

ANALYSIS OF FERTILITY TRENDS IN MOLDOVA OVER THE PAST THIRTY YEARS

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Abstract. *The continuous decrease in population numbers, driven partly by the decline in fertility rates in Moldova, necessitates ongoing monitoring of this area. The study aims to explore the evolution of fertility in Moldova in the last three decades. The research is based on the National Bureau of Statistics' vital data, including the females aged 15-49, the number of live births, and the distribution of births by mother's age and birth order from 1991 to 2023. Classic demographic methods were employed to analyse fertility, including total fertility rate, age-specific fertility rates, the mean age of mothers at first birth, and the proportion of live births by birth order and residence. The results regarding fertility in the Republic of Moldova in the analysed period highlight a continuous decline in the number of births and a postponement of the age at which women have their first child. The most marked decline in fertility is among women aged 15-24, whose contribution to overall births dropped from 55% in 1991 to an expected 26% in 2023. This shift underscores a clear trend of delayed childbearing, as fertility rates have risen among women aged 25-34, pointing to a societal shift toward postponing childbirth. Despite improving living standards, Moldova faces a total fertility rate of 1.6 children per woman, below the generational replacement threshold, contributing to a long-term demographic decline.*

Keywords: *fertility decline, delayed childbearing, Moldova*

JEL: *J13, J16, J18*

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Introduction. The continuous decrease in population numbers, driven partly by the decline in fertility rates in Moldova, necessitates ongoing monitoring of this area. The fertility transition began after 1991 and was marked by a restructuring of the birth calendar, leading to a steady decline in fertility. The significant change in the socioeconomic situation in the Republic of Moldova during the first decade of independence transformed the slow fertility decline, which started in the mid-1960s, into a sharp drop. Fertility patterns, initially characterized by early and almost universal childbirth and a two-child or larger family model, changed rapidly starting in the 1990s (Gagauz & Grigoras, 2018). The historic decline in the number of children per woman of reproductive age is driven by the need for fewer children, as well as changes in the life course, reflected in the extension of the education period,

the increasing importance of professional and personal fulfilment, and values that often conflict with the need to form a family and have children. Additionally, difficulties in the transition to adult life, labour market uncertainty, and increased social mobility are also factors that contribute to changes in reproductive behaviour, delaying childbirth to older ages, and reducing reproductive intentions. These factors set the context for the fertility transition process. The shift from an early to a late model has affected most countries.

The total fertility rate in the Republic of Moldova has remained below the replacement level of 2.1 children per woman of reproductive age for three decades. This persistent low fertility rate contributes to ongoing population decline, resulting in a deteriorating demographic structure and an increase in the aging population. Current studies predict a significant decrease in the number of births in the coming decades. This decline is influenced by the demographic structure and the fact that smaller generations born in the late 1990s and early 2000s are now entering their reproductive years (Gagauz, și alții, 2021).

Literature review. The decline in fertility rates in Central and Eastern Europe is a notable topic in the literature. This decrease is primarily linked to the economic transition and the uncertainties that arose after the fall of communism, resulting in delays in both marriage and the birth of the first child (Sobotka, 2004), (Sobotka, Zeman, Lesthaeghe, Frejka, & Neels, 2011). (Billingsley, 2010), emphasizes how individualistic and post-materialist values contribute to the decline in fertility, highlighting the impact of contraceptive, sexual, and gender revolutions. (Frejka, Gietel-Basten, Abolina, & Zvidrins, 2016), show that pronatalist policies in the region have had a limited impact on increasing fertility, requiring integrated measures to support the balance between work and family life.

The results from studies on postponing childbirth show that fertility recuperation is affected by family support policies and economic stability. While the ideal of having two children remains popular, economic constraints often lead families to have fewer children than they desire (Sobotka & Beaujouan, 2014). In Moldova, postponement and recovered fertility estimate demonstrates that recuperation is lower than postponement, (Gagauz & Grigoras, 2017), and the dynamic of fertility maintains an early/intermediate fertility pattern (Grigoras, 2019). At the same time, results on research of fertility transition from traditional to modern model show four types of reproductive behaviour. Changes in reproductive behavior appear in postponing marriage and the first birth to older ages (tempo effect), causing a decrease in the number of children of higher birth orders and an increase in the proportion of families with a small number of children (quantum effect), (Grigoras & Gagauz, 2022).

