (-38%) with, however, more notable decreases for the 3 and 4 stars (respectively -47% and -42%) relatively to the 5 stars (-25%). Thus, the 5 stars have maintained their prices at a high level (932 €) despite the differential they have, compared to other categories. Indeed, if the price differential was 59% and 94% respectively with the 4 stars and the unclassified accommodations for reservations established in February, it widened to 105% and 134% respectively for reservations established in April. This shows, in part, the resilience of these categories of hotels, often backed by well-structured groups, and, therefore, that of destinations where they are located, in particular that of Marrakech-Safi which concentrates 50% of the national offer.



**Figure 6. Average price of stays differentiated by category and date of reservation in 2020**

This resilience is also perceptible for accommodation that has successfully built good notoriety of its establishments in the past. In fact, the fall in prices is all the weaker as the appreciation of the accommodation by the customer<sup>5</sup> is more positive. Thus, the accommodations rated by customers as exceptional (an average rating of 9.6/10) experienced a drop in prices limited to -33% compared to -67% for those less appreciated by customers (an average rating of 6,6/10). However, this notoriety is also linked to the attractiveness of the territories as evidenced by the flagship destination of Marrakech-Safi, which concentrates 70% of accommodation in Morocco deemed to be exceptional by tourists.

## 4. Conclusion

Thus, it turns out that if the cancellation phenomenon, following the spread of Covid-19, was general on the territorial level of Morocco, its severity is more important in the vulnerable territories of the foothills of the Atlas and the Ultra Atlas. Indeed, the latter combine multidimensional precariousness (HCP, 2018) to which would be added the drop-in tourist activity, which is an important complementary resource for the population of these territories.

Some accommodations are more resilient, in particular, unclassified hotels and those classified as higher category, which requires appropriate support for hotels of middle and lower class. This resilience is also noted for establishments that are well appreciated by customers. This resilience is reflected in the most

<sup>5</sup> Appreciation based on real feedback from nearly 400000 customers.

attractive regions, in particular, Marrakech-Safi, which concentrates 70% of accommodation deemed exceptional by tourists and 50% of 5 stars hotels.

Thus, priority should be given to building disaster resilience in the hotel sector (Brown et al., 2017) which is a very important sector for the Moroccan economy (SFDD, 2011). According to our analysis, the measures to support the tourism sector against the repercussions of covid-19 should be differentiated according to the territories, favoring those with the highest cancellation rates and price reductions. These are, in particular, the regions of Drâa-Tafilalet and Béni Mellal-Khénifra, which also have the largest socioeconomic deficits in Morocco (HCP, 2018).

In addition, this differentiation should be established within the regions. Indeed, if Marrakech-Safi has generally high cancellation rates, they are higher for establishments for 3 and 4 stars compared to 5 stars which have higher resilience capacities.

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