

Population Change and Spatial Distribution across the Municipalities of Beni Abbes Province, Algeria (2008–2021)

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ABSTRACT:

This study, titled 'Analysis of Population Change in the Municipalities of Beni Abbes Province (2008–2021)', investigates the spatial dynamics and demographic trajectories in Beni Abbes, a newly established border province situated in the hyper-arid landscapes of southwestern Algeria. Formally elevated to provincial status following the 2019 administrative reorganization (Law No. 801-811), the region offers a compelling case for examining population shifts within a transitioning governance framework. The research identifies significant spatial disparities across municipalities, driven by the area's strategic border location and precarious desert environment. The findings reveal substantial fluctuations in annual growth rates, peaking at 3.8% in the Beni Abbes municipality and dipping to a minimum of 0.6% in Tamtert. Collectively, the provincial concentration index increased by 1.72%, reaching 46.43% by 2021. These results underscore a persistent demographic imbalance relative to the province's vast geographical expanse.

Keywords: Algeria, Beni Abbes, Growth, Population.

1 Introduction

Consistent with global urban and desertification trends, Algerian arid regions have experienced profound demographic shifts over successive decades, heavily catalyzed by state-led territorial planning. Crucially, the geopolitical and administrative landscape of southwestern Algeria underwent a paradigm shift following state-backed housing programs, and structural investments in the municipality of Beni Abbes have transformed it into a major regional demographic center.

This localized polarization destabilizes the demographic viability of peripheral border municipalities (such as Tamtert and Timoudi) by accelerating a continuous internal migration pipeline toward the new capital. Consequently, pre-existing spatial-demographic planning master plans have rendered themselves obsolete. To achieve true spatial justice in a hyper-arid province commanding 111,350 km² (4.67% of Algeria's landmass), policymakers must urgently re-evaluate territorial redistribution schemes based on empirical, post-2019 demographic data. By assessing the demographic realities of the 2008–2021

transitioning period, this study provides a vital foundational framework for regional planning, balancing demographic pressures, and safeguarding sustainable development in fragile desert border environments.

2 Previous studies

Previous research has explored population dynamics through various lenses. For instance, Clare et al. (2005) investigated the correlation between population change and external commuting within eight size classes of rural and small-town (RST) municipalities in Canada. Their findings suggested that while commuting patterns are significant, other forms of migration (in-and-out) likely influenced population shifts—a hypothesis that warrants further empirical verification.

On a regional level, Daw et al. (2019) conducted a longitudinal analysis of demographic characteristics in Libya, examining age and gender disparities over a 50-year period (1954–2016). By utilizing decennial census data, the study revealed a consistent increase in the total population alongside significant shifts in demographic parameters. Notably, the research highlighted rising fertility rates and declining mortality rates, which contributed to a substantial demographic transition. Furthermore, the study documented a shift in gender proportions and an increase in the working-age population, which reached 67% by 2016. These changes were attributed to marked improvements in the socio-economic and health conditions of Libyan society.

Demographic Shifts and Regional Variations

Recent scholarship has extensively documented the evolution of Algeria's demographic landscape. Belaroussi (2024) explores the progressive transformation of the country's demographic structure over the past two decades, highlighting a decline in fertility and an aging population—shifts that are reshaping social and economic dynamics. Similarly, Keith (2001) and Warzki (2016) analyze the historical demographic transition in Algeria, noting that while growth rates exceeded 3% post-independence, they declined by the late 1990s

due to socio-economic pressures, delayed marriage, and family planning. These studies emphasize that such growth has historically strained social services and led to unplanned urbanization.

Spatial Distribution and Economic Implications

The spatial dimension of population growth remains a critical concern. Tichoudad et al. (2015) identified significant spatial variations in growth rates across Algeria's North Central Region, while Al-Tahrawi et al. (2021) observed similar disparities in Jordan, where population concentration in capital districts necessitated a redirection of urban planning. Internationally, Marek et al. (1998) and Qianwen et al. (2016) have shown that population redistribution—whether in Poland or China—is deeply influenced by economic growth and changing migration patterns between rural and urban centers. Furthermore, the link between demography and economy is underscored by Benfreha et al. (2024) and Eli et al. (2015), who found that while population growth can positively impact GDP, its success is contingent upon effective state development programs.

