

CONCENTRATION-DISPERSION AS SURVIVAL STRATEGY OF THE INDIGENOUS PEOPLES IN HIDALGO

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— Abstract—

Analysis of concentration and dispersion of the indigenous population of the State of Hidalgo aims to identify the strategy of territorial occupation followed by the main indigenous populations while monitoring population growth experienced in the last forty years from 1970 to 2010. This way, it will quantify the evolution in space and growth, of indigenous language speaking population, at time for the five major ethnolinguistic groups to conclude whether their populations have managed to remain, expand or locate in way to extinction.

Keywords

Concentration-dispersion; population; indigenous; growth; ethnolinguistic.

The work related to the study of indigenous populations has focused mainly on the analysis of their demographic characteristics, in particular the study of their mortality, fertility and migration, associating them with the socioeconomic level or different cultural factors. That is why; this work represents one of the first efforts focused on the analysis of the phenomenon of concentration-dispersion of indigenous populations and their effects on their survival.

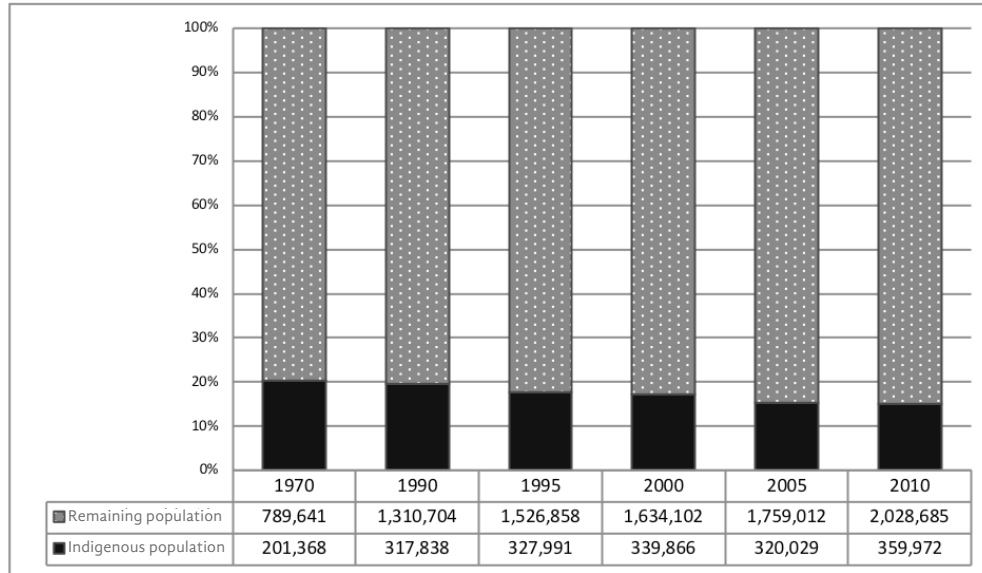
Although it is known that many of the indigenous populations have experienced a significant decrease in the number of their members, this decrease has not been presented in a homogeneous manner for all the ethnolinguistic groups, although the causes are attributed mainly to two factors: language loss (that is, the population is gradually similar to the bigger population with the consequent loss of culture and identity) and the emigration that supposes an immediate loss of productive and reproductive capacity (García, 2005).

The gradual loss of the indigenous language is strongly associated with the daily communication needs of indigenous communities, which has encouraged the use of Spanish. In Hidalgo, 60% of speakers of indigenous languages are bilingual and only 8% are monolingual, with the known consequences associated with indigenous monolingualism, which imply less access to information, markets, services and employment opportunities, among others (CDI, 2006a).

INDIGENOUS POPULATION IN THE STATE OF HIDALGO

This work was carried out entirely with data from the censuses and population counts provided by the National Institute of Statistics and Geography of Mexico from 1970 to 2010. For the purposes of this study, people of five years of age or more were considered as indigenous population if they answered affirmatively to the question of whether they spoke any indigenous language. Thus, the indigenous population was identified based on censuses and population counts using the linguistic criterion, which refers to the speech condition of the indigenous language. Thus, the indigenous language speaker population (phli) for all the years of analysis is made up of those individuals of five years or more who claimed to speak an indigenous language.