Research methodology. The study utilizes vital statistics data from the National Bureau of Statistics (NBS), focusing on the female in the reproductive period, birth numbers, and the distribution of births by mother's age and birth order from 1991 to 2023, including provisional data for 2023. The research is based on two primary data sets: for the years 1991 to 2014, alternative estimates of population

numbers and structure (Penina, Jdanov, & Grigoriev, 2015) were used, while for the years 2014 to 2023, recalculated data from the NBS on the "usual resident population" were applied. The concept of "usual resident population" refers to the place where an individual has primarily lived during the past 12 months, regardless of temporary absences for activities such as recreation, vacations, family visits, business trips, medical treatment, or religious pilgrimages. Temporary absences of up to three months are not considered interruptions to the 12-month period.

Fertility indicators for Moldova were calculated using classic demographic methods for fertility analysis, which include: Total fertility rate; Age-specific fertility rates; The mean age of mothers at first birth; The proportion of live births by birth order and residence.

Main results. The total number of women of reproductive age is essential for understanding a society's reproductive potential. The number of births during a given period is directly linked to the female reproductive population, which includes women aged 15 to 49. A larger population of women within this age group can theoretically lead to more births.

The chart illustrates how the decline in the female population of reproductive age contributes to the reduction in annual births. In 1991, the number of live births exceeded 70,000, but by 2000, this figure had dramatically dropped to just 36,900. This downward trend has continued and reflects both the decline in the population of women of reproductive age and a general decrease in fertility levels.

Specifically, the number of women in the reproductive age group has steadily declined from approximately 1 million in the 1991s to around 500,000 in 2023. Correspondingly, the number of births has also decreased significantly, falling below 30,000 in the same period.

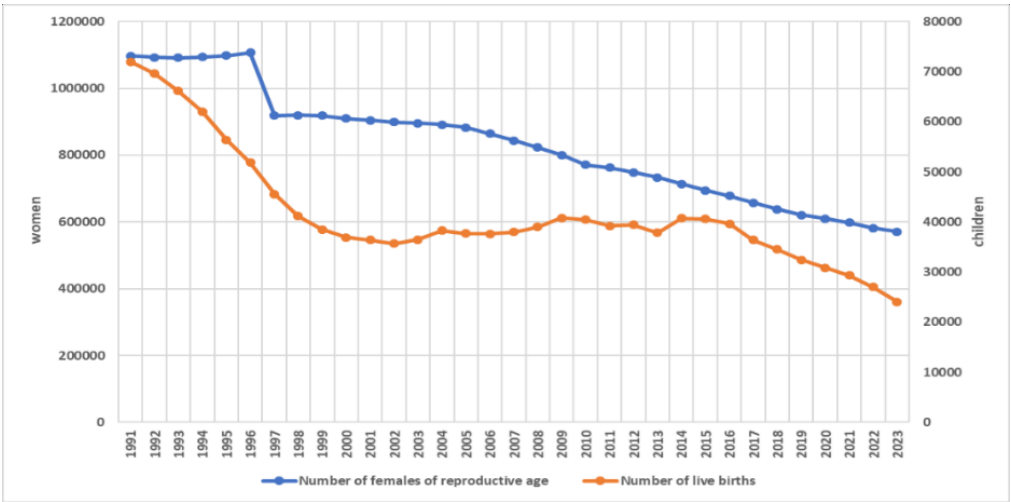


Figure 1. Number of women aged 15-49 and the number of live births, 1991-2023, starting from 1998, excluding the population of districts on the left bank of the Dniester and Bender municipality
 Source: National Bureau of Statistics

The analysis of birth distribution in rural and urban areas of the Republic of Moldova from 1991 to 2023 reveals a consistent decline in the total number of births, particularly in the early years after 1991 (*Figure 1*). This period coincided with significant economic and social transitions following the country’s independence.

Starting in 1991, a noticeable reduction in birth rates occurred in both rural and urban areas. This decline reflects the impact of socioeconomic changes, the emigration of young people, and a shift towards a lower fertility model. Throughout this period, births in rural areas consistently outnumbered those in urban areas. This trend suggests that fertility rates in rural areas are more stable compared to urban areas, where the decline in births is more pronounced.