The Present Study: Contribution and Objectives

Distinct from previous research, this study focuses specifically on the administrative municipalities of the Beni Abbes province during the 2008–2021 period. While existing literature often addresses national or northern regional trends, this paper employs modern analytical methods to provide a localized assessment of southwestern Algeria. Our research aims to identify population dynamics and growth trends, offering essential data for planners seeking to balance demographic growth with available resources. By revealing the mechanisms behind spatial disparities in Beni Abbes, this study contributes a new perspective to human geography, providing a foundational framework for sustainable development and regional planning in desert environments.

3 Methodology of the study

This study employs a descriptive-analytical approach to investigate population growth trends, spatial distribution patterns, and demographic trajectories within the municipalities of Beni Abbes Province. The analysis is primarily based on official longitudinal data and demographic indicators provided by the National Office of Statistics (ONS), covering the period from the 2008 General Census to the 2021 administrative estimates.

3.1 Analytical Framework

Demographic analysis constitutes a fundamental axis in human geographic studies, as population dynamics often dictate the socio-economic trajectory of urban environments. The rapid growth of population in many cities have experienced population growth exceeding projected rates, coupled with haphazard spatial distribution beyond initial residential boundaries, outpaces the capacity of these urban centers to provide adequate infrastructure and essential public services (Al-Tahrawi et al., 2021; UN-Habitat, 2020). This misalignment between demographic expansion and service delivery creates significant urban management challenges, particularly in developing regions.

3.2 Population Density

Researchers widely use population density as a scientific practical standard for the purpose of linking the number of people and the area of land on which they live, and there are several ways to measure population density, and the most commonly used and common measure is that which measures the number of people in a place to the total area of this place, which is called 'arithmetic density' (Fawzi *et al.*, 2008).

3.3 Population concentration

With the rapid development of the market economy, the urbanization process continues to accelerate, and many people move between different cities. Population concentration is not only the static result of population movement but also a dynamic process in which labor resources are optimized in market allocation

[Yang D et al]. Population concentration refers to the phenomenon where a certain geographical area attracts some or even all of the population based on various factors.

Population concentration is defined as the tendency and desire of the population of a country to live, exist or concentrate in high proportions in some specific geographical places and areas without others. In a more precise sense, population concentration is a statistical method aimed at knowing the concentration of the population in a region or area. In order to reach the population concentration, the population concentration ratio was used, as this measure will be used to know the difference in population concentration in the study area and show the extent of the disparity in the distribution of the population and their tendency to concentrate in a specific area during the time period of the study, In this study, the concentration index (CI) is used as a statistical method to quantify the disparity in population distribution across the province. This index helps identify the tendency of the population to cluster in specific municipalities over time, highlighting imbalances in the regional settlement pattern.

$$CI = \frac{1}{2} \sum_{i=1}^n | \%POP_i - \%AREA_i |$$

$\%POP_i$ = the population of municipality i as a percentage of the population of Beni Abbes Province.

- $\%AREA_i$ = land area of municipality i as a percentage of the land area of Beni Abbes Province.

- The sum of the absolute values of these differences, divided by two, equals the concentration index. (Douglas S. Massey et al)

These ratios range between (801-811), The higher the index, the more the population is concentrated. At an index of zero, the population would be evenly distributed all across a nation, state, county, or city. An index value of 100 would have all population concentrated within one subdivision of the larger entity. Along with issues of density we need to consider the distribution of population.

3.4 Population growth

Population growth is one of the most prominent demographic phenomena in the modern era, as it represents an important challenge for humanity, especially for developing nations whose populations are increasing at a large rate. Population growth is related to natural increase, which is the difference between births and deaths with the intervention of the migration factor.

Population growth rates will be calculated from census data using statistical equations used in this field such as the following equation $R = \ln(P_t/P_0)/T \times 100$ (Richard et al., 2002), Note that:

- R is the annual growth rate, Ln is the natural logarithm.
- P_t is the population in a later period, and P_0 is the population in a previous period.
- T = the time period between the subsequent census and the previous census (T = 13 years).

In short, population growth is defined as the net increase in population resulting from lower mortality rates, higher birth rates, and immigration. Accordingly, the population growth rate between the 2008 census and the 2021 estimates can be analyzed using the logarithmic law described above.