Graphic 1. Percentage of population by indigenous-speaking condition, Hidalgo



Source: own elaboration based on data from INEGI

The State of Hidalgo, according to the 2010 national population census, had a total of 2.3 million inhabitants, of five years or more, of whom, 359 thousand declared to be speakers of some indigenous language, that is, 15.1% of the total population of the state. For the period from 1970 to 2010, the growth rate of the general population was 2.3, while the phli growth rate was 1.4% (see graph 1). Phli decreased its presence in relative terms in the entity, for two reasons: a real decrease in its members (it went from 20 to 15% in the study period) and a smaller presence in municipalities, that is, they are more concentrated in spatial terms (see table 1 and 2).

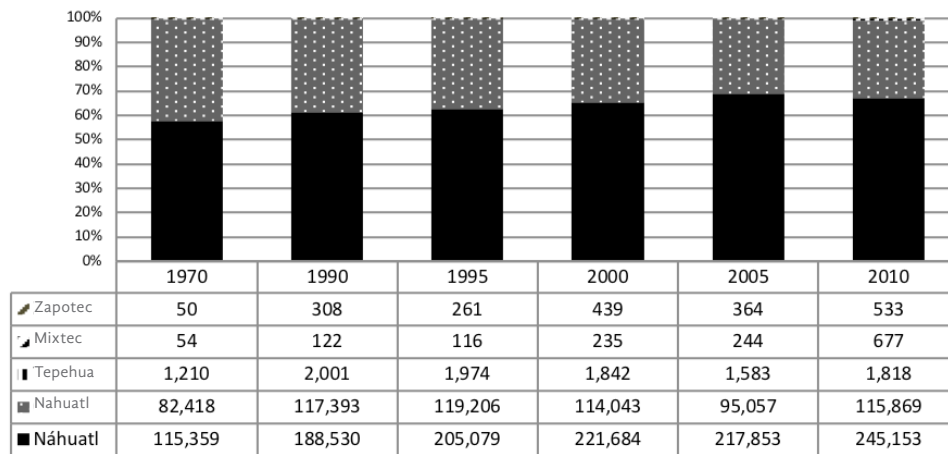
The indigenous population of the State of Hidalgo can be divided into 48 ethnolinguistic groups, according to figures from the basic tabulations for indigenous languages of Hidalgo (cdi-pnud, 2006), inegi, 2010 census. However, only three can be identified as the most representative of the entity (see graph 2). By their number, the Nahuatl and the Otomí stand out, followed by the Tepehua. Together, these three indigenous groups represent a proportion higher than 96% of the indigenous population of the entity, a proportion that is maintained throughout the 1970-2010 period. For the purposes of this paper, we will analyze the five most representative languages of Hidalgo. It was decided to add the Mixteco and Zapotec groups to the analysis, basically due to the rapid growth observed during the study period, even knowing that they are not statistically representative (CDI, 2006b). However, they can provide essential elements for the discussion in qualitative terms.

The original indigenous peoples of Hidalgo are located basically in three regions:

- (1) The Huasteca,
- (2) The Otomi region and
- (3) The Sierra Norte of Hidalgo, Puebla and Totonacapan.

La Huasteca, is one of the largest and richest regions in natural resources of Mexico with almost 1.6 million inhabitants, of them, slightly more than 920 thousand are indigenous, according to figures from the CDI for 2005 (CDI, 2005). In this region are the highest concentrations of Pame, Huasteca, Tepehua, and Nahuatl population, the latter with about 400 thousand people, which represent 25 percent of the total Nahuas in the country. The region has 55 municipalities, of which 8 are in Hidalgo, 21 in San Luis Potosí, 17 in Veracruz and the rest in Tamaulipas.

