

ZACATECAN DEMOGRAPHICS AT THE TURN OF THE 21ST CENTURY

JUAN MANUEL PADILLA*
MIREYA A. TORRES RAMIREZ**

Abstract

This paper deals with the study of the demographics of the Zacatecas state, Mexico, during the first decade of the 21st century, and is based on demographic transition theory. This initially shows a demographic decrease in tune with what had been happening since the end of the 20th century. However, there is a sudden increase in 2010 that is associated with the low emigration rates caused by the U.S. crisis, since the state's natural growth has continued to decrease. Secondly, the data shows the state is in the last stage of demographic transition (demographic maturation and aging), with all the implications this entails. Finally, the data show high population scattering and urban growth concentrated around the city of Zacatecas-Guadalupe. Our conclusions address the challenges posed by demographics to public policy and society in general.

Keywords: demographic transition, state of Zacatecas, growth, migration, aging.

* Lecturer and researcher at the Academic Unit of Economics at the Autonomous University of Zacatecas.

** Lecturer and researcher at the Academic Unit of Economics at the Autonomous University of Zacatecas.

INTRODUCTION

Like the rest of Latin America at the beginning of the 21st century, Mexico is undergoing a process of “demographic transition.” This key concept of demographic development describes the transition from high fertility and mortality rates to low ones and involves the following stages: first, a decline in mortality which, coupled with high birth rates, causes a significant population increase. Second, a decrease in fertility, leading to a gradual decline in growth. Third, low rates of mortality and fertility resulting in low, absent or even negative growth. Mexico experienced the first stage between 1920 and 1970, the second between 1970 and 2000, and the third from 2000 onwards (Partida, 2005). This leads to changes in the populational age structure, also known as the maturation and ageing of the population (Miró, 2003).

Demographic transition is occurring unevenly across the nation’s states. The Federal District and Chiapas are the extreme cases. Zacatecas is in one of the last places, with high values of infant mortality and fertility. This document deals with the Zacatecan experience and posits that the demographic transition is happening unevenly. Therefore, it is important to describe the shapes it is taking insofar as it is determined by the degree of social welfare and this analysis might contribute to the design of public policies to improve it. It is important to note that other research has addressed demographic transition as an issue related to international migration and the population loss resulting from this phenomenon. This work deals with a demographic perspective that allows us to split the study in three parts: 1) population dynamics and their components; 2) the age-based structure; and 3) the territorial distribution of the population. The subject is addressed at a sub-regional level.

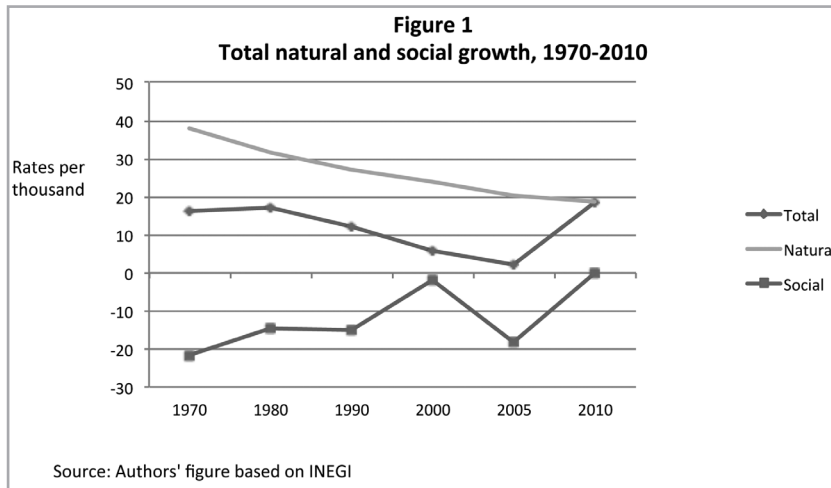
POPULATION GROWTH AND ITS COMPONENTS

Demographic growth expresses the joint movement of population dynamics (mortality, fertility and migration), a necessary starting point. This section describes the pace of growth using the respective rates unless otherwise indicated.

Real growth

During the past decades, Zacatecas' growth rate has been clearly below the national average,¹ a trait that persisted in 2005, when the respective rates were 0.2% and 1% per year. This difference is related to the intense emigration that characterized the entity according to the net migration rate: between 1990 and 2000 it went from -15.2 to -18, and in 2005 to -21 (see Figure 1). Between 1990 and 2005 there was a decline in fertility rates, which went from 3.1% to 2.97% children born alive per every woman 12 years and older; during the same years, mortality increased from 4.8% to 5.1% deaths per every thousand inhabitants (Padilla, 2008). Natural growth is decreasing but, as the data show, its components have reached a virtual impasse the improvement of which would imply substantial advances in social welfare, an unlikely outcome.

