

INITIAL INSIGHTS INTO ALGERIAN TOURISM DEVELOPMENT WITH A BRIEF EXAMPLE FROM JIJEL

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Abstract: Tourism has emerged as one of the world's most vital industries, with its exponential growth generating substantial revenue. Nearly every nation now relies on this sector to diversify income streams and elevate the socio-cultural well-being of their populations. In this context, Algeria, endowed with vast and diverse potential, is now tasked with revitalizing its tourism sector to position itself as an alternative and forward-looking destination in the Mediterranean basin. Thus, this study aimed at assessing the development of tourism in Algeria through a case study of Jijel (a coastal area). For this purpose, descriptive statistics and ANOVA tests were applied to tourism infrastructure and flow data collected from national and local authorities regarding Algeria and the province (Wilaya) of Jijel. Our results showed that even if Algeria attracts a high volume of tourists (particularly in the summer), this does not consistently translate into longer stays or significant economic impact. Between 2010 and 2019, tourism indicators such as visitor numbers and overnight stays increased, but the COVID-19 pandemic caused a sharp decline in 2020–2021. However, a partial recovery was observed in 2022. Statistical modeling confirmed that hotel bed capacity significantly influences the number of tourists, but its effect on overnight stays, summer visits, and GDP was not significant. The study highlights that expanding accommodation alone is insufficient; comprehensive planning that considers tourist behavior, infrastructure quality, and alternative tourism types (such as Saharan and thermal tourism) remains also essential to unlock Algeria full potential as a sustainable tourism destination in general, and to secure Jijel's position as a premier high-quality tourist destination.

Keywords: tourism, touristic development, sustainable tourism, Jijel, Algeria

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INTRODUCTION

It is well known that tourism offers an important source through which counties can achieve improvements in terms of economic diversification that will enhance non-oil wealth and economic stability, specifically in Africa (Boutafenouchet, 2011). In fact, we cannot overlook the role of tourism on generating employment, boosting incomes, reducing poverty, and mitigating volatility in global markets (Ekeocha et al., 2021). According to Cárdenas-García et al., 2024, there are numerous studies that have identified three primary causal relationships between tourism and economic growth: tourism-led growth, economic-driven tourism expansion, and bidirectional feedback effects. These relationships are empirically supported by evidence such as in the study of (Brida et al., 2016). In addition, always according to the same authors, the impact of tourism on human development can be debated, as economic growth from tourism may improve living conditions, but outcomes depend on factors like infrastructure and policies, as previous studies stated that less-developed countries often require international aid to escape poverty traps and leverage tourism for development (Thao & Bakucz, 2022) highlighted causal relationships between tourism, economic growth, and human development while identifying a research gap in integrated studies of these variables across diverse economies. Algeria, characterized with vast and diverse potential, is now tasked with revitalizing its tourism sector to position itself as an alternative and forward-looking destination in the Mediterranean basin. To achieve this, the country must address its severe shortage of lodging capacity, modernize hotel infrastructure, and align service standards with international benchmarks, all while safeguarding its natural and socio-cultural heritage (Boulesnane et al., 2022; Boulhila et al., 2022). Success hinges on developing tourism models that align with Algeria's unique cultural identity, economic realities, and environmental assets (Kherrou et al., 2018).

Guided by the principles of its National Spatial Development Plan (SDAT, 2023), Algeria's tourism strategy prioritizes sustainable development (Azil et al., 2020). This framework emphasizes protecting natural, cultural, and historical resources (Rahal et al., 2020) to preserve their authenticity and ensure long-term appeal for visitors.

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Recently, as demonstrated in some studies, the Coronavirus disease 2019 (COVID-19) pandemic considerably impacted tourism in the world, with cross-regional analyses revealing stark disparities in impacts and recovery. Indeed, according to (Škare et al., 2021) the travel industry faced unprecedented disruptions, with airline and hotel revenues plummeting by 50–70% in 2020 because of border closures and lockdowns. Another study by Uğur & Akbıyık, 2020 highlighted regional inequalities: while Western economies leveraged government aid to sustain tourism businesses, Asian destinations reliant on international arrivals suffered prolonged slumps. Another study by Korinth, 2022 emphasized that North-East Asia suffered the steepest decline in international tourism revenues during COVID-19, while European responses (e.g. Italy) mitigated losses, revealing stark regional disparities tied to pre-pandemic tourism dependence and government policies.

Another study documented the vulnerability of eco-tourism in Ghana's Savannah region, where community-based enterprises collapsed without safety nets, exacerbating poverty (Soliku et al., 2021). Alreahi et al. (2023) suggested to integrate biological/psychological perspectives to understand customer perceptions, while post-COVID-19 and energy-crisis studies are needed to assess true operational impacts on both green and non-green hotels. These studies around the world underscore how pre-existing structural weaknesses, lack of diversification, fiscal dependence on tourism, and unequal policy support amplified the crisis. As it is the case in most countries around the world, Algeria suffered from the COVID-19 pandemic, the borders were closed fairly early at the start of the epidemic, and the first confirmed case was declared on 25 February 2020, as indicated by Hamimes et al., 2022, 2023 where the authors detailed the situation at that moment. Thus, the situation persisted until the pandemic was under better control as the authorities applied new measures to contain the spread of the epidemic (Ababsa & Aouissi, 2020). In fact, the borders remain closed while some countries opened too early and some of them were forced to close again (Aouissi et al., 2021). Undoubtedly, this dealt a massive blow to tourism, bringing it to a near standstill for months (or years), with significant economic effects.