Graphic 2. Percentage of population according to indigenous language, Hidalgo



Source: Own elaboration based on data from INEGI

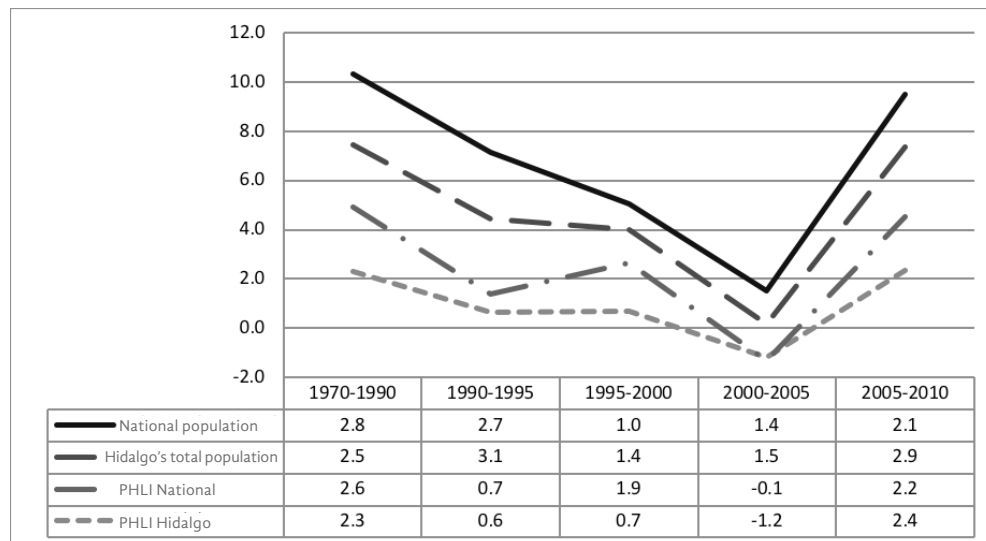
The Huasteca Hidalgo includes the municipalities of Atlapexco, Huautla, Huazalingo, Huejutla, Jaltocan, San Felipe Orizatlan, Xochiatipan and Yahualica. In these municipalities, the indigenous population is the majority, representing approximately 85% of the total population of the area. Nahuatl represents 87%, Otomí 12% and Tepehua 1%.

The Otomi region is made up of 14 municipalities, two of which are located in Querétaro and the remaining 12 in Hidalgo. The Otomí region occupies the Mezquital valley. The Otomí population is one of the ethnolinguistic groups that presents the greatest territorial dispersion, which makes it

difficult to delimit a geographical area that includes a high percentage of its total population (there is a significant number of municipalities with less than 1% of Otomí speakers). In 2010, Otomi is spoken by just over 288,000 Mexicans, of whom 115,000 live in Hidalgo.

The region of the Sierra Norte of Puebla and Totonacapan extends through the States of Puebla, in 57 municipalities, Veracruz in 114 municipalities and Hidalgo with one municipality, Acaxochitlán. The municipality is occupied mainly by the groups Nahuatl, Otomí, Totonaca, Tepehua and Mazateco. The percentage of indigenous population in said municipality is greater than 36%, throughout the period of analysis (1970-2010).

Graphic 3. Hidalgo vs National growth rate



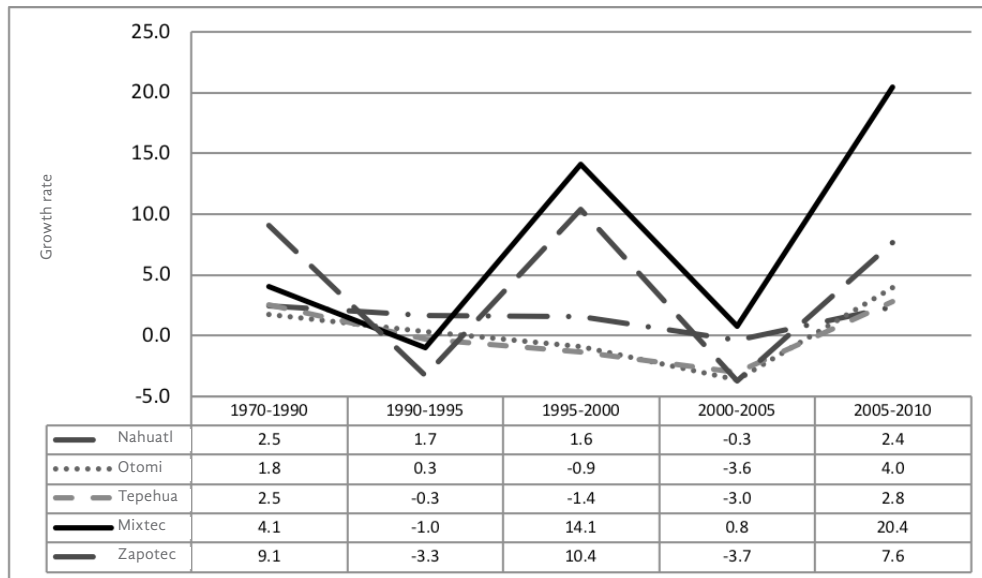
Source: Own elaboration based on data from INEGI

GROWTH RATES

Phli's growth in absolute terms observed during the period 1970-2010, is estimated of only 158 thousand people, going from 201 to 359 thousand, in a period of 40 years, which includes the years of population growth as a result of the gap between the decline in the mortality and fertility rates caused by the demographic transition (Cerdeña and Marmolejo, 2002). The effects on the Hidalgo population consisted of an increase of 789 thousand to a little more than two million inhabitants, a situation very similar to what occurred in the rest of the country.