4 The study area

The Wilaya of Beni Abbes is situated in the southwestern region of Algeria. It encompasses a vast geographical area of 111,350 km², representing approximately 4.67% of Algeria's total landmass (2,381,741 km²). Administratively, the wilaya is composed of ten municipalities: Beni Abbes, Ouled Khodeir, Timoudi, Beni Ikhlef, Igli, Tabelbala, Louata, Kerzaz, Ksabi, and Tamtert. The municipality of Beni Abbes serves as the administrative capital and functions as the primary demographic hub, housing nearly 30% of the province's total population.

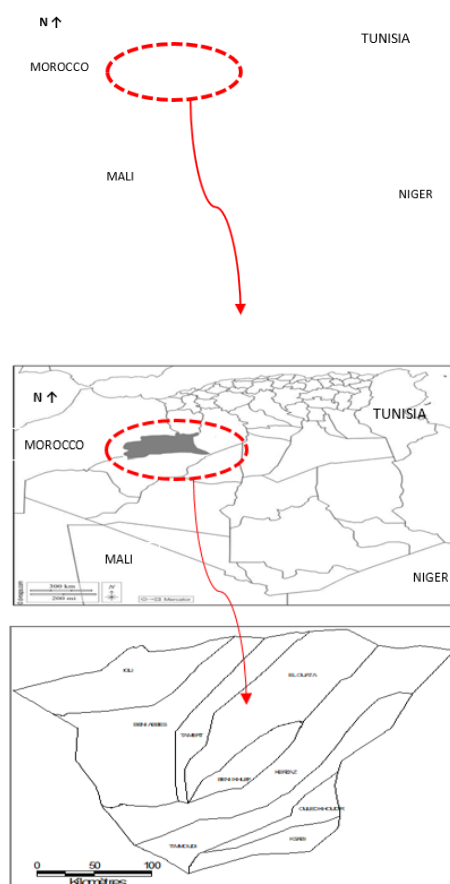
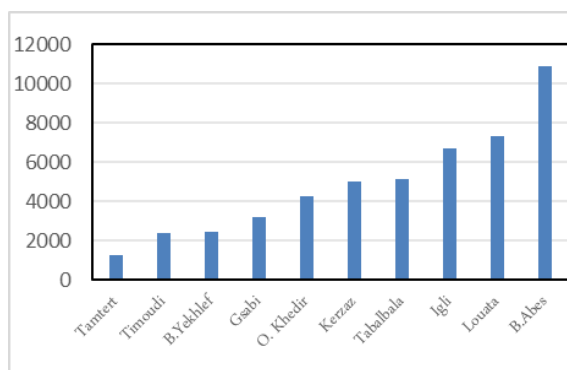


Figure 1. Location map of the wilaya of Beni Abbes and its municipalities

Table 1. Municipalities belonging to the wilaya of Beni Abbes in terms of population (2008).

Municipalities	Areas	Population 2008	Administrative Center
Ouled Khodeir	Includes 4 urban areas	4251	Elnamer
Timoudi	Includes 3 urban areas	2389	Timoudi
Beni Abbes	Includes 3 urban areas	10885	Beni Abbes
Ben Yekhllef	Includes 2 urban areas	2459	Ben Yekhllef
Igli	Includes 2 urban areas	6682	Igli
Tabelbala	Includes 3 urban areas	5121	Tabelbala
Louata	Includes 6 urban areas	7343	Louata
Kerzaz	Includes 4 urban areas	5028	Kerzaz
Ksabi	One urban area	3187	Ksabi
Tamtert	One urban area	1249	Tamtert
Total		48594	

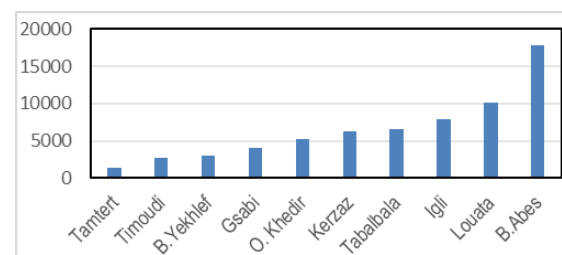
Source: Algerian National Office of Statistics, 2008

**Figure 2. Population in the municipalities of Beni Abbes State in 2008.**

Analysis of Population Distribution (2008)

As illustrated in Figure 2, a significant disparity in population distribution was observed across the municipalities of Beni Abbes Province in 2008. The municipality of Beni Abbes emerged as the primary population center, housing over 11,000 inhabitants, which accounts for approximately 22% of the province's total population (estimated at over 48,500). In contrast, Tamtert municipality recorded the lowest population figures, with only 1,250 residents, representing a mere 2.6% of the total. This gap highlights the early stages of

demographic polarizat comparative analysis and growth drivers.