After a sharp drop in the 1990s, some stabilization in the number of births was observed, although at a lower level than at the beginning of the analysed period. However, the overall decline continues at a slow pace, largely due to a decreasing reproductive-age population and a persistently low total fertility rate. The decrease in births is more uniform in rural areas, while urban areas exhibit a more pronounced decline. This may reflect broader access to education and career opportunities in cities, which often leads to the postponement and reduction of childbirth.

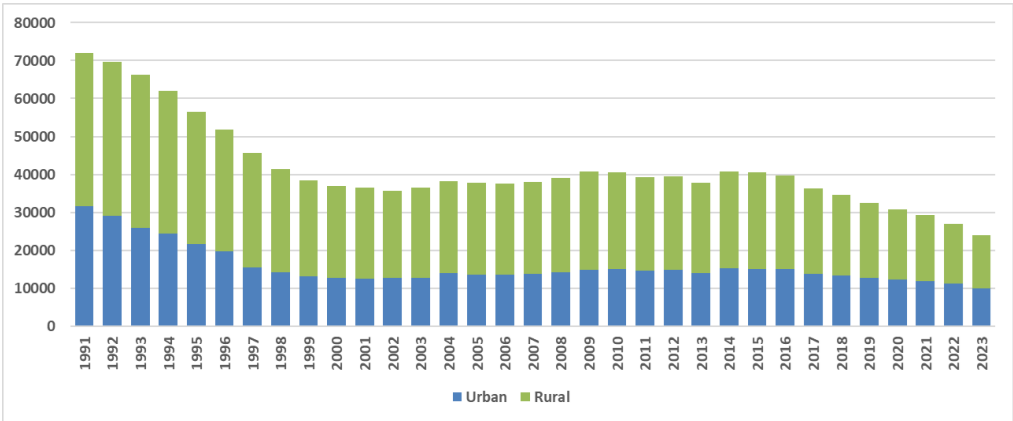


Figure 2. The number of live births in total and by place of residence, 1991-2023
 Source: National Bureau of Statistics

According to official statistical data, fertility rates among women aged 15 to 24 significantly decreased between 1991 and 2023. In 1991, this age group accounted for 55% of total births; by 2023, this figure had dropped to 26%, a decrease of 28%. In contrast, the highest fertility rate is now observed in women aged 25 to 34, which rose from 39% in 1991 to 55% in 2023.

From 1991 to 2023, the specific fertility rates for younger women (those aged 20 and under) fell by three times, while the rates for women aged 20 to 24 decreased by half. This decline in births among younger women resulted in an overall reduction of 0.83 children per woman of childbearing age. Conversely, there was a slight increase in the birth rate among older women, aged 30 to 49, but this increase was minimal, at just 0.15 children. As a result, the total fertility rate (TFR) in 2023 was 0.7 children lower than it was in 1991, dropping from 2.3 to 1.6.

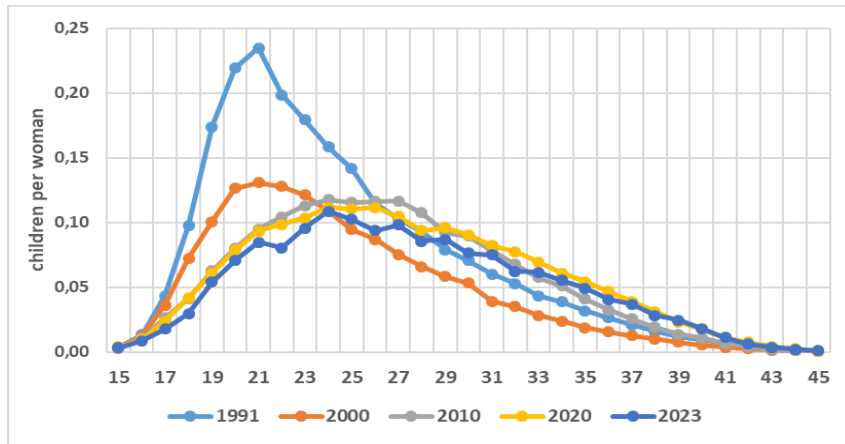


Figure 3. Age specific fertility rates from 1991 to 2023 (children per woman) include recalculated data for 1990, 2000, and 2010 by Center for Demographic Research, and for 2020 and 2023 by National Bureau of Statistics
Source: calculated by author based on NBS data

The data suggests a demographic shift toward smaller family sizes, with a stable preference for one or two children (Figure 4). The proportion of first births has remained relatively stable over the years (33%), forming the largest segment in the distribution, though there is a slight decrease in recent years. This suggests a sustained preference for having at least one child. Second births occupy a central portion of the distribution and have remained stable, with only minor fluctuations. This indicates a consistent trend for families opting for two children. The proportion of third and higher-order births has shown a marked decrease over the period. This decline, especially from the early 1990s to recent years, indicates a shift away from larger families.