The phli's growth rate was 1.5%, while for the population of the state was 2.2%, the national rate was 2.3%, for the 1970-2010 period. If we compare the phli's growth rate of Hidalgo with the rate recorded for the phli of the rest of the country (1.9%), a significantly lower growth can be observed.

Graphic 4. Indigenous-speaking population growth rate according to type of language



Source: own elaboration based on data from INEGI

The growth rate of the population by ethnolinguistic group presented roughly the same behavior as its state counterpart, for example, the Nahuatl population grew at a rate of 1.9% per year, the Otomies at a rate of 2.5%, the Tepehuas at rates from 1%, Mixteco to 6.3% and Zapotecs to 5.9%, all during the 1970-2010 period. The inter-census growth rates for each of the indigenous languages can be seen in Graph 4.

METHODOLOGY

Data on indigenous languages recorded by the different censuses and counts were concentrated in tables classified by language type, and quantified by municipality. It was considered that there was a presence of an indigenous language in the municipality if it had at least 0.5% of the total population speaking the language in the entity (see table 2).

The analysis of the distribution of the indigenous population in the municipalities was carried out based on a typology of municipalities constructed

as a variant of the methodology used by the National Commission for the Development of Indigenous Peoples (CDI, 2006a: 16), where a municipality is considered indigenous if the proportion of indigenous population is equal to or greater than 40% of the total population of the municipality, then we considered those municipalities with less than 40% and more than 20% indigenous population with respect to the total population and we called them a municipality with an indigenous presence. Finally, we considered municipalities with less than 20% indigenous population and more than 0.5%, and we called them municipalities with scattered indigenous presence.

ANALYSIS OF CONCENTRATION-DISPERSION OF INDIGENOUS POPULATION

In this section we will analyze the evolution of the indigenous population in the state of Hidalgo and its concentration-dispersion in the 84 municipalities that make it up. In general, the indigenous municipalities of the state have gone from 19 to 15 between 1990 and 2010, the municipalities with indigenous presence have increased from 6 to 9 in said period, while the municipalities with scattered indigenous presence have remained practically constant going from 59 to 60 in the period indicated (see table 1).

Table 1. Typology of indigenous municipalities, Hidalgo

Municipality	1990	1995	2000	2005	2010
Indigenous people	19	19	17	13	15
With indigenous presence	6	6	7	11	9
With diverse indigenous presence	59	59	60	60	60
Total	84	84	84	84	84

Source: Own elaboration based on data from INEGI

The analysis of the indigenous population distribution in the territory allows us, on the one hand, to know the proportion of indigenous population present in each of the municipalities and, on the other, to identify the different languages in their respective spatial location. To identify the presence of an indigenous language in each of the municipalities, municipalities were counted where the presence of a language-speaking population was at least 0.5% of the total number of speakers of the language in the state; otherwise it was considered that the language was not present in the municipality (CDI-UNDP, 2002). From this perspective it can be observed, in table 2, that the language with the greatest spatial concentration, in terms of the number of municipalities in which it resides, is Tepehua.

Table 2. Municipalities with indigenous-speaking population presence, according to type of language