**Figure 3. Population in Beni Abbes Municipalities in 2021.**

As demonstrated in Figure 3, the disparity in population distribution persisted through 2021. The municipality of Beni Abbes continues to consolidate its position as the demographic core, with its population rising to over 17,800, representing 30% of the province's total of approximately 65,000 inhabitants (see Table 2). Comparing the 2021 census results with those from 2008 reveals an upward trend in the overall population of the province, which is reflected across its various municipalities. This demographic shift is driven by several critical factors

The exodus of residents from southern municipalities suffering from a lack of infrastructure and public facilities, which has increased demand for housing and pressure on public services and facilities, and their relocation to the municipality of Beni Abbes, the center of commercial activity and the location of the most important public facilities such as the hospital, the provincial headquarters, the secondary school, etc. This has led to uncontrolled urban expansion at the expense of agricultural land and palm groves, and a shortage of drinking water.

5 The trends of population density in the study area during the period 801-811

Population density is a measure of the number of people living in an given area. In the case of countries, population density in relation to the area they occupy is an indicator to determine population density trends, and it is also used for cities and any populated place with the following relationship:

$$\text{Population density} = \frac{\text{Number of people}}{\text{Area}},$$

The table below shows the area of the municipalities of Beni Abbes Province and the population density of each municipality.

Table 2. Population Density and Population Growth Rate by Municipality for 2021.

Municipality	Population number	Area km ²	Density of population	Growth rate
Ouled	5180	192	2.71	1.52

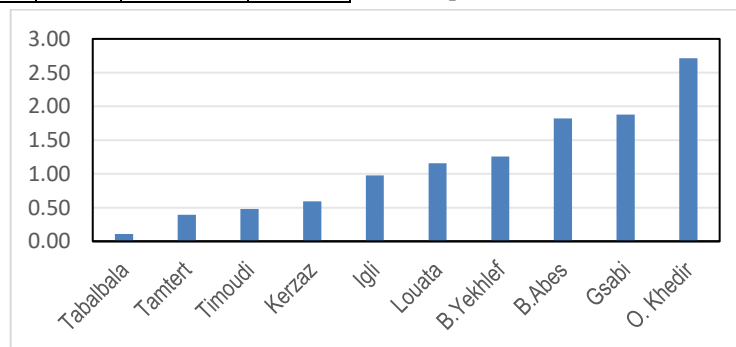


Figure 4. Population density among the municipalities of Beni Abbes province, 2021

Source: Authors.

Khodir		0		
Timoudi	2710	6175	0.43	0.97
Beni Abbes	17845	10040	1.78	3.80
Ben Yekhllef	3016	2615	1.15	1.57
Igli	7947	6220	1.27	1.33
Tabelbala	6568	60560	0.11	1.92
Louata	10148	7950	1.28	2.49
Kerzaz	6310	10520	0.59	1.75
Ksabi	4100	2220	1.88	1.94
Tamtert	1350	3130	0.43	0.59

Source: Authors.

The table shows that the municipality of Ouled Khodier recorded the highest density in the state, with 2.70 persons per square kilometre, followed closely by the municipality of Ksabi with 1.90 persons per square kilometre. On the other hand, very low density was recorded in the rest of the municipalities. The lowest figures were recorded in the municipality of Tabelbala, at 0.11 persons per square kilometre; this is not because it has the smallest population, but because of its large area, estimated at 60,000 square kilometers as shown in figure 4.

There is no question that the population density of each municipality has been rising, but the distribution of population among the municipalities is vastly different.

6 The population distributed in the study area

Population concentration is defined as the tendency and desire of the population of a

particular area to live, exist or concentrate in high proportions in some specific places and geographical areas without others, and in a more precise sense, population concentration is a statistical method that aims to know the concentration of population in a region or geographical area, and by applying the population concentration method, Table 3 shows this in the study areas.