Zacatecas is headed toward the final stage of the demographic transition; its population entered the 21st century immersed in this process, with an average annual growth rate of 1.8 per thousand for 2005, less than 6 per thousand for 2000, and even less than the rates of years prior to 2000.



1. In 1990, the data for Zacatecas and the whole country are, respectively, 1.2% and 2.04%; in 1995, 0.8% and 2.06%; in 2000, 0.3% to 1.55%.

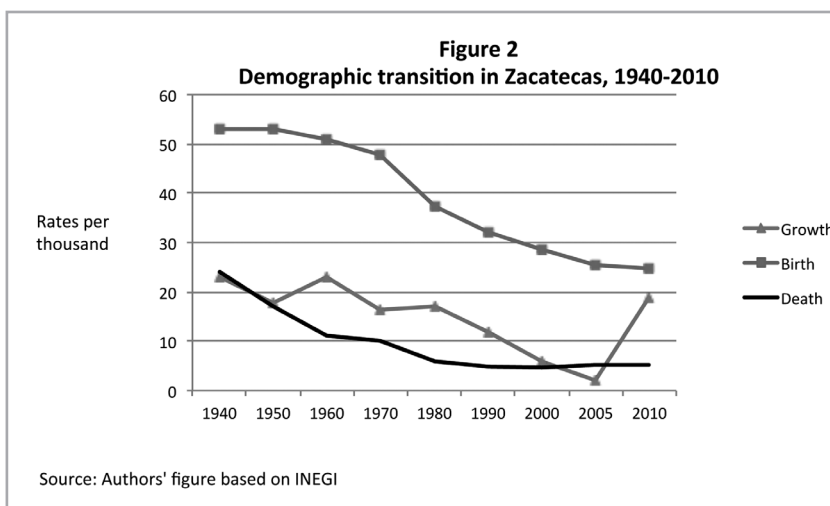


Figure 2 illustrates the demographic changes in Zacatecas. The decrease in mortality can be seen in 1940 and reaches its lowest point in 1990; from this moment on, it tends to increase moderately given the old age population structure. Fertility, for its part, remains constant and high, and it is not until 1970 that it begins to decline. In theory, this should result in high demographic growth, but the transitional model does not happen because of intense emigration.

With regard to growth dynamics, there is a trend toward stagnation or decline. This state trend also manifests on a regional level, as shown in Table 1, where there is a general tendency toward a decrease in the pace of growth or, in this case, increasing depopulation in areas of high emigration. Zacatecas figures in these years of higher growth, followed by Fresnillo and Pinos; all other municipalities have negative rates in 2000, and this remains constant or, in some cases, increases during 2005.² It is, however, noticeable that, in 2010, all regions suddenly had positive growth (this phenomenon will be explained later).

2. We use the Copladez scheme, which served as the basis for the state government's development projects and improved social welfare, enabling the evaluation of public policies and their regional impact.

Table 1:
Total regional population growth rates, 1990-2010. %

<i>Region/year</i>	<i>1990/80</i>	<i>2000/90</i>	<i>2005/00</i>	<i>2010/05</i>
Zacatecas	1.2	0.6	0.18	1.87
Calera-Fresnillo	1.16	1.82	0.4	1.63
Jalpa-Juchipila	-0,22	-0,88	-2.1	0.9
Jerez	-0,72	-1.8	-2	1.1
Loreto-Pinos	1.73	1.02	0.9	2.13
Mazapil	-1.5	-1.6	-1.2	11.7
Ojocaliente	1.4	0.62	0.21	1.74
Río Grande	0.64	0.22	-1	1.52
Sombrerete	0.78	-0.5	-1.4	0.6
Tlaltenango	-0,58	-1,01	-2.8	1
Zacatecas	2.3	1.72	2	2.23

Source: X, XI, XII and XIII Censo general de población y vivienda; II Conteo general de población y vivienda, 2005. INEGI.

In order to establish and quantify the association between population growth and living conditions, we calculated the correlation coefficients shown in Table 7. The data indicate that the correlation between population growth and the rate of marginalization is clearly negative; i.e., with increasing deprivation there is a decrease in population growth. This is valid for 2005 and 2010, although that year presented atypical cases such as Jerez and Pinos; the first occupies third place given its very low marginalization rate and negative growth, while the second showed an increase in spite of high marginalization.³ The statistical weight of the relationship is clear and meaningful; on the other hand, the relationship between population growth and poverty, while negative, is not significant in statistical terms.

3. The marginalization index is a synthetic measure that allows us to differentiate federal entities or municipalities and towns depending on the overall impact of local shortcomings. It considers four aspects: a) lack of access to education, b) inadequate housing, c) insufficient income, and d) residence in localities with less than five thousand inhabitants.