Our study focuses on Jijel, a coastal province in northeastern Algeria located 357 km east of Algiers, boasting 120 km of Mediterranean coastline. Despite limited tourism infrastructure, Jijel attracts growing numbers of tourists and summer visitors drawn to its unspoiled natural landscapes (Boutafenouchet, 2011). In 2022 alone, the province welcomed over 19 million summer travelers, ranking it first nationally in seasonal tourism. Currently, Jijel's hospitality sector includes 31 hotels offering 2,578 beds (Direction of Tourism and handicrafts, Jijel, 2021). Jijel, as a province, possesses the necessary potential to become a hub of tourism excellence. The region offers unique characteristics that make it an attractive destination for travelers seeking authentic and diverse experiences. As such, Jijel stands as a center of tourism excellence, where its exceptional assets can be highlighted to develop this Algerian region, which boasts distinctive features that also make it an appealing destination for travelers in search of genuine and varied experiences—not only on a local (national) scale but also on a global (international) level. However, despite this remarkable potential (which must be leveraged to establish Jijel as a must-visit destination for travelers seeking memorable experiences) by promoting these unique strengths and investing in tourism development, Jijel can rise among the most sought-after destinations in the region and contribute to the economic prosperity of the province and its inhabitants. Jijel now faces a critical dilemma: balancing tourism growth (expanding infrastructure and lodging capacity) with the preservation of its fragile coastal ecosystems. We judged it as important to try to know to what extent does the tourism potential (measured by accommodation capacity and the hotels) in Algeria can influence the key tourism indicators in Jijel (such as the number of tourists or overnight stays).

Furthermore, there is a lack of studies dealing with tourism in general in Algeria, only a few are indexed and accessible such as the work of Farah et al. (2024) that studied tourist traffic in the wilaya of Constantine and the different projects programmed by the authorities to develop tourism in the Wilaya. Madani et al. (2020) examined how COVID-19 reshaped Algerian tourists' needs emphasizing a strong demand for domestic leisure to mitigate psychologic stress, cost-effective services, safety and hygiene at tourist sites, the authors also highlighted the importance of tourism in economic recovery.

Abderzag & Mohamed (2023) noted the need for improved visa flexibility, air transport, heritage investment, and also digital technologies to unlock its full potential. Finally, Charchafa & Kimouche (2024) examined Algeria's sectoral growth (from 1997 to 2019) and its impact on tourism, revealing no significant links with agriculture, manufacturing, or services, but a weak positive effect from infrastructure/public works, underscoring the need for stronger sectoral integration to boost tourism-led economic diversification. Nevertheless, it is important to note that several articles have examined different aspects of tourism in Algeria. For example Zeraib et al., 2022 showed that targeted local strategies can stimulate domestic tourism demand. However, their findings were limited by a specific area (Aures Mountains), while (Azzaoui et al., 2022) finds that Algeria's Horizon 2025 tourism initiatives yielded progress in marketing and infrastructure but were hampered by weak governance, visa problems and other constraints. In addition, Charchafa & Kimouche, 2024 reported no significant link between growth in agriculture or manufacturing, and tourism, but the they included pre-COVID period ignoring domestic tourism and regional variation. Baba & Chabi, 2024 argued that local heritage assets can drive sustainable rural development through small circuits, artisanal valorization. Nonetheless, this was limited to a qualitative approche. Ghadjati et al., 2024 determined that social media and user-generated content have been instrumental in reviving Algeria's domestic tourism after COVID-19. However, it relies on online surveys that may be biased

More recently, Ramdan & Mourad, 2025 examined the structural and policy-related impediments to sustainable desert tourism in Algeria, but their analysis was descriptive and does not contain quantitative assessment of the effectiveness of proposed policy remedies. Azzaoui et al., 2025 interrogates how post-colonial narratives reconfigure the tourist gaze and the representation of heritage in contemporary Algerian tourism discourse. Even if it is qualitative, the paper has the same limitation of the previous one, as it lacks quantitative analysis. Moussa & Saidi, 2025 investigated the relationship between GDP and tourism activity examining macro-level tourism indicators and national income measures. However, the study was predominantly descriptive, limiting its capacity to address potential endogeneity between tourism and GDP.

The situation is even more evident regarding Jijel. To the best of the authors knowledge, this is the first study that dealt with quantifying tourism in the wilaya of Jijel specifically before and after the COVID-19 pandemic, the rare works on tourism in Jijel are generally in French, scarce, not accessible, or non-indexed (such as Bouhelouf et al., 2019). In addition, the majority are only master's thesis (Azizi & Hadeif, 2016; Boudendouna & Ariane, 2021; Chahna et al., 2016; Dib & Bestandji, 2022; Laouir & Bouhanni, 2017). The main objective of this study was to deliver data-driven assessment of tourism in the Wilaya of Jijel by quantifying and comparing key indicators before and after the COVID-19 pandemic, examining the situation and evaluating the adequacy of local infrastructure and governance (such as transport, accommodation, or site).

The study also combined original quantitative data with qualitative insights and statistical comparisons, and aimed to: (i) identify the region's strengths and weaknesses (ii) highlight concrete opportunities for sustainable development (iii) provide prioritized, evidence-based recommendations for policymakers and local operators, thereby filling documented gaps in the Algerian regional tourism literature, especially in the Wilaya of Jijel, and establishing a baseline for future comparative research.

MATERIALS AND METHODS

1. Study Area

The Wilaya of Jijel is located in the North-East of Algeria, it is bordered to the north by the Mediterranean Sea, to the east by the Wilaya of Skikda (Collo Massif), to the south by the Wilaya of Mila, to the southwest by the Wilaya of Sétif, and finally to the west by the Wilaya of Béjaïa (Figure 1). The climate of this region is Mediterranean with a humid bioclimatic stage (Mebarki, 2005). The municipality of Jijel holds a strategic position in northeastern Algeria. It is bordered: to the north by the Mediterranean Sea, to the south by the municipality of Kaous, to the east by the municipality of Emir Abdelkader, to the west by the municipality of El Aouana. According to (PDAU Jijel, 2025), administratively, the municipality of Jijel was part of the Constantine prefecture until 1974. According to the 1984 administrative division, the municipality of Jijel was split into two separate municipalities: Jijel and Kaous.