Table 3. Area, Population and Population Concentration in 2008 by Municipalities:

Municipality	Area (km ²)	Area %	Population number	Pop%	Area%- pop%
Ouled Khodeir	1920	1.68	4251	8.75	7.02
Timoudi	6175	5.01	2389	4.92	0.63
Beni Abbes	10040	8.65	10885	22.4	13.38
Ben Yekhlef	2615	2.11	2459	5.06	2.71
Igli	6220	7.18	6682	13.75	8.16
Tabelbala	60560	53.3	5121	10.54	43.85
Louata	7950	7.74	7343	15.11	7.97
Kerzaz	10520	9.37	5028	10.35	0.9
Ksabi	2220	1.93	3187	6.56	4.56
Tamtert	3130	3.03	1249	2.57	0.24
Total	111350	100	48594	100	89.42

$$\text{Concentration ratio} = 2/1 \times 89.42 = 44.71$$

Based on the empirical data presented in Table 3, the overall Population Concentration Index (CI) for Beni Abbes Province stood at 44.71% in 2008. This value points to a clear spatial imbalance in the regional distribution of the population relative to the total area. When analyzing the absolute differences |Area% - Population%| across individual municipalities, Tabelbala accounts for the largest share of this provincial disparity, recording a value of 43.85. From a geographical perspective, this high value is a direct result of the municipality's vast territorial size (54.39% of the province)

contrasted with its low population share (10.54%), rather than an actual concentration of inhabitants. On the other hand, the municipality of Beni Abbes (the capital) represents the opposite trend, showing an absolute difference of 13.38. This is explained by its high demographic weight, as it clustered 22.40% of the province's population within only 9.02% of its territory. For the remaining eight municipalities, the absolute differences did not exceed 9%, reflecting relatively stable and minor contributions to the overall spatial imbalance during that period.

Table 4. Relative weight of population and area for the year 2021:

Municipality	Area (km ²)	Area%	Pop number 2021	Pop%	Area%- pop%
Ouled Khodeir	1920	1.72	5180	7.95	6.22
Timoudi	6175	5.55	2710	4.16	1.39
Beni Abbes	10040	9.02	17845	27.38	18.36
Ben Yekhllef	2615	2.35	3016	4.63	2.28
Igli	6220	5.59	7947	12.19	6.61
Tabelbala	60560	54.39	6568	10.08	44.31
Louata	7950	7.14	10148	15.57	8.43
Kerzaz	10520	9.45	6310	9.68	0.23
Ksabi	2220	1.99	4100	6.29	4.30
Tamtert	3130	2.81	1350	2.07	0.74
Total	111350	100	65174	100	92.87

Concentration ratio = $2/1 \times 92,87 = 46,43$

In 2021, the population concentration index of Beni Abbes province increased to more than 46%, and all municipalities maintained their concentration ratios.

This is a very slight change, indicating that the population distribution in the region has remained almost stable, meaning that there have been no major changes in population density or distribution.

Table 5. Population growth rate in the municipalities of Beni Abbes province for the period 801-811.

Spatial variation of population growth rates among municipalities of Beni Abbes province for the period (801-811)			
Municipality	P0 (pop 2008)	Pt (pop 2021)	Growth rate $R = \frac{\ln(Pt/P0)}{T} \times 100$
Ouled Khodeir	4251	5180	1.52
Timoudi	2389	2710	0.97
Beni Abbes	10885	17845	3.80
Ben Yekhllef	2459	3016	1.57
Igli	6682	7947	1.33
Tabelbala	5121	6568	1.92
Louata	7343	10148	2.49
Kerzaz	5028	6310	1.75
Ksabi	3187	4100	1.94
Tamtert	1249	1350	0.59
	48594	65174	2.26

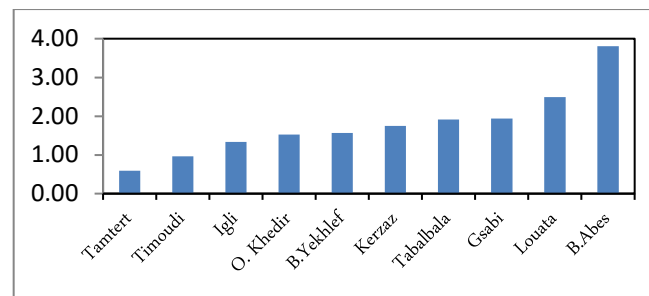


Figure 5. Population growth rate between 2008 and 2021

Source: Authors.