Natural growth

The depopulation that characterizes the State of Zacatecas is determined by a decline in natural growth and a net increase in migration. This fall in natural growth is the result of the family planning policy implemented in the 1970s and visible since 1990; it can be seen across all regions if we compare 2005 and 2000 in Table 3, especially against 1990 data. We can only expect this trend will continue, however moderately, after the second decade of the 21st century.

Table 2:
Natural growth rates by region, 1980-2005. Per thousand

<i>Region/year</i>	<i>1990</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>
Zacatecas	27.2	24.1	20.4	18,21
Calera-Fresnillo	28.8	25.6	20.6	19,21
Jalpa-Juchipila	25.2	22.8	16.5	14,02
Jerez	24.2	17.1	12.9	10,48
Loreto-Pinos	30.7	26.8	23.3	21,59
Mazapil	26.1	23.5	18.6	15,75
Ojocaliente	30.9	24.5	23.4	22,18
Río Grande	28.8	23.2	19.7	18.5
Sombrerete	28.3	21.4	17.6	17,21
Tlaltenango	24.1	27.4	20.6	19,32
Zacatecas	28	25.1	20.8	18,78

Source: Authors' table based on XI, XII and XIII Censo general de población y vivienda and II Conteo general de población y vivienda, INEGI.

The decline in natural growth is very clear and manifests across all regions, especially in the 2000-2005 period, during which the decline continues in smaller numbers. It is striking that the Jerez region should have the lowest natural growth rate and Ojocaliente the highest. It could be said that higher marginalization leads to more natural growth, but this assumption is not met across the state, since Zacatecas is the least deprived region and does not have the lowest rate of natural increase.

The average number of living children born to women 12 years and older in 2010 seems more consistent: according to the National Population Council (Conapo), the data for Zacatecas (the municipality with less marginalization) is 2.5, the lowest in the state, while Mazapil, one of the municipalities with the highest marginalization, has an average of 3.5, the highest in the state (Conapo, 2011).

Table 3:
Regional birth rates, 1980-2010. Per thousand

<i>Region/year</i>	<i>1980</i>	<i>1990</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>
Zacatecas	37.5	32	28.7	25.5	23,69
Calera-Fresnillo	37.8	33.2	29.5	25.5	24,31
Jalpa-Juchipila	34	31.4	28.3	23.9	22,03
Jerez	32.4	30	23.7	21.1	19,54
Loreto-Pinos	45.1	35.3	30.7	27.7	26,01
Mazapil	41.9	29	26.8	22.9	21,13
Ojocaliente	43.1	34.9	28.5	27.7	27,31
Río Grande	39.3	33.4	28	25.4	24,98
Sombrerete	42	33	25.8	23.4	24,81
Tlaltenango	34.2	30.9	34.8	28.7	29,37
Zacatecas	38.5	32.3	28.8	24.9	23,00

Source: Authors' table based on census data. Data regarding events was taken from Anuarios Estadísticos de Zacatecas.

If we look at natural growth data we can see that the birth rate has been declining since 1980, and this is made clear between 2000 and 2010 (see Table 3). If we take the total fertility rate, we will see that, between 2000 and 2010, it decreased from an average of 2.8 to 2.4 children per woman 12 years and older on a national level, while in the state it fell from 3.1 to 2.44.

Available data on fertility suggest that, as the classical theory advises, a higher level of social welfare leads to reduced fertility and viceversa, although this assertion may not be categorically proven. The municipalities of Zacatecas (with 2.19 children born alive per woman 12 years and older) and Guadalupe (with 2.16), are the less marginalized as well

are those with the lowest fertility and the minimum replacement rate, 2.1, according to Conapo (2011). These municipalities also have the highest level of female economic participation according to the National Institute of Statistics and Geography (INEGI, 2011). Note, on the other hand, that, in all cases, the birth rate by region for 2010 is inferior to that of 2000. The region of Sombrerete stands out given its slight growth in this regard and with respect to 2005.

Since 1940 and until 2000, the essential characteristic of mortality was its decrease, particularly until 1980. It began growing moderately in 2005 due to the aging population structure (see Table 4). Thus, mortality increased in all regions between 2000 and 2010, especially in Jalpa, Jerez and Tlaltenango, the areas with the strongest migration⁶ tradition to the United States. Given its selective nature, migration essentially involves young people; in this regard, we must note that there is a positive relationship between mortality and intensity of international migration, with a correlation coefficient of 0.58; i.e., emigration causes greater demographic aging, which translates into a higher propensity to die.