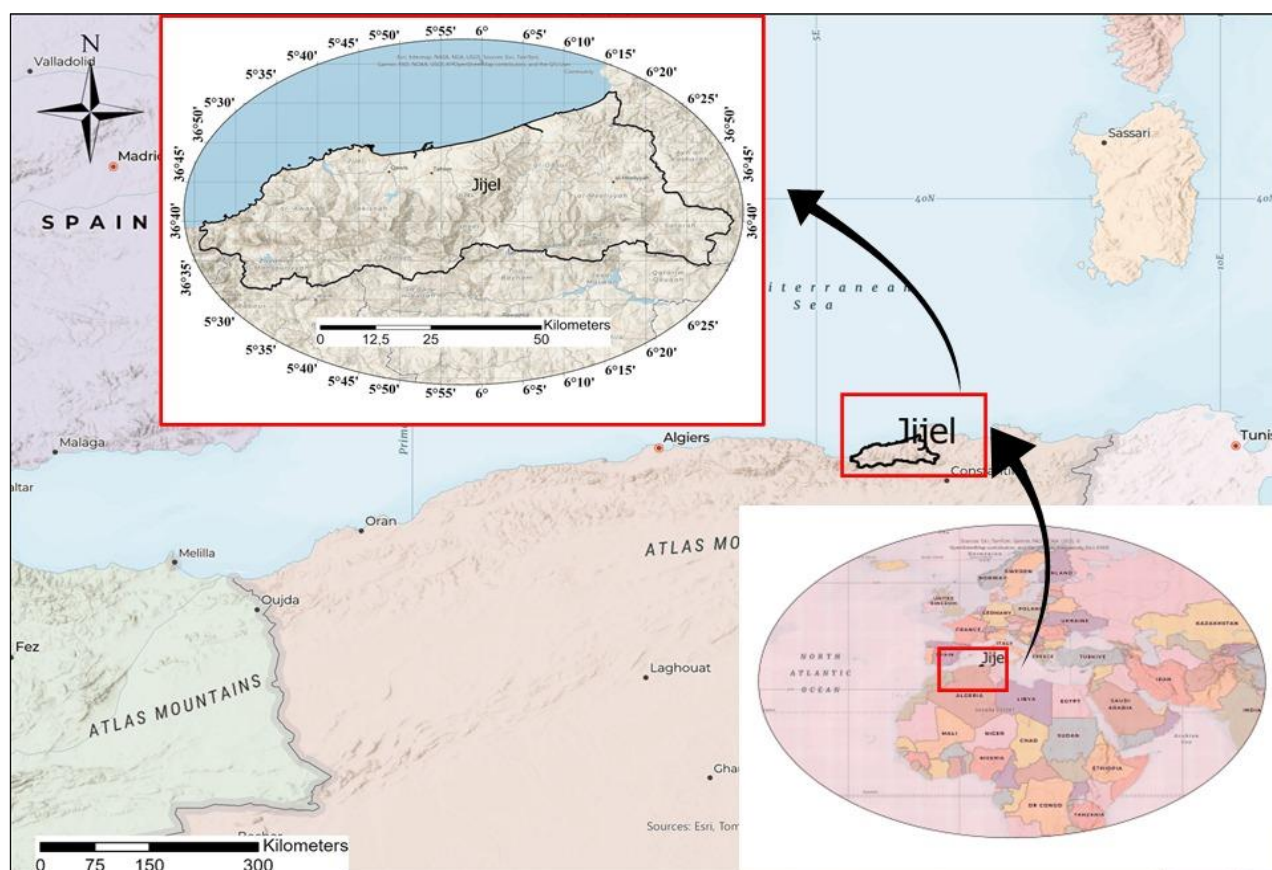


Figure 1. Geographical location of the Study Area (Source: The authors using ArcGIS Software)

2. History

Jijel has been a crossroads of multiple civilizations. Founded in the 6th century by the Phoenicians, who named it "Igilgili", its origins trace back to pre-Roman antiquity. Over time, successive occupations gave it various names: Gigel, Djidjel, Djidjeli, and finally Jijel (MICLAT, 2021). The city first became a Carthaginian trading post, then a Roman colony under Emperor Augustus. The gradual decline of the Roman Empire allowed the Berber populations of eastern Kabylia to regain their freedom. Before its Arabization, Jijel witnessed invasions by the Vandals and Byzantines. The rule of the Fatimids and later the Hammadids in the early 10th century enabled it to resist Norman, Pisan, and Genoese incursions. The city is also linked to the famous corsair brothers Aroudj and Kheiredine Barbarossa, who established it as their base in 1514. Their presence in Jijel and their dominance in the Mediterranean attracted multiple punitive expeditions.

During Algeria's War of Independence, Jijel and its region played an important role. Today, it is the capital of a rapidly growing wilaya (Hadji, 2009). Due to its turbulent history shaped by its Mediterranean location, Jijel has been a melting pot of civilizations, with traces still visible today, such as the Roman ruins of Choba in Ziam Mansouriah, and prehistoric sites in Taza, Ouled Bounnar, Settara, and Emir Abdelkader (Hadji, 2011).

3. Touristic Potential

It is known that the Jijel region boasts a rich natural and cultural heritage that serves as a key driver for tourism development. From a natural perspective, it is home to one of the country's most significant forest resources, including remarkable forests such as Guerrouche, which stretches down to the sea, and the vast Tamentout forest, spanning several provinces (Ali, 2024). The Jijelian corniche, with its rocky cliffs to the west of the city, offers spectacular landscapes.

Jijel's 120-kilometer coastline is dotted with beaches, coves, islets, and caves, forming the "Sapphire Coast" with breathtaking views. Among the most famous beaches are those stretching from Tichi to Sidi Abdelaziz, and from Ziam Mansouriah to El Milia. The region also features natural lakes, such as the Ghdir El Mordj marsh and Ghdir Beni Hamza, which attract a rich diversity of bird species. The "Grottes Merveilleuses" (Marvelous Caves), located 35 km west of Jijel, and El-Ouana Island—also known as the "Goat Islet"—add to this natural landscape (MTA, 2021).

As for its cultural assets, Jijel is a true historical treasure, home to 25 archaeological sites and historical monuments, including prehistoric, Phoenician, and Roman remains found in Jijel, Ziam Mansouriah, and Djimla. Some of these sites are already classified or in the process of being classified, bearing witness to the region's historical significance. Finally, Jijel's local craftsmanship—including woodworking, brassware, pottery, leatherwork, and traditional embroidery—represents another valuable asset. With over 3,000 artisans working across various sectors, this craftsmanship contributes to both the region's economic development and cultural influence.