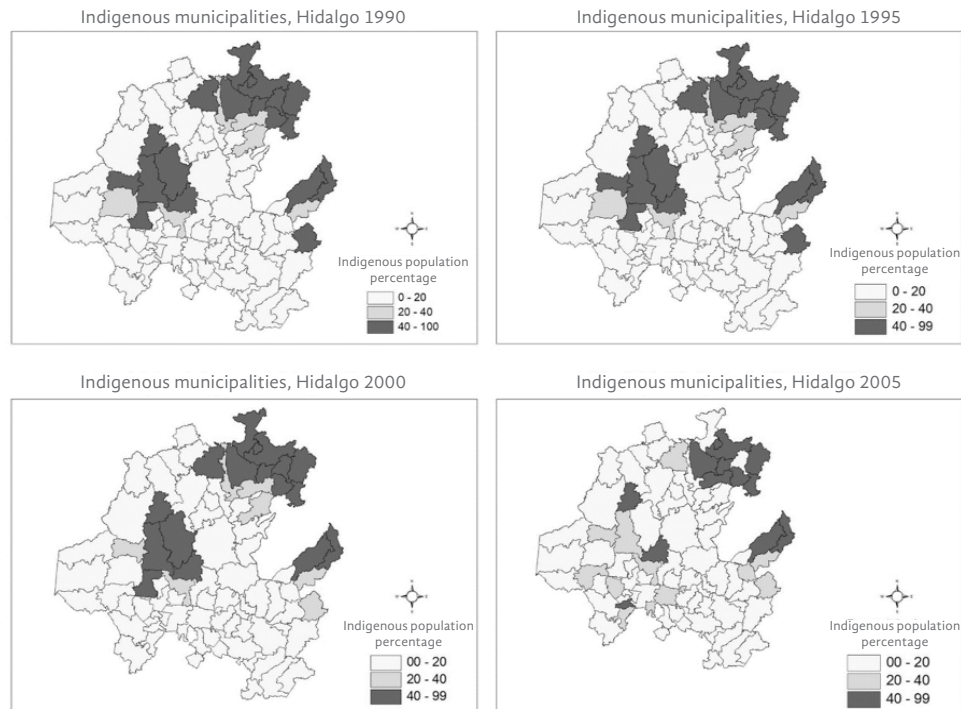
Language	1990	1995	2000	2005	2010
Nahuatl	15	16	17	17	18
Otomi	20	19	19	18	18
Tepehua	3	3	3	3	3
Mixtec	40	38	36	33	27
Zapotec	28	26	34	31	32

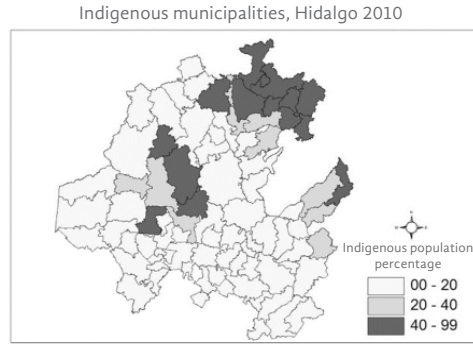
Note: Calculated based on 0.5% of the speaking population of the resident state in the corresponding municipality

Source: Own elaboration based on data from INEGI

Map 1 shows the typology of indigenous municipalities of the State of Hidalgo. It shows the 3 most important indigenous regions of the state. The heterogeneity of the ethnolinguistic composition of the State of Hidalgo can be seen in the high number of municipalities with scattered indigenous population, a situation that also reflects the high concentration of the population of the three main ethnolinguistic groups, a situation that prevails throughout the entire period of analysis.

Map 1. Typology of indigenous municipalities of Hidalgo





Source: own elaboration based on data from population census and counting from INEGI

The aforementioned has the consequence that, on average, 11% of the municipalities of the state have indigenous presence, while another 11% are indigenous municipalities. In contrast, 25 ethnolinguistic groups are located in indigenous municipalities with less than 10% of their speaking population and the remaining 90 percent of their speaking population lies in municipalities with indigenous presence or dispersed indigenous presence. It is also worth mentioning that among these 25 ethnolinguistic groups, municipalities with only a few hundred speakers predominate, as is the case of the Mixes, which totaled just over 200 people in 2010.

Due to its political and economic importance, it should be noted that the municipalities of Pachuca de Soto, Tepeji del Río and Tulancingo have an indigenous population and a scattered indigenous population, but none of them forms an indigenous region of Hidalgo (García-López, 2007).

The review by type of municipality indicates that the regions of Hidalgo where the most important ethnolinguistic groups live are: the Huasteca, region where the largest concentration of Nahuatl population is found, the region of the Mezquital valley where a large proportion of the Otomí population is located, and the region of the Sierra Norte de Puebla and Totonacapan occupied mainly by the Nahuatl, Otomí, Totonaca, Mazateco and Tepehua groups. The latter is the region where the largest proportion of the Tepehua population of the entity and the country is located (Marmolejo and Roca, 2008).