Table 4:
Mortality rates by region, 1980-2010. Per thousand

<i>Region/year</i>	<i>1980</i>	<i>1990</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>
Zacatecas	5.7	4.8	4.6	5.1	5.48
Calera-Fresnillo	5.1	4.4	3.9	4.9	5.10
Jalpa-Juchipila	6.2	6.2	5.5	7.4	8.02
Jerez	5.6	5.8	6.6	8.2	9.05
Loreto-Pinos	6.8	4.6	3.9	4.4	4.41
Mazapil	4.3	2.9	3.3	4.3	5.37
Ojocaliente	5.2	4	4	4.3	5.13
Río Grande	4.9	4.6	4.8	5.7	6.48
Sombrerete	5.5	4.7	4.4	5.8	7.60
Tlaltenango	5.7	6.8	7.4	8.1	10,05
Zacatecas	5.7	4.3	3.7	4.1	4.22

Source: Authors' calculations based on data from INEGI.

It should be added that the relationship between the demographic growth rate and the mortality rate is negative, with a correlation coefficient of - 0.7, where a higher mortality rate implies slower growth and vice versa. Note that there is not a significant correlation between infant mortality and the emigration rate. Indeed, as we have said elsewhere (Padilla, 2011), child mortality is much more related to poverty: in 2005, the poorest regions of the state (Sombrerete, Pinos and Mazapil, according to the National Council for the Evaluation of Social Development Policy or Coneval, 2006), are those with the highest incidence.

Social growth (net migration)

Prevalent emigration is a common feature to all the regions in the state; only Zacatecas shows a trend toward migratory balance. In 2010, there is a decrease in migration-related “loss”; even in Zacatecas, total migration is positive, while Sombrerete has the highest negative rate. It should be added that, according to data from the United Nations Development Programme (UNDP, 2008), in 2005 Zacatecas had the highest human development index, while Sombrerete had the lowest; the relationship between population growth rate and migratory intensity is negative, with a correlation of -0.51, indicating that, the lower the number of emigrants, the higher population growth will be.

Table 5:
Social growth rates by region, 1980-2010. Per thousand

<i>Region/year</i>	<i>1980</i>	<i>1990</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>
Zacatecas	-14,8	-15,2	-18,1	-18,6	1,15
Calera-Fresnillo	-15,9	-17,2	-7,4	-16,6	-2,46
Jalpa-Juchipila	-24,2	-27,4	-31,6	-37,5	-5,03
Jerez	-34	-31,4	-35,1	-32,9	-2,51
Loreto-Pinos	-12,1	-13,4	-16,6	-14,3	0,64
Mazapil	-46,1	-41,1	-39,5	-30,9	-3,36
Ojocaliente	-11,5	-16,9	-18,3	-21,3	-4,15
Río Grande	-9,8	-22,4	-21	-29,7	-2,82

Sombrerete	-21	-20,5	-26,4	-31,6	-11,09
Tlaltenango	-28,6	-29,9	-37,5	-48,6	-7,04
Zacatecas	5.2	-5	-7.9	-0.8	8.13

Source: Authors' table based on data from INEGI.

Table 5 shows the increase in migration-based loss as indicated by the rate of social growth, which went from -15.2 to -18.6 per every thousand inhabitants between 1990 and 2005. Data for 2010 break with the expected trend and show 1.15 per every thousand, which accounts for a reduction in migration—a sign that the U.S. labor market is increasingly airtight and this is accompanied by a more rigid immigration policy.

In absolute terms, the total emigration balance in 1990 was -24,465 people, and -26,943 in 2005; by 2010 and according to our own calculations based on data from INEGI, the figure had fallen to a surprising -2,410 (see Table 6). Thus, negative social growth erodes natural population growth in the state. The total emigration balance for 1990 is 70% of natural growth, moving to 91.7% in 2005 and reverting to 8.8% for 2010. In other words, if in 1990 Zacatecas could withhold 30% of its natural growth, that capacity was reduced to only 8.3% in 2005; however and given the current crisis, 91.2% remained in the state in 2010 (see Table 6). Many of us expected that the total emigration balance of the state would exceed natural growth in 2010 and that, therefore, the 2010 population would be smaller. We were wrong.

Table 6:
Zacatecas: population, social and natural growth, 1990-2010.

<i>Indicator</i>	1990–1995	1995–2000	2000–05	2005–2010
Census-registered population by June 30 of the first year	1279344	1331343	1354611	1366847
Births per five-year period	204717	193690	180672	174727

Deaths per five-year period	30394	32039	33723	37552
Natural growth per five-year period	174323	161651	146949	137175
Natural growth, annual average	34865	32330	29390	27435
Census-registered population by June 30 of the second year	1331343	1354611	1366847	1491970
Initial population plus natural growth (expected)	1453667	1492994	1501560	1504022
Difference between registered and expected population	-122324	-138383	-134713	-12052
Total annual average migration	-24465	-27677	-26943	-2410

Source: Authors' table based on the XI, XII y XIII Censos Generales; I, II Conteos de Población y Vivienda, and Anuarios Estadísticos de Zacatecas. 1991-2009 INEGI editions.

