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RESEARCH ARTICLE

Analysis of Census Data in Algeria

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ABSTRACT

This research aims to analyse the current state of data in the Algerian census process using a descriptive-analytical approach. The observation network tool was employed and applied to the population censuses conducted between 1966 and 2008. The study reached the following conclusions: Algeria experienced a high population growth rate, exceeding 3% annually during the first half of the 1980s. The demographic development was characterized by a predominantly young age structure. Additionally, the crude death rate decreased from 14.90‰ in 1966 to 4.42‰ in 2008. Furthermore, there was an increase in the age of first marriage from one census to the next, alongside a decline in the fertility age group (15-49 years). In light of these findings, the study recommends raising statistical awareness among all stakeholders in coordination with cooperating entities and making effective use of media campaigns. It also stresses the need for the statistical system's independence and the development of public services with the support of entrepreneurs and the private sector.

1. INTRODUCTION

Given the increasing demand for statistics, international initiatives have emerged aimed at improving the quality of statistical data to produce high-quality, timely statistics. These initiatives are essential for achieving productive standing and generating well-timed and quality statistical information. The pursuit of stability and continuity makes it imperative for countries, including Algeria, to develop their national statistical systems.

Statistics serve as a crucial input for policy-making and decision-making processes required for economic and social activities (1). In response to the economic and political crises Algeria experienced in the late 1980s—such as the unemployment crisis and housing shortage—upgrading and modernizing the statistical system became a national priority. These statistics were expected to provide an accurate description of the effects and future developments of such crises. Algeria has sought to amend its statistical laws, such as legislative and executive decrees, to ensure the centralization and independence of statistical activities, benefiting from the statistical endeavours conducted by international and regional organizations. Most of these amendments aimed at reforming the statistical system and aligning it with modern trends in statistical agencies.

In the 1970s, Algeria established a central statistical body called the "National Office of Statistics," which became the sole institution responsible for conducting census operations and collecting civil status data. These two functions have become indicators reflecting social welfare or its absence, as demonstrated through the numerous comparisons they provide in light of various economic and social challenges faced by the state (2).

Free and easy access to statistical information represents a key effort to enhance statistical capacities, formulate a national statistical strategy, and standardize publication methods. These are important

cornerstones for improving the performance of the National Office of Statistics in delivering high-quality statistics. However, Algeria's economic and political crises have led to challenges in covering statistical data and gaining the trust of data users, resulting in a decline in the development of statistical activities. Despite the progress made in Algeria's statistical system, shortcomings persist in providing economic, social, and demographic data and indicators. Therefore, this study seeks to answer the question: What is the current state of census data in Algeria?

1. Historical Overview of the Census Process in Algeria

1.1. Before the Common Era

The census, as a method for collecting and enumerating population data, has been present in human history for thousands of years. Several historical sources indicate its significance, such as references in the Bible, which emphasized the importance of knowing population numbers for taxation and military resource allocation. Other sources suggest that the practice of counting and enumerating populations dates back to around 3000 BCE. Civilizations like the Babylonians, Chinese, Ancient Egyptians, Romans, and many others recognized the importance of the census for managing their societies. Although the exact nature of these early censuses and their procedures remains unclear, historical evidence points to the existence of population counts in the Assyrian civilization before 3800 BCE, in Babylon around 3000 BCE for financial purposes, in China around the same time, and in Egypt during the Pharaonic era around 2500 BCE (3).

1.2. The Middle Ages

Some European nations kept records of certain segments of their population, particularly the nobility and clergy. Additionally, there is evidence of Islamic civilization's interest in estimating population numbers based on land taxes and property ownership in regions such as the Levant, Iraq, and Egypt. However, these efforts did not represent comprehensive population censuses; they were mainly focused on specific groups or classes.

1.3. The Modern Era

Many consider the German city of Nuremberg to have conducted the first true modern population census in 1449. This was followed by the eastern region of Canada in 1565. From the early 18th century, the scope of censuses expanded, with countries like Iceland (1703), Sweden (1749), Saxony and Hanover (1744), Norway (1760), Denmark (1769), and Spain (1787) conducting population counts. The two largest political and economic powers of the time, France and England, delayed their first censuses until 1801. Outside of Europe, the United States conducted its first census in 1790 (4). Few developing nations were able to carry out censuses during this period, though Algeria, under Turkish rule, conducted its first census in 1800.