The decline in higher-order births (third, fourth, or more) aligns with trends of decreasing fertility rates and changing family size preferences. This shift is consistent with demographic trends observed in many countries undergoing fertility transition.

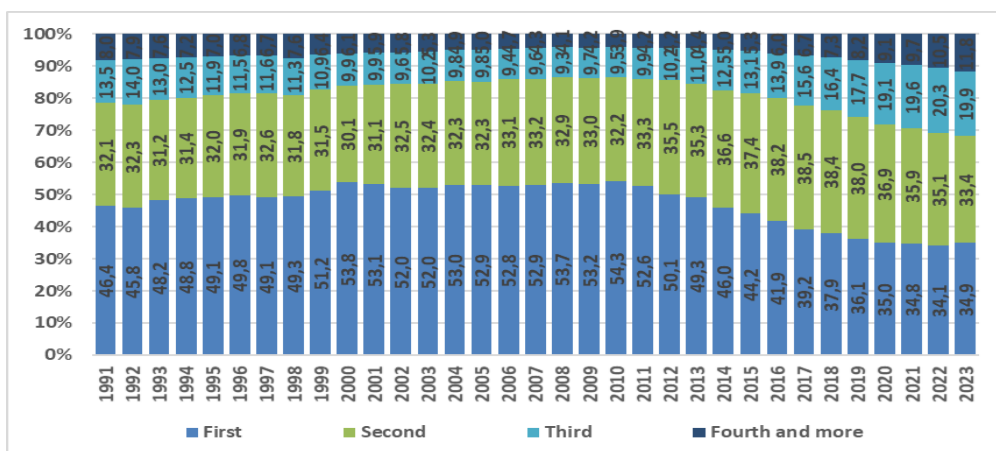


Figure 4. The proportion of live births by birth order, total births, 1991-2023, %
Source: calculated by author based on NBS data

The percentage distribution of total live births by birth order in rural areas from 1991 to 2023 emphasizes some evidence (Figure 5). First births display a general downward trend, while second births remain relatively stable (30%). Third births maintain a smaller, consistent proportion, but starting with 2015 (14,1%), it increased to 21,2% in 2023. Fourth or higher-order births have significantly declined, especially from 1991 (11,1%) to 2014 (6%). A significant proportion of families with four or more children is registered, and by 2023, a proportion of 14,3%. Despite the slight increases in the proportion of higher birth orders for recent years, the chart illustrates a trend towards fewer large families and a shift in family size preferences in rural areas over this period.