In terms of intensity, we can see that total emigration increased during 2005, although, according to Conapo (2006), this tendency will stabilize and reduce over time. So far, we can say that, between 1990 and 2005, the state of Zacatecas lost more than 395,000 emigrants, more than twice the population of the municipality of Fresnillo, the most populous in the state.

Let us assess 2005 in terms of municipalities: all of them, except for Guadalupe, Trancoso, Vetagrande and Villa García, have a negative total migration balance between 2000 and 2005; in them, total emigration is greater than natural growth. Among those who have greater negative balance during the 2000-2005 period are Fresnillo, with 9,069 inhabitants; Sombrerete, with 8,828; and Río Grande, with 7,177. Among those with the greatest relative population in 2005 (annual/population total) are El Plateado de Joaquín Amaro, with 7%; Momax, with 6.6%;

and Apozol, with 6.5% (according to our own estimates based on data from INEGI). All these municipalities have a high migration rate to the United States, according to Conapo (2002).

For 2010, emigration loss had decreased to 2,448. Twelve of the 58 municipalities had a positive rate: Benito Juárez, Guadalupe, Juan Aldama, Mazapil, Pánuco and others, though the numbers were small.

Migration to the United States

Following the trend, Zacatecan emigration to the United States increased until 2005: between 1990 and 2000, it went from 350,276 to 513,810 people (Conapo, COEPO and UNFPA, 2006), and 579,441 in 2005 (INEGI, 2007). If we add that, between 2005 and 2010, the flow was 31,817 and exclude the 10,388 returnees, the last General Population and Housing Census registers 600,970 Zacatecan immigrants in the United States. Undocumented flow is also decreasing. And thus we reach 2010.

In this context, we can say that the decline in the rate of emigration to the United States is the factor that has determined the high national population growth. Indeed, available data indicate that the number of Mexicans residing in the United States reached its peak around 2008 (almost 12 million), while the flow of undocumented workers has decreased significantly due to unfriendly immigration policies, the economic crisis and unemployment, among others.

There has certainly been an increase in deportations and voluntary returns, in addition to factors that discourage migration (especially among those who lack experience), leaving actual or potential migrants in their home communities. The Census registered them all.

There is no significant change in terms of regional origin, and rural origins continue to be a key factor: 62.9% of migrants leave localities of less than 5,000 inhabitants.

In 2010, the ten municipalities with the highest migration rates were Sain Alto, Apozol, García de la Cadena, Susticacán, Apulco, Momax, General Francisco R. Murguía, Nochistlán, Mezquital del Oro, and Juchipila. Those with the lowest rates were Zacatecas, El Salvador, Maza-

pil, Melchor Ocampo, General Enrique Estrada, Guadalupe, Cuauhtémoc, Calera, Pánuco, Luis Moya and Fresnillo.⁴

If we divide the state municipalities in five groups using the cluster sampling method, we will find Sain Alto in the first one, Trinidad García de la Cadena and Apozol in the second, Susticacán in fourth, and Momax in fifth, while the remaining 53 municipalities will be concentrated in group three. We can therefore argue that, in 2010, traditional migration zones did not follow the trends they presented decades ago; the data show that, recently, migration in Guadalupe was similar to Tlaltenango, Juchipila, and Momax, among others.

Table 7:
Correlation coefficients

Variables	Migration	Marginalization	Poverty	Extreme poverty	Moderate poverty
Growth	-0,188793639	-0,335119811	-0,027965582	0,02456689	-0,087128143
Migration		0,16048919	0,011897446	0,137426776	-0,158739354

Source: Authors' table based on Coneval, Conapo, and 2010 Census data.

Table 7 shows the incidence of certain variables that affect demographic behavior and migration in the state. There is a negative relationship between growth vis-à-vis marginalization, migration, and general and moderate poverty. On the other hand and in regards to the migration-poverty variable, we observe there is a positive, if not very significant, relationship. Poverty does not really seem to be an incidence factor for migration, which is different if we are referring to extreme poverty.

AGE STRUCTURE

We said that Zacatecas is immersed in the early stages of the last phase of the demographic transition, where fertility and mortality have reached

4. This order was based on emigration intensity data calculated using the method of the main components and the following indicators: a) households with migrants during 2005-2010, b) households with permanent migrants, c) households with circular migrants, and d) households with return migrants.

low and balanced values, giving rise to substantial changes in the age structure and a low population growth. Zacatecas will complete this phase in the mid-21st century, like the rest of the country.