The municipality of Beni Abbes recorded the highest population growth rate of 3.8 per cent, due to the fact that it is the district headquarters and a magnet for population, benefiting from several housing programmes and public facilities

The municipalities of Louata and Beni Abbes recorded a population growth rate of more than 2,5%, due to improved health services and urbanisation, which encouraged people to move from rural areas to cities in search of job opportunities and a better life.

Table 6. Classification of municipalities in the study area by population growth rate

Growth rate	Number of Municipalities	Municipalities
801-811 %	2	Tamtert ,Timoudi.
801-811 %	6	Ouled Khodeir, Ben Yekhllef,Igli, Kerzaz, Ksabi, Tabelbala.
801-811 %	2	Louata, Beni Abbes.

Source: Authors.

Table 6 above shows that population growth rates vary across the municipalities of Beni Abbes Province, with low growth rates of less than 1% recorded in the municipalities of Tamert and Timoudi, while the municipalities of Ouled Khodeir, Ben Yekhllef, Igli, Louata, Kerzaz, Ksabi, and Tabelbala recorded average growth rates ranging from 1–2%, and finally, the municipality of Beni Abbes recorded the highest population growth rate in Beni Abbes Province at 3.80%.

7 Conclusion

This study demonstrates that the municipality of Beni Abbes functions as the primary demographic, economic, and infrastructural epicenter of the province, significantly altering the regional population dynamics and placing heightened pressure on local ecosystems and natural resources. The empirical findings reveal a profound disparity in annual growth rates across the province, spanning from a stagnant 0.6% in

Tamtert to an aggressive 3.8% in the capital municipality. Furthermore, while arithmetic densities scaled upward across peripheral subdivisions—notably in Tabelbala and Kerzaz—the structural spatial imbalance intensified. Crucially, the overall provincial Concentration Index (CI) escalated by 1.72% over the analytical timeframe, rising from 44.71% in 2008 to 46.43% in 2021. This trajectory underscores an increasingly skewed demographic distribution relative to the province's vast geographic landmass. Currently, the capital municipality alone anchors approximately 30% of the total provincial population, consolidating a monocentric pattern of localized polarization.5.2 Policy Recommendations To mitigate these spatial-demographic imbalances and achieve regional equity, this study proposes the following strategic interventions: Decentralized Territorial Planning: Policymakers must design integrated urban growth master plans that strategically

redirect demographic and economic weight away from the saturated capital toward peripheral zones. Equitable Service Distribution: Achieving spatial justice necessitates a decentralized redistribution of administrative institutions, healthcare, education, and public infrastructure across underserved border municipalities to arrest internal migration pipelines. Comprehensive Regional Development: Targeted public investments should be deployed

to revitalize fragile municipalities suffering from severe structural deficits, thereby stabilizing their demographic viability. Demographic-Driven Governance: Future regional development models, spatial plans, and infrastructural projects must dynamically integrate post-2019 empirical demographic indicators to ensure long-term socio-ecological sustainability in hyper-arid environments.