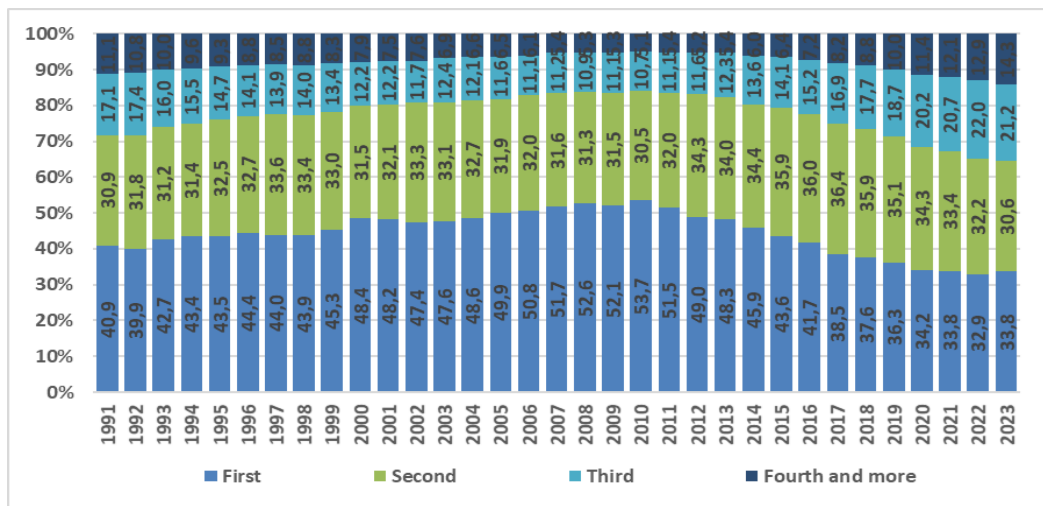


Figure 5. The proportion of live births by birth order, rural, 1991-2023, %

Source: calculated by author based on NBS data

Urban area indicates a trend toward smaller family sizes compared with rural area (Figure 6), with first and second births dominating the distribution. The proportion of second births is relatively stable in the earlier years but starts increasing around the mid-2000s. It reaches a peak around 42.9% in 2019 before stabilizing at around 37.9% in 2023. This indicates that families continue to prioritize having a second child, and it remains a significant contributor to total fertility. The stable preference for two-child families, along with the decline in larger families, reflects an ongoing demographic shift that aligns with modern urban lifestyles, where education, career aspirations, and economic stability may influence family planning decisions.

It is found a slow increase in the proportion of third births, rising in recent years from 11,2% in 2015 to 17,7% in 2023. The declining trend in first births could signal challenges such as later marriage ages, financial pressures, or changing cultural priorities.

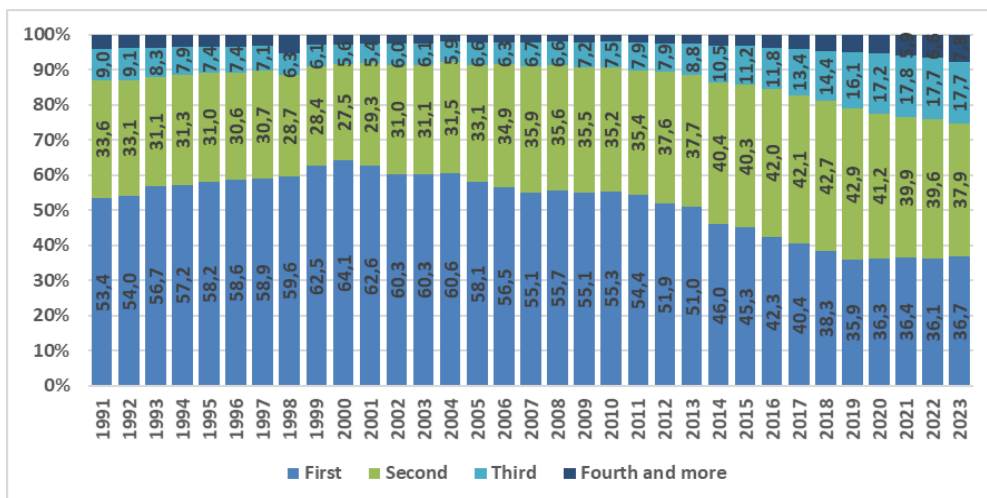


Figure 6. **Proportion of live births by birth order, urban, 1991-2023, %**
Source: calculated by author based on NBS data

In recent years, Moldova has experienced significant changes in fertility rates due to various demographic, social, and economic factors. Notably, both the total fertility rate and the mean age of mother at first birth have undergone considerable fluctuations. Analysing these changes is essential for understanding demographic dynamics and developing effective policies.

Until 1990, Moldova did not experience low fertility rates. However, during the 1990s, the total fertility rate saw a steep decline, dropping from 2.1 children per woman in 1990 to a low of 1.44 in 2002. The shift in the calendar of births significantly contributed to a drastic reduction in fertility rates, which dropped to very low levels by the late 1990s and early 2000s. In the subsequent years, the recovery of delayed births, along with a decrease in the trend of postponing childbirth, resulted in an increase in the total fertility rate to levels exceeding 1.5 children per woman of childbearing age. This indicates that the threshold for low fertility has been surpassed (Grigoras, 2019). As of 2023, the estimated fertility rate is approximately 1.6 children per woman of childbearing age, according to the latest data from the National Bureau of Statistics.