The establishment of the International Statistical Congress in 1872 laid the foundation for modern census practices, encouraging both European and developing countries to adopt census methods. Countries like India and Egypt followed suit between 1881 and 1882. However, the outbreak of World Wars I and II forced many nations to suspend their census activities (5). These efforts resumed once political stability returned on the global stage. Since 1960, approximately 80% of the world's countries have adopted census systems, the highest percentage of global population coverage ever recorded. However, the accuracy of some of these censuses has been questioned. The United Nations' World Census Program, established in 1960, revealed that many censuses relied on population estimates rather than actual counts. Census opportunities also varied greatly by region. For instance, Linder notes that in 1950, two-thirds of Africa's population had been enumerated, while 100% of Europe's population was counted during the same period (6).

2. The Concept of Population Census

The population census is defined as the total set of operations aimed at collecting, classifying, and publishing demographic, economic, and social data related to all individuals within a specific region at a particular time (7). According to the United Nations Statistical Office, it is described as a comprehensive process of gathering, processing, evaluating, analysing, and disseminating demographic, economic, and social data for all individuals in a country or a specific, well-defined area, at a particular point in time (8).

The census can also be understood as a systematic and comprehensive process of collecting, processing, evaluating, analysing, and disseminating demographic, economic, and social data related to the living population within a specific country at a given time in an official and regular manner. This means that every individual living within the borders of a particular country at a specified moment must be counted, and their demographic, social, and economic characteristics must be recorded at the designated time, independently from the characteristics of other family members.

2.1. Conditions for Population Census

According to many experts, the credibility of the census hinges on meeting a set of objective conditions that serve its primary goals. These are summarized in the following five key requirements:

2.1.1. Comprehensiveness: This entails including every person within the territory without omission, duplication, or exclusion. The census must cover the entire nation. If achieving such an ideal is not possible due to certain compelling reasons, the type of coverage must be clearly described in the census publications.

2.1.2. Individuality: This involves recording data for each individual in the household separately, along with their distinctive characteristics—whether social, demographic, or economic. Each person must be counted individually, and their characteristics must be recorded separately from others so that the various population characteristics can be classified into tables that cross-reference multiple traits, such as occupation, educational level, employment status, age categories, gender, etc.

2.1.3. Timeliness (Synchronicity): Every individual must be counted as close as possible to the same moment in time to which the census data refers. This means that all census data must relate to a specific time period, such as a particular day or week. The longer the census period, the greater the risk of omissions or duplications in recording data.

2.1.4. Aggregation: The data must be compiled, classified, and published according to geographic regions, and various demographic, economic, and social variables must be considered without significant changes to the geographic classification between censuses. Changing classifications distorts the picture and makes comparisons over time and space difficult.

2.1.5. Legal Basis: The census must be conducted under government supervision, as it is a mandatory process requiring laws and regulations that obligate all citizens to provide the necessary data within the required timeframe. Furthermore, conducting a census is a complex process that necessitates the establishment of a permanent government body dedicated to preparing and implementing it.

2.1.6. Regular Periodicity: Censuses should be conducted at regular intervals, typically every 5 to 10 years, to provide comparable data. A consistent series of censuses allows for easier assessment of past trends, understanding of the present, and forecasting of the future (9). Countries differ in how they organize their population censuses. Some, like Canada, Japan, Denmark, and Sweden, conduct censuses every five years. Others, like the United States, the United Kingdom, Austria, Mexico, Egypt, and Algeria, conduct them every 10 years. A third group has less precise intervals, with censuses

conducted every 10 or even 20 years, as in Brazil, or every six or seven years, as in France and some other countries (10).

2.2. The Importance of the Population Census

The population census plays a crucial role in determining the military, tax, and labour obligations of individuals within a society. It also aids in understanding factors such as migration, fertility, economic characteristics, and social security determinants, which accompany the social and economic development of society. The census provides essential data on the population's key characteristics, which governments, public services, educational institutions, research organizations, and citizens use to formulate scientific plans and address societal challenges (11).

2.2.1. Types of Population Census:

Population researchers typically employ one of three methods when conducting a census:

2.2.1.1. De Facto Census: This method involves recording all individuals present in their homes or other living spaces on the day of the census. A key challenge with this approach is accounting for people who are traveling or working overnight at the time of the census. These individuals may not be present in their usual living places, necessitating counting people in trains, ships, hotels, or requesting heads of households to include them in the census form, alongside those physically present (12). Many countries that adopt this method enforce special measures, such as restricting movement and requiring people to stay home on census day until it is officially completed, to facilitate the enumeration process (13).