References

- Abu Sobha, Kayed, Geography of Cities, second edition, Amman: *Dar Wael for Publishing and Distribution*, Jordan, 2005.
- Algerian National Office of Statistics, 1998, 2008
- Al-Tahrawi, A. and Al-Habis, M. Population change in the districts of Amman Governorate for the period 801-811, *Studies, Humanities and Social Sciences*, Vol. 48, No. 4, Supplement 2, pp. 801-811, Deanship of Scientific Research, University of Jordan, Amman, Jordan, 2021.
- Belaroussi, C, Changes in population structure in Algeria. *RIMAK International Journal of Humanities and Social Sciences*, Vol6 N°3, 2024.
- Benfreha, N., Cheibani, A., and Nasah, S. The impact of population growth on economic development - an analytical study for Algeria in the period 801-811, *Academy of Social and Humanitarian Studies*, Vol. 16, No. 01, pp. 801-811, Hassiba Ben Bouali University, Chlef, Algeria, 2024.
- Boulahrik Mohand, Algerian population and challenges of the coming years, *Journal of Studies in Economics, Trade and Finance*, Vol. 7, No. 01, Laboratory of Traditional Industries, University of Algiers 3, Algeria, 2018.
- Clare J.A. Mitchell. Population change and external commuting in Canada's rural and small town municipalities: 801-811. *Canadian Journal of Regional Science* (Vol. 28, Issue 3), 2005.
- DOUGLAS S. MASSEY, NANCY A. D E N T O N, The Dimensions of Residential Segregation, *Social Forces*, Volume 67, Issue 2, December 1988, Pages 281–315, <https://doi.org/10.1093/sf/67.2.281>
- Eli H. Tartiyus, Inuwa, m. & Amade, P. Impact of Population Growth on Economic Growth in Nigeria (801-811), *IOSR Journal Of Humanities And Social Science*, Volume 20, Issue 4, PP 801-811, 2015. doi:10.6084/M9.FIGSHARE.1397417.V1.
- Fawzi, A. and Musa, S. The Geography of Population, *Dar Wael for Publishing and Distribution*, Amman, Jordan, 2008.
- Ghouizi, S, Problems of urbanisation in the city of Bechar, Master's thesis, University of Oran 2, Algeria. 2015.
- Ghouizi, S, Hadeid M, Population change of the municipalities of Bechar province for the period (801-811), volume 5, Issue (2), 2024, doi.org/10.54021/seesv5n801-811
- Ke Liu, Xu Bo, Wang Zhaoping, Ran Du, Chen Heng, Measurement of population agglomeration, dynamic change characteristics, and motivations in metropolitan agglomerations—A case study of the Xi'an metropolitan area, 2025 <https://doi.org/10.1371/journal.pone.0316385>.
- Keith, S. Demographic Transition and Regional Population Change in Algeria, 801-811, *The Arab World Geographer* (2001) volume 4, Issue (3): 206–219, 2001, doi: 10.5555/arwg.4.3.a6t23106917322q6.
- Journal Officiel de la République Algérienne. (2019). Loi n° 801-811 du 11 décembre 2019 modifiant et complétant la loi n° 801-811 du 2 février 1984 relative à l'organisation territoriale du pays (N° 77).
- Marek, K, Helen, D & Philip, R. Internal Migration and Urban Change in Poland, *Journal of population*, volume 14, pp 801-811, 1998, doi: 10.1023/A:1006058712865.

DAW M, El-Bouzedi A, Trends and projections of demographic indices of Libyan population using a fifty year census data 801-811, *Journal of African population studies*, volume 33, pp :801-811,2019
DOI: 10.11564/801-811-1401

Programming and Budget Management Directorate of the Province of Bechar

Qianwen, Z. & Shilang, S. Déterminants of urban expansion and their relative importance: *A comparative analysis of 30 major metropolitans in China*. Volume 58, pp 801-811, Habitat International, 2016, doi:10.1016/j.habitatint.2016.10.003.

Richard M. Sibly <mailto:r.m.sibly@reading.ac.uk> and Jim Hone, Population growth rate and its determinants: an overview, *Royal society*, Volume 357 Issue 1425, 2002, doi:10.1098/rstb.2002.1117.

Sabeur Chouiref Mokhtaria, Demographic Shifts in Algeria: from High Growth to Structural Strain, *Journal of ELWAHAT Journal for Research and Studies*, Volume(18)/Issue (2) (2025):801-811

Tichoudad, T. Spatial variation of population growth in the North Central Region during the period 801-811 - Algeria, *Researcher's Journal*, Vol. 07 No. 01, pp. 801-811, Ecole Supérieure des Professeurs Bouzriea, Algeria, 2015.

UN-Habitat. (2020). World Cities Report 2020: The Value of Sustainable Urbanization. United Nations Human Settlements Programme.

Warzaki, M. Demographic trends and population structure in Algeria: An analytical study covering the period 1962–2015, *The Algerian Journal of Social and Human Sciences*, Volume 4, Issue 7, pp 11–44, University of Algiers 3, 2016.

Yang D, Zheng G. Study on population agglomeration performance and countermeasures in Guangdong-Hong Kong-Macao Greater Bay Area. *Reform Econ Syst*. 2022:66–72.