From 1996 to the present, the average age of mothers at first birth has gradually increased, peaking at 24.6 years in 2012-2013. In 2015, this age decreased slightly to 24.1 years. By 2023, the average age had risen to 24.4 years, which is two years higher than in the early 2020s.

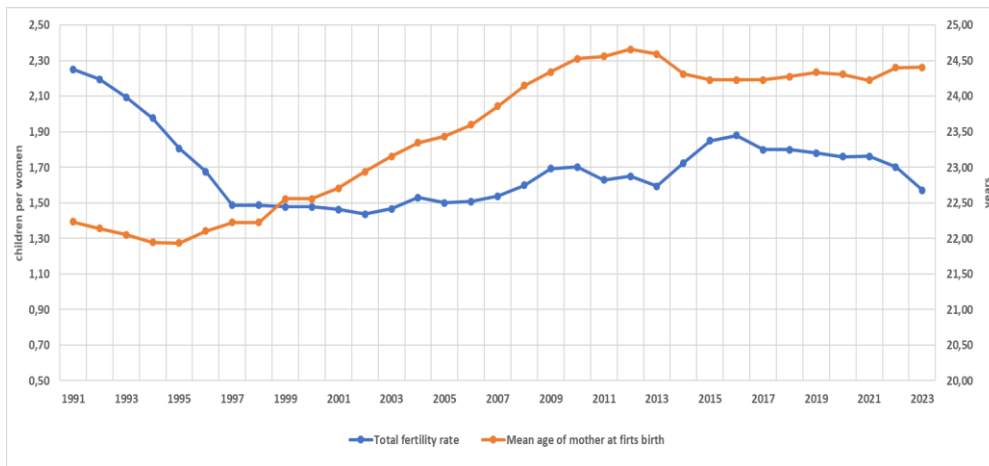


Figure 7. Total fertility rate and mean age of mother at first birth, 1991-2023 (children per woman of reproductive age, years), 1991-2013 – population data recalculated by the Center for Demographic Research, from 2014 onward – population data recalculated by the National Bureau of Statistics.

Source: calculated by the author

The decline in the total fertility rate in Moldova results from a combination of complex factors, including economic instability, emigration and shifts in career aspirations of women. After the collapse of the Soviet Union, Moldova experienced a period of economic transition marked by recession and uncertainty, which led to a decreased desire to have children. Cultural and social changes have contributed to the postponement of marriage and childbirth, with young people increasingly prioritizing education and career development. Simultaneously, the rising level of education among women and improved access to contraception have allowed for greater control over the timing and number of births, further encouraging preferences for smaller families. These trends reflect broader demographic changes occurring in Central and Eastern Europe (Sobotka & Beaujouan, 2014). (Kreyenfeld & Konietzka, 2017; Sobotka & Beaujouan, 2014).

Discussion and Conclusions. The conclusions regarding the dynamic of fertility in the Republic of Moldova in 1991-2023 highlight a consistent decline in the number of births and a postponement of the age at which women have their first child. Compared to 1991, the total number of births has decreased by 31%, resulting in 24,033 children born in 2023. This reduction also reflects a 52.1% decrease in the female population of reproductive age. The decline in fertility is most pronounced among women aged 15-24. In 1991, this group accounted for the majority of births at 55%, but by 2023, their contribution is expected to drop to just 26%. Conversely, the fertility rate is now higher among women aged 25-34, indicating a trend toward deliberately postponing childbirth.

The postponement of the first birth has become evident since 1996, when the mean age of mothers has gradually increased by more than 2 years, reaching 24.4 years in 2023, compared to 22.6 years in 1996. These changes are part of a common trend in Central and Eastern Europe, where economic uncertainties, changes in social

values, and access to education stimulate couples to start families later (Frejka, Gietel-Basten, Abolina, & Zvidrins, 2016). Despite improving living standards, Moldova faces a total fertility rate of 1.6 children per woman, below the generational replacement threshold, contributing to a long-term demographic decline. The decline in fertility rate is influenced by significant youth migration and evolving family ideals, with many parents choosing to have no more than two children. In conclusion, the decrease in fertility and the postponement of births in Moldova reflect a combination of economic factors and socio-cultural changes that are profoundly altering the country's demographic structure.

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