In order to establish the age-based structure, the population is divided into three large groups. In 1970, the population under 15 years was 50.5% of the total population; those 15 to 59 amounted to 43.3%, and those over 60 to 6.2%. The data for 2005 was, respectively, 32.4%, 57.8% and 9.8%, according to INEGI (see Table 8). Please note that the group under 15 is smaller than that of those aged 15 to 64 across all municipalities; the opposite was true in 1970. We are experiencing, then, a process of demographic maturation rather than just aging, and this entails new and complex challenges, both in terms of public policy and society in general.

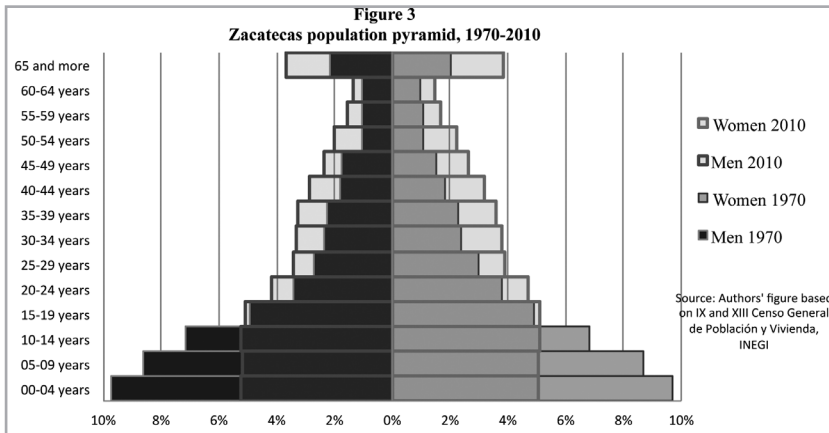
Table 8:
Regional population percentage by broad age group, 2005

<i>Region/age groups</i>	<i>Total</i>	<i>0-14</i>	<i>15-64</i>	<i>65 yrs. +</i>
Zacatecas	100	32.8	59.4	7.1
Calera-Fresnillo	100	31,82	56,59	11,58
Jalpa-Juchipila	100	28,56	54.4	17,04
Jerez	100	25,84	54,27	19,89
Loreto-Pinos	100	33,69	57,01	9.3
Mazapil	100	28,55	57,23	14,22
Ojocaliente	100	33,41	56,96	9.63
Río Grande	100	31,02	56,04	12,93
Sombrerete	100	31,36	55,91	12,73
Tlaltenango	100	30,67	52.8	16,53
Zacatecas	100	30,71	61,56	7.73

Source: Authors' table based on the XIII Censo General de Población y Vivienda. INEGI.

This process is taking place unevenly across municipalities. In 2010, Zacatecas had the highest percentage of population aged 15 to 64, which reflects the attraction posed by Guadalupe and Zacatecas to people from other municipalities; they have been the center of the state's changing

economy during recent years: its tertiarization. On the other hand, regions with a history of international migration have the highest relative level of population 65 and older because those who migrate are essentially young; in this case, migration contributes to depopulation and aging, while in the first case it rejuvenates.



The percentage of population over 65 or 60 is often taken as an indicator of aging, but the extension of the median age of the population tends to be a better indicator. In the state, this went from 21 to 25 years between 2000 and 2005, while in the country as a whole it moved from 22 to 26. In any case, this percentage is illustrative; looking into the future, we can say that the above changes will deepen (see Figure 3). First, the under 15 group will continue to decline until 2030; second, the 15-59 age group will grow until 2015 and then decrease; finally, the over 60 group will grow consistently during the projected time, matching the under 15 group by 2030 (see Figure 4).

Table 9:
Population by broad age group, 2005-2030. %

<i>Year</i>	<i>Age groups</i>		
	<i>0-14</i>	<i>15-59</i>	<i>60 yrs. +</i>
2005	33.3	57.7	9
2010	29.6	60.4	10
2015	26.1	62.4	11.5
2020	23.7	62.7	13.6
2025	22	61.5	16.4
2030	19	55.4	18.4

Source: CONAPO projections (2011).

This entails huge economic, social and political challenges. Economically speaking, social security will be unsustainable given the diminished contributions. If employment problems persist, the number of elderly people without any social security will be high. Support policies targeting this population must be strengthened to prevent an association between old age and poverty.