2.2.1.2. De Jure Census: This approach requires each person counted outside their usual residence to be recorded in the place where they normally live. The census forms include all individuals who usually reside in the same household, including both present and temporarily absent members, while excluding visitors who have a regular place of residence elsewhere. Visitors are counted at their usual place of residence. This method necessitates additional precautions to account for absent individuals who might not be reported by others in their usual residence. Special forms are used to record such absent individuals, which are then sent to the census office in their place of residence (14). However, this method is complex, and errors may occur, such as failing to record some people or recording others twice.

2.2.1.3. Combined De Jure and De Facto Census: This method involves simultaneously recording permanently residing individuals and those temporarily present at the time of enumeration. The census form is divided into three sections (15):

- **Section One:** Records the de facto count.
- **Section Two:** Records those who are completely absent.
- **Section Three:** Includes individuals who are temporarily present.

3. Statistical Censuses in Algeria

Highlighting general trends in social and economic phenomena requires a systematic process of collecting and counting the facts related to these phenomena, drawing conclusions, and making necessary decisions in various fields affecting daily human activity based on objective, unbiased data. This ensures the integrity of institutions, the objectivity of studies, and the sustainability and comprehensiveness of development. The general population and housing census serves as a crucial source of data that enables the understanding of demographic growth, social conditions, living standards, and the impacts of development policies.

3.1. The 1966 Census of Algeria

Following independence, Algeria enacted Law 64-91 in March 1964, which established the National Authority for Population and Housing Statistics (CNRPH). A national committee composed of ministers and deputy ministers was formed to study the technical aspects of conducting the population census. However, this initiative faced several challenges, including the vastness of the country, the presence of nomadic and semi-nomadic populations, widespread ignorance and lack of awareness, insufficient qualified human resources, and a lack of financial resources to cover the process.

3.2. The 1977 Census of Algeria

This census was conducted on February 12, 1977, under the authority of the National Census Committee, established according to Decision No. 75/08 dated February 27, 1975, which provided the necessary means for executing the census. The technical preparation was managed by the National Statistics and National Accounting Directorate, alongside the National Census and Statistical Research Authority. The state utilized media campaigns to raise awareness among citizens about the importance and necessity of the census, using television, radio, newspapers, and even cinema. The postal center contributed by distributing informational stamps about the census, and the National Tobacco Company placed posters on its products.

3.3. The 1987 Census of Algeria

In 1987, Algeria conducted its third population and housing census according to Decree No. 09/86 dated July 29, 1986, which outlined its execution and the general conditions regarding preparation, financing, and implementation. An organization was established to ensure the proper management, follow-up, and monitoring of the various census phases, comprising national, regional, and municipal committees, alongside a technical body managed by the National Statistics Office (ONS). These committees played a critical role in monitoring and coordinating the census, providing the necessary human and material resources. The 1987 census required the mobilization of approximately 40,000 supervisors and extensive equipment, with some equipment acquired in 1984. Data processing was handled by the ONS.

3.4. The 1998 Census of Algeria

This census was carried out over 15 days, from June 25 to July 9, after significant preparatory operations that included training the enumerators, totalling 45,000 individuals. The training lasted for 10 days, and the enumerators were tasked with counting between 120 to 140 households during this period. Each enumerator was supervised by a monitor, who oversaw five enumerators, totalling around 1,000 monitors. Additionally, there were 200 trainers involved in the preparation process.

3.5. The 2008 Census of Algeria

Conducted between April 16 and 30, 2008, this census featured the use of different concepts, such as geographical areas, which included major urban centers consisting of 100 buildings or more, with distances between them estimated at 200 meters. These areas served as the locations for municipalities and secondary urban centers. Other locations in municipalities where buildings were scattered were considered dispersed areas. The census also examined the characteristics of the employed population, including primary occupation, employment status, legal sector, economic activity sector, workplace location, and means of transportation to work.

4. Analysis of the Population Census Data in Algeria

4.1. Population Growth

Algeria experienced high population growth rates in the 1960s, 1970s, and the first half of the 1980s, exceeding 3% annually. As a result of this pace, the population doubled in just 22 years, compared to the previous doubling that took place over 54 years between 1900 and 1954.