Figure 2. Touristic potential of Jijel (a) the old road (b) the port of Jijel (Source: The authors in Jijel, June 2023)

4. Data acquisition

The data listed and analyzed in the manuscript were made available by the Ministry of Tourism and Handicraft in Algeria and the Direction of Tourism and Handicrafts of Jijel. The authors involved a process of selection, grouping, filtering, and data entry to retain only those deemed complete and/or relevant.

5. Statistical analysis

In this manuscript, Microsoft Excel (ver. 2019) was used for data compilation and for descriptive statistics, while Statistical Package for Social Sciences "SPSS" (ver. 27) was used for the ANOVA test.

RESULTS AND DISCUSSION

1. Descriptive results related to Algeria

1.1. Algeria's Socio-economic Indicators (Gross Domestic Product)

Algeria's economy has always been linked to hydrocarbons. As shown in Figure 3, the COVID-19 pandemic severely impacted Algeria's hydrocarbon-dependent economy. In fact, oil prices crashed by 24% in a single day in March 2020 due to reduced global demand and the Saudi-Russia price war, exacerbating fiscal deficits (Fabiani, 2021; Nicola et al., 2020). In the same vein, the review article by Nicola et al. (2020) emphasized that commodity-dependent economies faced "grave implications" from the dual shock of demand collapse (due to lockdowns) and supply gluts (from the oil price war).

1.2. Tourism infrastructure data – Algeria:

1.2.1. Evolution and Distribution of Hotel Bed Capacity by Category

Figure 4 show that hotel accommodation capacity increased between 2012 and 2022, growing from 96,898 beds in 2012 to 145,526 beds in 2022. However, the majority of establishments are concentrated in urban areas (93,906 beds in 2022), while 37,586 beds are in coastal areas. In addition, regarding the number of hotels, it is observed that the number of five-

star hotels increased from 13 in 2016 to 19 in 2022, while Four-star hotels experienced faster expansion, growing from 12 in 2016 to 58 in 2022. These results are in line with the current Algerian policy which is to try to improve the tourism sector where Algeria was in the 6th position among the most attractive African countries in 2022 (Pica, 2022).

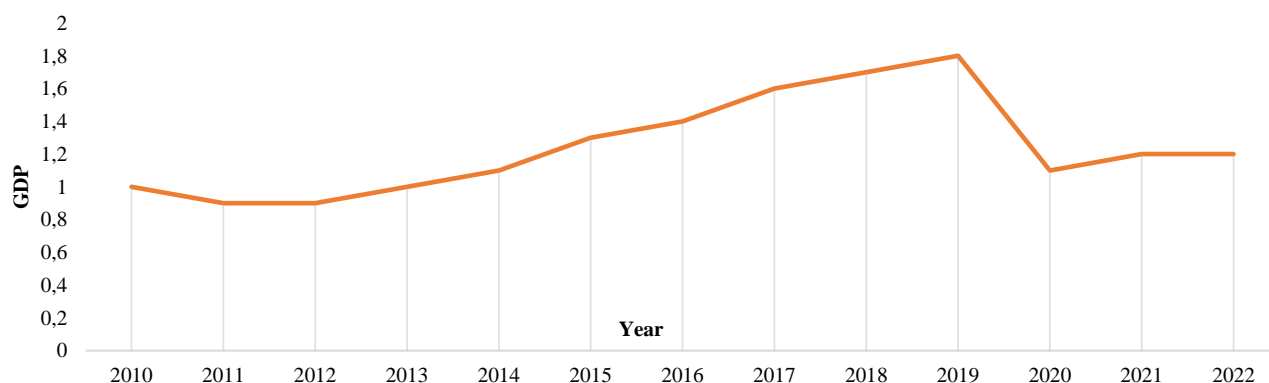


Figure 3. Gross Domestic Product (GDP) in Algeria between 2010 and 2022 (Source: World Bank, 2024)

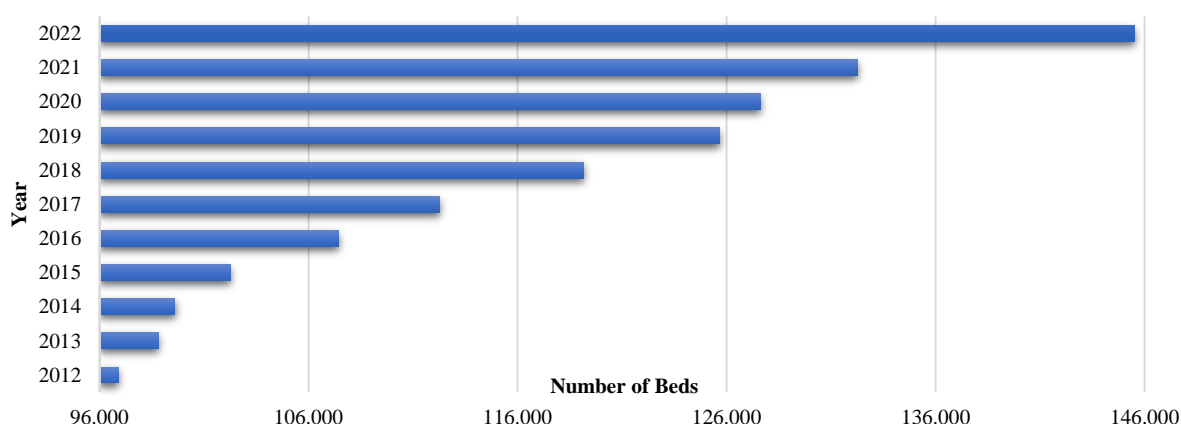


Figure 4. Hotel Capacity in Number of Beds

(Source: The Algerian Ministry of Tourism and Hadicrafts and the Direction du Tourism and Handicrafts of Jijel)

1.2.2. Evolution and Distribution of Bed Capacity by Accommodation Type

As displayed in Figure 5, the total bed capacity increased from 96,898 in 2012 to 145,526 in 2022, marking +50% growth over 10 years. At the same time, steady rise between 2012–2019, followed by a slowdown in 2020–2021 (because of the COVID-19 pandemic). However, a recovery was observed in 2022.