TERRITORIAL DISTRIBUTION OF THE POPULATION AND URBANIZATION PROCESSES

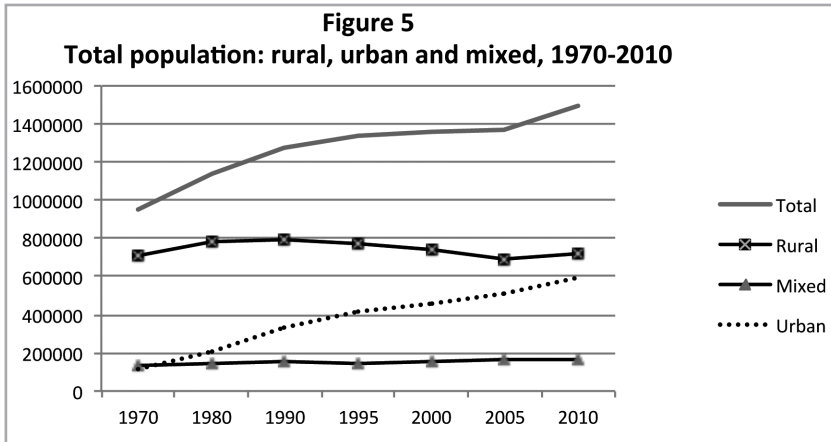
The pattern of settlement in Zacatecas, like in the rest of the country, has two characteristics: high dispersion across hundreds of locations on the one hand, and concentration in a few urban centers on the other. Let us break down population by type of residence.

Table 10:
Localities according to size and population, 2010

<i>Size</i>	<i>Localities</i>	<i>Population</i>	<i>Relative</i>	<i>Cumulative %</i>
1-249	3953	148121	9.94	9.94
250-499	306	109009	7.31	17,25
500-999	212	148519	9.96	27,21
1000-2499	134	198010	13,28	40,49
2500-4999	33	114214	7.66	48,15
5000-9999	17	106916	7.17	55,32
10000-14999	5	66959	4.49	59,81
15000-29999	6	115202	7.73	67,54
30000-49999	3	109725	7.36	74.9
100000	3	374578	25,13	100
Sum	4672	1490668	100	100

Source: Authors' table based on the XIII Censo General de Población y Vivienda. INEGI.

The rural population residing in towns of less than 5,000 inhabitants has grown at a rate lower than the state's, as shown in Figure 2; it decreased in recent years and then grew a 0.9% annual average between 2005 and 2010. However, the rural population still predominates across the total population: in 2010, 48.5% of the state's inhabitants were rural, 11.3% mixed, and 40.2% urban. This is due to the weakness of regional economies within the national scope—0.8% in 2008, according to INEGI (2010).



Source: Censo General de Población y Vivienda, INEGI

The mixed population residing in towns that have between 5,000 and 14,999 inhabitants seems to have a constant relative contribution. It is somewhat irregular given the reclassification of mixed towns to urban ones, or rural towns to mixed ones. A 7.7% of the state population resides in towns of 5,000 to 9,999 people, which amount to 16 localities in the state, including: Villa de Cos, Juchipila, Pinos, Villa García, General Francisco R. Murguía, and Tacoaleche. Another 4.5% resides in towns with 10,000 to 14,999 inhabitants: Miguel Auza, Villanueva, Trancoso, Jalpa, and Valparaíso.

Table 11:
Urban localities, 2000-2010. Inhabitants and increase.

Locality/year	2000	2005	2010	r2005/2000	r2010/2005
Zacatecas	113947	122889	129011	1.39	1.05
Fresnillo	97043	110892	120944	2.52	1.89
Jerez	37558	38624	43064	0.5	2.37
Guadalupe	78879	99572	124623	4.64	4.95
Río Grande	29214	29309	32944	0.06	2.55
Calera	25709	29626	32721	2.69	2.16

Sombrerete	18668	19353	21702	0.65	2.5
Loreto	19634	22085	24260	2.21	2.04
Nochistlán	15499	15322	16562	-0.2	1.69
Ojocaliente	18150	18940	20851	0.77	2.09
Juan Aldama	-	-	15431	-	-
Tlaltenango	-	-	16396	-	-
Sum	454301	506612	598509	2.03	3.65

$r = \text{average annual growth rate}$

Source: Author's table based on data from the XII and XIII Censo General de Población y Vivienda and II Conteo General de Población y Vivienda. INEGI.

Population growth in Zacatecas is fundamentally urban—that is, it takes place in localities of 15,000 or more inhabitants—and had an annual rate of 3.65% in 2010, higher than the state average. The total is of twelve localities; Guadalupe, Zacatecas and Fresnillo have more than 100,000 inhabitants, while the others have less than 50,000: three range from 30,000 to 49,999, three from 20,000 to 29,999, and three from 15,000 to 19,999. These places house 40.15% of the state population.

Available data show that the urbanization process is weak in most regions, which involve small urban localities with barely any growth. We see this in the northwest and southwest; e.g., Nochistlán and Sombrerete. There is a polarized urbanization process taking place mainly in the metropolitan Zacatecas-Guadalupe area, the place that concentrates the tertiarization of the economy and contributed 32% of total state production in 2004; in 2010, 20% of the state population lived in these places.