Table 1: Population of Algeria

Year of Census	Number of population
1966	11908000
1977	16948000
1987	23050731
1998	29272343
2008	34080030

Source: Prepared by the researcher based on data from the Algerian censuses.

Between the last two censuses, specifically the 1998 and 2008 censuses, we observe that the population increased by only 5 million. This modest increase can be attributed to several factors, the most significant of which include improvements in the standard of living, advancements in the healthcare system, the widespread use of contraceptives, and the postponement of the age at first marriage. Additionally, the development of statistical methods employed in population censuses has contributed to a more accurate determination of the actual population compared to the figures recorded at the beginning of independence.

4.2. Fertility

Algeria experienced its highest fertility rates immediately after independence, averaging 48.43% between 1961 and 1975. This increase can be attributed to the cessation of war, stabilization of conditions, and the return of conscripts, which resulted in a significant decline in the final singleness rate from 36% in 1954 to 1.65% in 1987. During this period, it was found that three-quarters of women married before the age of 20, with the percentage of married women reaching 82.7% in the 1966 census.

Table (02): Development of the Age at First Marriage for Both Genders

Year of Census	1966	1977	1987	1998
Males	23.86	26.3	27.9	31.8
Females	18.3	20.7	23.7	27.7
Difference	5.5	5.6	4.2	3.6

Source: Prepared by the researcher based on data from the Algerian censuses.

We observe an increase in the age of first marriage from one census to another, reaching 31.8 years in the 1998 census, up from 23.86 years in the 1966 census for males. For females, the age rose to 27.7 years in the 1998 census from 18.3 years in the 1966 census. This trend has led to a decline in fertility rates among Algerians.

Despite the increasing number of women in their reproductive years, there has been a decrease in the age group of 15-49 years, with the percentage dropping from 74.89% in the 1966 census to 65.84% in the 1977 census, further declining to 56.49% in the 1987 census, and reaching 47.56% in the 1998 census. Among the reasons for this decline are the extended duration of women's education, women's increased participation in the workforce, and the economic and security crises.

Table (03): Development of the Number of Women of Reproductive Age

Year of Census	Total Number of Women Aged 15-49	Number of Married Women Aged 15-49
1966	3,493,000	1,867,000
1977	3,358,000	2,211,000
1987	5,038,000	2,846,000
1998	7,405,000	3,522,000
2008	8,845,000	4,362,000

Source: Prepared by the researcher based on data from Algerian censuses.

Based on the statistical data from the table, we observe that the number of women of childbearing age is increasing, thanks to the health programs implemented in the field of maternal and child health. This improvement is achieved through the continuous training of medical and paramedical staff specializing in obstetrics, both domestically and abroad, via conferences and training sessions aimed at enhancing services.

4.3. Mortality

Mortality directly affects the population size, as a decrease in mortality leads to an increase in the population, and vice versa.

Table (04): Trends in Mortality Rates

Year of Census	Mortality rate (%)
1966	14.90
1977	14.77
1987	6.97
1998	5.82
2008	4.42

Source: Prepared by the researcher based on the data from Algerian censuses.

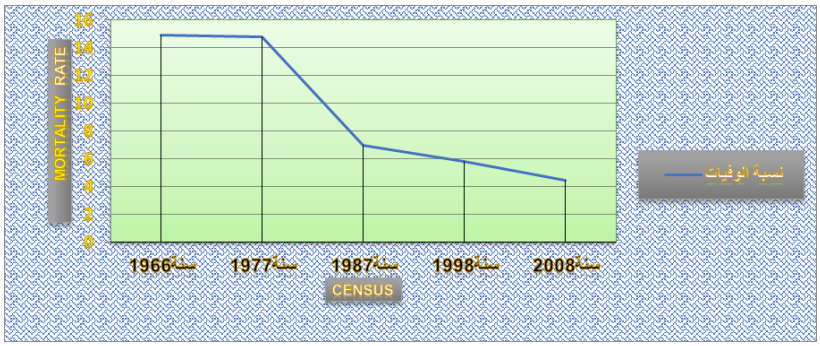

Figure (01): Trends in Mortality Rate

Source: Prepared by the researcher based on the data from Table (04).