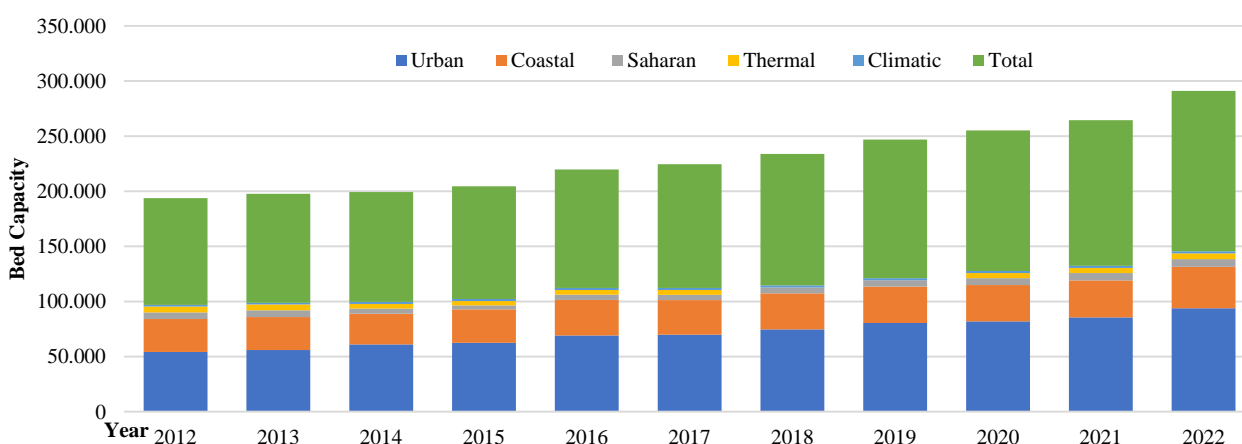


Figure 5. Evolution and Distribution of Bed Capacity by Accommodation Type

(Source: The Algerian Ministry of Tourism and Hadicrafts and the Direction du Tourism and Handicrafts of Jijel)

When dividing into Segments: urban accommodation knew a significant growth (from 54,186 beds in 2012 to 93,906 in 2022), accounting for 65% of total capacity. Concerning coastal accommodation was relatively stable but recently increased (29,886 beds in 2012 to 37,586 in 2022). For Saharan and spa/wellness accommodation, we noted a limited progress, with modest capacity (6,946 beds for desert tourism and 5,189 for thermal tourism in 2022). Finally, for climate-based resorts a stagnation at under 2,000 beds throughout the period was noticed. Based on the results, we

noticed that urban tourism dominates, suggesting a focus on business travel or MICE tourism (Meetings, Incentives, Conferences, Exhibitions etc.). This trend, which is quite well known in Europe, is quite recent in the case of Algeria, where unfortunately, Algeria is among the 50 most expensive countries in the world and its capital Algiers is the 3rd most expensive city in the Arab world (Benderradj, 2016). Additionally, Saharan and thermal tourism remain underdeveloped despite their diversification, specifically the Saharan tourism, which can guarantee regional development thanks to the very significant potential economic benefits that it could provide, particularly in terms of the creation of permanent jobs (Djeghri et al., 2020).

1.3. Distribution of Hotel Inventory by Accommodation Type in 2022

As seen in distribution of bed capacity by accommodation type, the trend is almost the same given the fact that urban hotels dominate, accounting for 73% of properties and 65% of total bed capacity, as displayed in Figure 6. Even its importance in Algeria (Lamine et al., 2022), coastal tourism represents 19% of beds but only 283 establishments, highlighting fragmented development. Finally, Saharan and thermal tourism remain underdeveloped, with minimal infrastructure (86 and 33 establishments, respectively). Algeria's hospitality sector remains overwhelmingly urban-centric, constraining tourism diversification (Belaid & Lardjane, 2021). In addition, coastal capacity remains underdeveloped due to the country's extensive Mediterranean coastline (Kacemi, 2013). Furthermore, untapped potential in Saharan/thermal tourism, which could offset seasonal demand and boost year-round tourism (Zourdani, 2019).

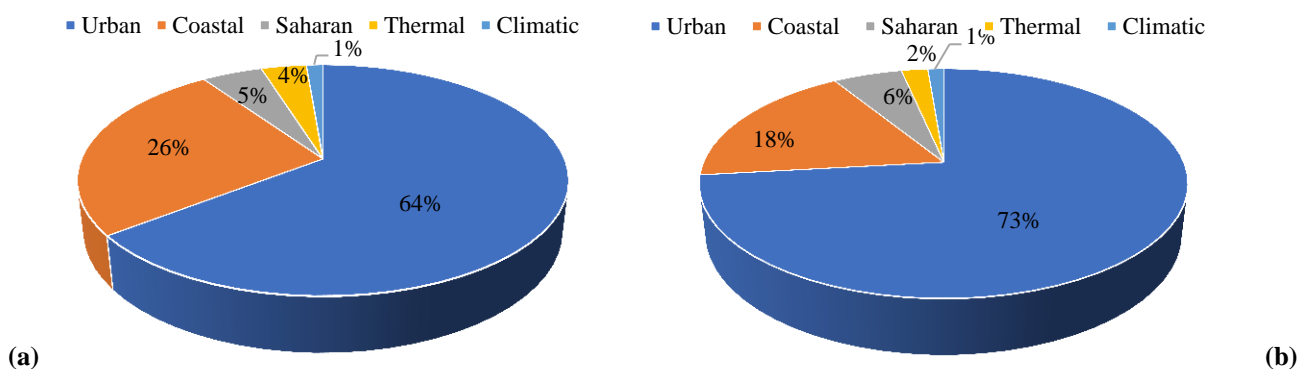


Figure 6. Summary of accommodations capacity in 2022 (a) Bed Capacity and (b) Number of Hotel establishments (Source: The Algerian Ministry of Tourism and Hadicrafts and the Direction du Tourism and Handicrafts of Jijel)