The municipality of Guadalupe has registered the largest urbanization process, which is related to the conurbation of the towns of Guadalupe and Zacatecas, the state's main metropolitan area. Actually, the high demographic growth that characterizes the municipality is mainly that of Guadalupe, the population of which grew, between 1980 and 2010, from 25,395 to 124,623 inhabitants; that is, it almost quintupled. If Guadalupe continues to grow with the same intensity as in 2005-2010 (an annual average of 5%), by 2024 another fully-equipped town will be needed: more housing (over 31,000), jobs (around 33,000), and urban

transport to service a population of 250,000 inhabitants, twice as much as that of 2010. How desirable would a sharply polarized urbanization process in this town be? What about the other sectors and regions?

It is clear that the process of urbanization is concentrated in the center of the state. A less territorially inequitable urbanization process is, in fact, desirable. We know, moreover, that the unequal economic change we are experiencing has been accompanied by uneven populational distribution across the territory, resulting in three trends: first, its growing concentration in the Zacatecas region, particularly in the municipalities of Zacatecas and Guadalupe; second, a moderate growth in the north-central and southern areas, Calera-Fresnillo and Loreto-Pinos; third and last, a decrease in the west and north. This is not new, although it should be noted that, by 2005, all the municipalities in the Jalpa, Jerez, Tlaltenango, Sombrerete and Río Grande regions recorded depopulation, along with others in different regions. The territorial distribution of the population, corresponds more or less, to economic growth: in 2005, Calera-Fresnillo, for example, concentrated 22% of the population and yielded 21.2% of the state's product.

Table 12:
Regional percentage of the zacatecas population, 1970-2010

<i>Region/year</i>	1970	1990	2010
Zacatecas	100	100	100
Calera-Fresnillo	19.3	20.2	21.9
Jalpa-Juchipila	11.8	9.1	6.9
Jerez	12.2	9.4	7.1
Loreto-Pinos	10.2	11.4	12.3
Mazapil	5.6	3.3	2.4
Ojocaliente	5.7	6.5	7.5
Río Grande	9.6	10.2	9.1
Sombrerete	8.4	8.2	6.6
Tlaltenango	6.4	4.86	3.7
Zacatecas	11.3	17.1	22.5

Source: Authors' table based on data from the IX, XI and XIII Censo General de Población y Vivienda. INEGI.

This differentiated population growth is reflected in variations of the relative contributions by municipality or region in regards to state population. First we have Fresnillo, with 14.3%; Guadalupe, with 10.7%; Zacatecas, with 9.3%; Pinos, with 4.7%, and Río Grande, with 4.2%. Comparing with data from 2005, we can see that Guadalupe rises over Zacatecas. In terms of regions, Fresnillo gives way to Zacatecas in 2010. Others with a decrease in contributions are Jalpa, Jerez, Ojocaliente, Río Grande, Sombrerete and Tlaltenango, while Pinos and Mazapil remained the same.

The way the population is distributed across the territory still shows a high degree of dispersion, as well as a process of urban concentration. The first complicates access to services, while the latter entails typical urbanization problems.

CONCLUSIONS

The 2005 data confirm some features and trends in the Zacatecan demography of the late 20th century: decreased growth that tends toward stagnation; an increase in depopulation; a decrease in the under 15 years of age group and an increase in all others, leading to a mature and aging population structure; growth of the urban population mainly around the cities of Zacatecas and Fresnillo, along with a decrease in rural population; and a growing concentration of people in the Zacatecas region, especially in the municipalities of Zacatecas and Guadalupe, which reflects the unequal economic change affecting the state.

A decline in natural growth and an increase in total emigration, particularly to the United States, determine depopulation. It seems that the number of Zacatecans in the United States peaked around 2008, and that undocumented migration has significantly decreased due to deterrent immigration policies, the economic crisis and unemployment, among other factors. A lower emigration rate explains the high rate of population growth in 2010, in addition to new mining operations in some municipalities. Available data on natural growth do not point to increased fecundity as a relevant factor.

It is possible that the “escape valve” role formerly played by migration is no longer applicable. In this case, we have to ask ourselves if the

state is prepared to assimilate migrants. Before, young people were able to find what the Mexican economy did not offer in United States, but this is no longer an option.

As a result of the changes in fertility, mortality and migration, Zacatecas finds itself at the beginning of the last phase of the demographic transition; i.e. a process of maturation and aging of the population. The living conditions for the elderly must be improved via universal support programs. Demographic aging is inevitable, but poverty can be avoided or, at least, lessened.

There is still a high dispersion of the population across the territory. Focused policies could be implemented in scattered communities to include local services such as water, electricity, health and housing in an attempt to stimulate economies of scale in the concentration of public services that improve living standards. This is another way of complementing anti-poverty policies. We are also undergoing a polarized process of urbanization. A more territorially equitable type of urbanization is desirable, along with programs that combat urban poverty.

Finally, we want to reassert the usefulness of demographic transition for the study of population change.

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