The decrease can be attributed to the significant improvements at various levels, particularly in health care, through the implementation of free medical treatment and the widespread availability of preventive and therapeutic medicine. Additionally, the establishment of healthcare centers such as clinics, hospitals, and pharmacies in both rural and urban areas has contributed to this positive trend.

Table (05): Development of Infant Mortality Rate

Year of Census	Infant Mortality Rate
1966	124.4
1977	112.5

1987	64.4
1998	37.4
2008	25.5

Source : ONS (1987), *Trimestrial Publication*, No. 18, p. 42 ; ONS Publication (1990-2007), *Démographie Algérienne*, Nos. 499-520.

We observe from the table a continuous decline in the infant mortality rate, which reached below 100 ‰ in 1987 at a rate of 64.4 ‰. Thus, it can be stated that the infant mortality rate was high before the 1980s. However, the decrease in the infant mortality rate is primarily attributed to the government's child mortality prevention program aimed at reducing the infant mortality rate by half and ensuring it does not exceed 80 ‰ in any city.

4.4. Age and Gender Structure of the Population

The demographic development has been characterized by a young age structure, with the percentage of individuals under 20 years old in the first census of 1966 reaching 57.37%. The following table illustrates the evolution of the population percentage by age groups.

Table 6: Evolution of the Population Percentage by Age Groups

Age groups	**1966**	**1977**	**1987**	**1998**	**2008**
Under 20 years	57.37	58.20	54.97	48.18	38.73
25-29 years	21.88	25.36	27.98	30.64	31.84
20-59 years	35.94	35.97	39.92	45.13	53.78

Source: Prepared by the researcher based on data from the Algerian censuses.

The data in the table indicates that the majority of the population in Algeria is under 20 years old, which suggests that childbirth continues despite the declining birth rate. Regarding the gender composition of the Algerian population, there is not a significant difference between the two sexes, with only a few thousand variations.

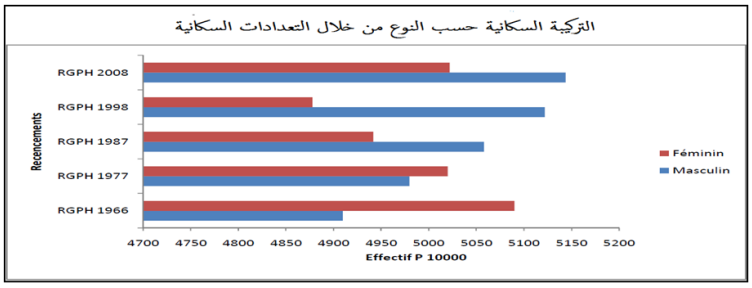

Figure 02: Illustrates the population composition by gender according to the population censuses. Source: Prepared by the researcher based on data from the Algerian censuses.

4.5. Geographic Composition of the Population

The population is distributed unevenly due to several factors, primarily historical and economic influences. Population density is often linked to the presence of urban centers with favourable living conditions. The following table illustrates the evolution of the population in the capital:

Table (07): Evolution of the Population in the Capital

Year of Census	**Number of population**
1966	994751
1977	1587888
1987	1690191
1998	2423694
2008	2988145

Source: Prepared by the researcher based on Algerian census data.

5. Study Results

- Algeria experienced a high population growth rate exceeding 3% annually during the 1960s, 1970s, and the first half of the 1980s.
- The demographic development was characterized by a youthful age structure, with the percentage of individuals under 20 years old reaching 57.37% in the first census of 1966.
- The crude death rate decreased from 14.90‰ in 1966 to 4.42‰ in 2008.
- The age at first marriage increased from census to census, reaching 31.8 years in the 1998 census, up from 23.86 years in the 1966 census.
- There was a decline in the fertility age group (15-49 years), with the percentage in the 1966 census being 74.89%, decreasing to 65.84% in 1977, 56.49% in 1987, and 47.56% in 1998.

CONCLUSION:

The National Office of Statistics has endeavoured to accomplish its key responsibilities, which include conducting population censuses and collecting civil status data for Algerian citizens. These tasks are vital for measuring Algeria's progress and development across various fields. As a primary source of information and statistics, Algeria has conducted five censuses, each reflecting varying figures and trends. Furthermore, these censuses have been characterized by the publication of all obtained results for use in studies related to population development. However, in 2018, there was a notable delay in the commencement of the sixth general census of housing and population, despite the significance of this census and the considerable changes in many population-related indicators.

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