1.4. Tourism Flow Data in Algeria

1.4.1. Number of Tourists

According to Figure 7, the total number of tourists (overall arrivals) showed a generally upward trend from 2010 to 2019, peaking in 2018 with 2,657,113 tourists. A significant decline was recorded in 2020 and 2021 due to the COVID-19 pandemic, with a low of 125,238 arrivals in 2021. In 2022, a partial recovery was observed with 1,398,048 tourists, though still below pre-pandemic levels. This is in line with the post-pandemic scenarios of United Nations Conference on Trade and Development (UNWTO). They project an uneven recovery, with tourism expected to drop by 75% in low-vaccination countries (such as Algeria) and 37% in high-vaccination countries.

Traditional destinations (such as beach resorts or UNESCO sites) may rebound to pre-COVID levels but risk a return to overtourism and its associated conflicts (Trono et al., 2022). In addition, foreign tourists saw a steady increase between 2010 and 2019, rising from 654,987 to 1,933,778, followed by a sharp drop in 2020–2021. Algerians residing abroad had a more fluctuating trend, peaking in 2013 (1,768,578) before declining in 2020–2021.

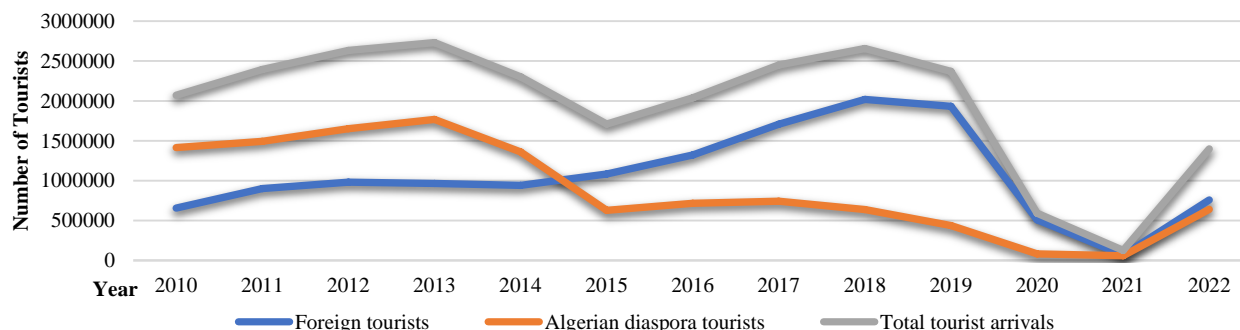


Figure 7. Number and type of Tourists from 2010 to 2022 (Source: The Algerian Ministry of Tourism and Hadicrafts and the Direction du Tourism and Handicrafts of Jijel)

1.4.2. Overnight count and Number of summer visitors

For Hotel Occupancy Trends and according to Figure 8, Hotel stays showed steady growth from 2010 to 2019, peaking at 7,690,926 overnight stays in 2019. Nevertheless, a sharp decline occurred in 2020-2021 (due to the COVID-19), followed by a partial recovery to 5,373,928 overnight stays in 2022. Generally, the increase in tourist numbers doesn't necessarily translate to

proportional growth in overnight stays. In this case, it may suggest that many visitors don't remain in the same place for extended periods. Regarding summer visitors, their number grew significantly between 2012 and 2017, reaching 132 million in 2017. However, a decline was observed in 2018 and 2019, with around 95 million visitors. Logically, numbers dropped sharply in 2020 and 2021 (Again because of the Covid-19) but rebounded strongly in 2022, with 128 million visitors. Algerian coastal cities, such as Jijel, attract a large number of summer visitors thanks to its appealing coastline (Ghodbani et al., 2016). However, the high volume of summer tourism does not translate into overnight stays, likely due to day-trippers (same-day visitors) dominating the flow. A recent study by Scotti et al., 2024 observed the same trend in the area of Lombardy (Italy), they observed that summer months (e.g., August) record the lowest overnight stays despite high visitor flows.

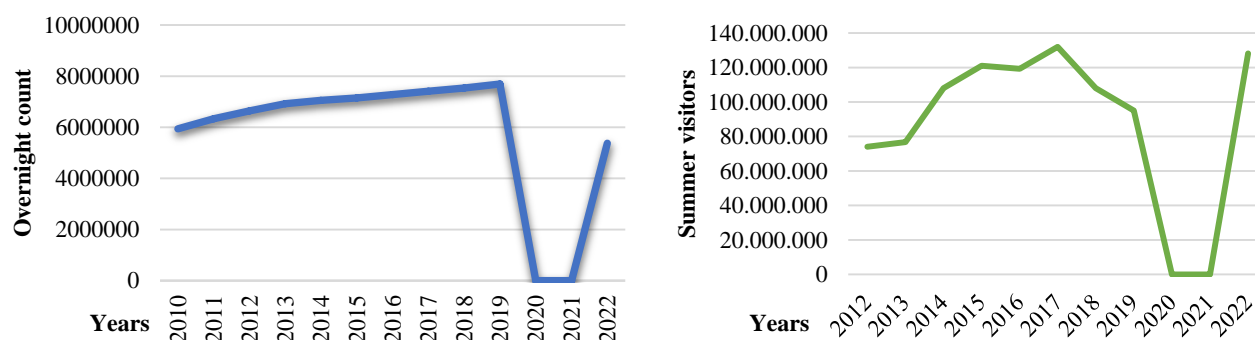


Figure 8. Overnight count (a) and number of summer visitors (b)

(Source: The Algerian Ministry of Tourism and Handicrafts and the Direction du Tourisme and Handicrafts of Jijel)

2. Statistical results related to Algeria

The inductive approach to the tourism potential and its impact on selected local tourism indicators: In this section, we will employ an inductive approach to analyze tourist numbers, overnight stays, summer visitor counts, and GDP contribution in relation to tourism potential - which includes both general bed capacity and specific hotel accommodation capacity.

2.1. Model 1: Tourist numbers as a function of total bed capacity and hotel accommodation capacity

To explain tourist numbers as a function of total bed capacity and hotel accommodation capacity, we first test the overall significance of this statistical relationship using both correlation coefficients and ANOVA testing as follows: The correlation coefficient ($R = 0.622$) indicates a strong positive relationship between the variables, while the coefficient of determination ($R^2 = 0.387$) suggests that the model explains 38.7% of the variance, as shown in Table 1. The ANOVA test results displayed in Table 2 demonstrate the model's overall significance ($P = 0.041 < 0.05$), confirming that both total bed capacity and hotel accommodation capacity have a statistically significant impact on increasing tourist numbers.

Table 1. Coefficient of determination (R^2) for Model 1

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0,622 ^a	0,387	0,319	722094,827

Table 2. The ANOVA test results for Model 1

	Model	Sum of Squares	Df	Mean Square	F	P value
1	Regression	2968634199737,825	1	2968634199737,825	5,693	0,041
	Residual	4692788451448,175	9	521420939049,797		
	Total	7661422651186,000	10			

2.2. Model 2: Overnight stays as a function of total bed capacity and hotel accommodation capacity

To evaluate Model 2 (overnight stays as a function of total bed capacity and hotel accommodation capacity), we first assess the overall statistical significance of this relationship using both correlation coefficients and ANOVA testing, as presented in Table 3. A strong positive correlation exists ($R = 0.525$), with the model accounting for 27.5% of variance ($R^2 = 0.275$), as observed in Table 3. The ANOVA test results displayed in Table 4, indicate no overall significance for Model 2 ($p = 0.097 > 0.05$), demonstrating that neither total bed capacity nor hotel accommodation capacity has a statistically significant effect on increasing overnight stays at the 5% threshold.

Table 3. Coefficient of determination (R^2) for Model 2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,525	,275	,195	2602331,51030

Table 4. The ANOVA test results for Model 2

	Model	Sum of Squares	df	Mean Square	F	P value
1	Regression	23159112266902,758	1	23159112266902,758	3,420	0,097
	Residual	60949163605482,150	9	6772129289498,017		
	Total	84108275872384,900	10			

2.3. Model 3: Summer visitor numbers as a function of total bed capacity and hotel accommodation capacity

To explain summer visitor numbers as a function of total bed capacity and hotel accommodation capacity, we first assess the overall statistical significance of this relationship using both correlation coefficients and ANOVA testing as follows in Table 5. The correlation coefficient ($R=0.464$) indicates a weak positive correlation between the variables, with a coefficient of determination ($R\text{-Square}=0.216$) showing that the model has 21.6% explanatory power (Table 5). The ANOVA test results in Table 6 show a lack of overall model significance, given the sig value of 0.208, which is greater than 0.05 ($P > 0.05$). This also refutes the overall impact of 'Bed Capacity' and 'Hotel Sector Bed Capacity' in increasing the number of summer visitors.

Table 5. Correlation coefficient (R) and coefficient of determination (R^2) for Model 3

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,464 ^a	,216	,104	19989689,38545

Table 6. The ANOVA test results for Model 3

ANOVA						
Model		Sum of Squares	Df	Mean Square	F	P value
1	Regression	768832914514053,400	1	768832914514053,400	1,924	,208 ^b
	Residual	2797113772086441,500	7	399587681726634,500		
	Total	3565946686600495,000	8			

2.4. Model 4: The GDP value based on Bed Capacity and Hotel Sector Bed Capacity

To explain GDP as a function of Bed Capacity and Hotel Sector Bed Capacity, we first test the overall significance of this statistical relationship using the correlation coefficient and ANOVA test as follows in Table 7. As indicated in Table 8, the correlation coefficient ($R=0.283$) indicates a very weak positive correlation between the variables, with a coefficient of determination ($R^2=0.08$) showing that the model explains only 8% of the variation. The ANOVA results displayed in Table 8 ($P = 0.4 > 0.05$) indicate that the model lacks overall statistical significance, thereby disproving any meaningful effect of Bed Capacity and Hotel Sector Bed Capacity on GDP growth.

Table 7. Coefficient of determination (R^2)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,283 ^a	,080	-,022	,29652

Table 8. The ANOVA test results for Model 4

ANOVA						
Model		Sum of Squares	Df	Mean Square	F	P value
1	Regression	,069	1	,069	,781	0,400
	Residual	,791	9	,088		
	Total	,860	10			

3. Descriptive Analysis of the Jijel Region

3.1. Foreign Tourists in Jijel

Based on Figure 9, we can notice a collapse from 1 906 arrivals in 2019 to just 335 in 2020, and only 379 in 2021. It can be interpreted by the global downturn caused by travel restrictions during COVID-19 pandemic. According to UNWTO (2021), international arrivals fell by over 60 % in 2020, with many destinations only beginning to recover in 2022. Indeed, Jijel reached 1 259 foreign entries in 2022, roughly 66 % of its pre-pandemic peak, consistent with UNWTO's scenario that most destinations would recover to 80–95 % of 2019 levels only by 2023–2024.

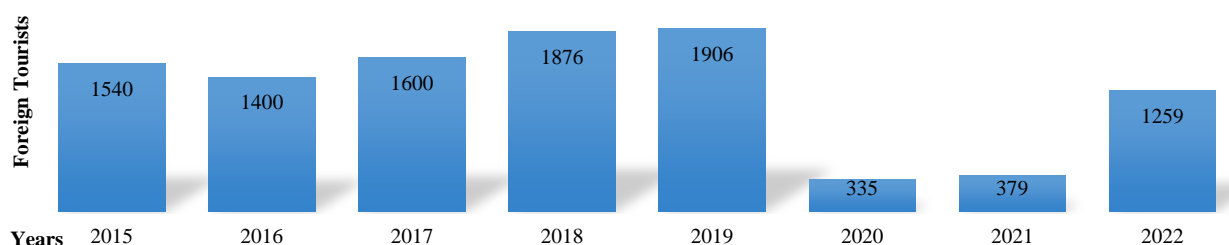


Figure 9. Number of Foreign Tourists in Jijel

(Source: The Algerian Ministry of Tourism and Hadicrafts and the Direction du Tourism and Handicrafts of Jijel)

3.2. Number of Nights in Jijel

Figure 10 show that overnight stays were highly reduced from 2019 to 2020 (from 3490 to 475), reflecting mandatory closures and border shutdowns reported across Algeria in general and more specifically in the region of Jijel. Although nights recorded were 2078 in 2022, this is still only about 32 % of the 2018 high (6436), highlighting a sluggish rebound in structured, multi-night tourism compared to day-visitors and domestic travel (Benchab, 2022).

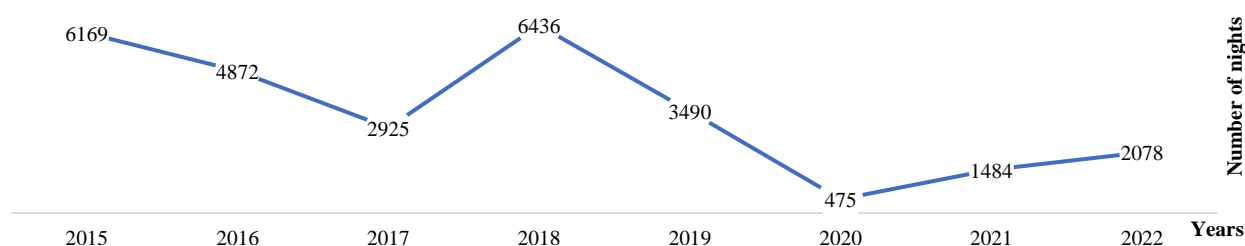


Figure 10. Number of Nights in Jijel

(Source: The Algerian Ministry of Tourism and Hadicrafts and the Direction du Tourism and Handicrafts of Jijel)

3.3. Beach visits

As shown in Figure 11, after a logical COVID-related drop in 2020 (to ~4.7 M), beach visits rebounded strongly, reaching a record 19 million in 2022, almost double the 2019 level. This suggests a shift toward short-stay, day-trip leisure rather than overnight tourism. Studies on domestic beach tourism emphasize that such unregulated influxes can strain local infrastructure and ecosystems unless sustainable management plans are implemented (e-unwto, 2023; Kelfaoui et al., 2021; Rabehi et al., 2023).

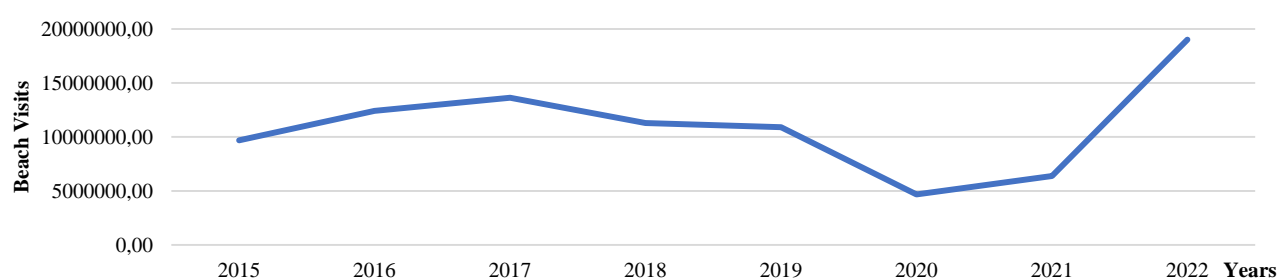


Figure 11. Number of Beach Visits in Jijel

4. Limitations of the study

Despite its originality, this study has naturally limitations, among them, we can cite the fact that it relies on officially reported infrastructure and flow data that may be incomplete or inconsistent, as there can be some bias in the number of visitors or overnight stays for example. Moreover, the temporal window used to compare pre and post COVID-19 period may be considered as short to capture longer-term recovery dynamics. Another potential limitation is that in our case, the descriptive results, statistics, and models are still limited in their ability to establish causal relationships. Finally, the study's focus on a single Wilaya (Jijel) limit the external validity. In fact, results and policy implications may not be generalized to other Algerian Wilayas with different infrastructures or governance.

At the end, these limitations emphasize the need for further research, we recommend using more detailed data (and collected more frequently), along with causal analysis methods, to confirm and expand our findings.

CONCLUSION

Based on the analysis of tourism flow data in Algeria, and more specifically in Jijel, several conclusions can be drawn. Tourism in Algeria (and in the Jijel region) experienced strong growth between 2010 and 2019, with a peak in tourist arrivals in 2018, before a drastic decline in 2020 and 2021 due to the COVID-19 pandemic. However, a recovery was observed in 2022, although some numbers remained lower than pre-pandemic levels. Beach attendance, particularly high during the summer season, highlights the region's attractiveness, although this does not necessarily translate into an increase in overnight stays, suggesting short-term tourism, especially of a local nature. In terms of hotel infrastructure in the country, the bed capacity saw a notable increase, rising from 96,898 beds in 2012 to 145,526 beds in 2022, reflecting the expansion of supply, particularly in urban and coastal areas, and demonstrating Algeria's willingness to develop tourism in general.

Nevertheless, desert and thermal tourism remain underdeveloped in Algeria despite their potential. Finally, the statistical models used to assess the impact of accommodation capacity on various tourism indicators (number of tourists, number of overnight stays, number of holidaymakers, and GDP) show mixed results. While bed capacity has a significant impact on the number of tourists, its influence on other variables, such as overnight stays and GDP, remains limited. This suggests that the growth of tourism is not solely linked to the increase in accommodation supply but could also be influenced by other factors, such as tourist preferences, the length of their stay, and broader economic conditions. At the end, it is important to conduct further studies in the near future to analyze tourism flows in Algeria in general and, especially in Jijel in greater detail.

This will help improve infrastructure, accommodate more visitors, and ultimately strengthen the national economy.

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