NAHUATL

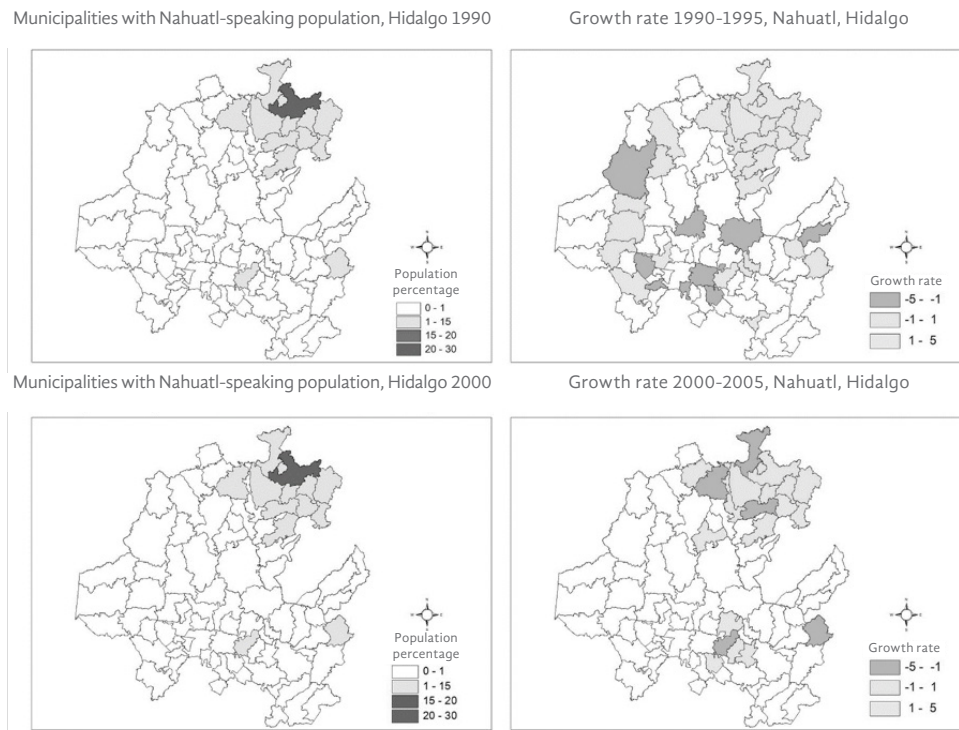
The Nahuatl language of the Huasteca belongs to the yuto-Aztec linguistic group, its origins are considered unclear, and the most widespread version refers to the influence of various languages such as Toltec, from the Central Highlands and the Olmec of the Valley of Puebla and Tlaxcala.

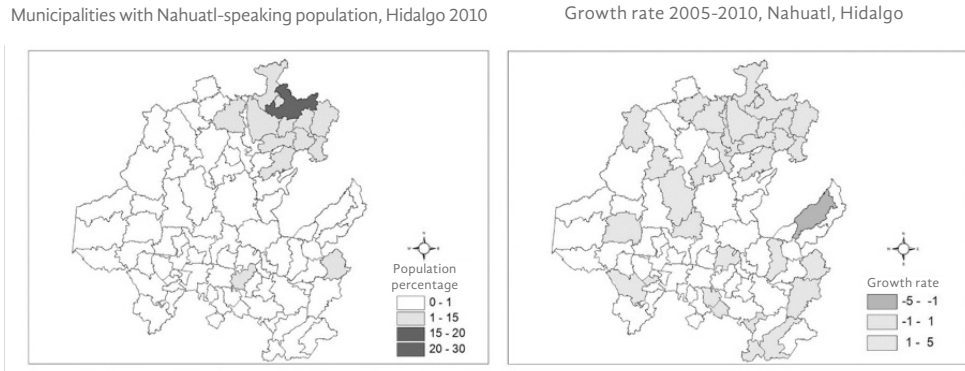
The Nahuatl population that was originally concentrated in the Huasteca region, in the 1990-1995 period, when calculating their growth rates, two behaviors can be distinguished, first, in the Huasteca, where a strong growth is observed, with rates between 1 and 5% annually (see map 2) and second, in the municipalities that are outside the region, where the values are of loss, from minus 1 to less than 5% per year.

For the 2000-2005 period the population is concentrated in two regions, the Huasteca and in the valleys near Tulancingo. The traditional settlement region is where there is a greater growth of Nahuatl speaking population (with annual growth rate between 1 and 5%), while in the municipalities adjacent to the valleys of Tulancingo growth rates are observed moderate

During the five-year period of 2005-2010, only one Hidalgo municipality shows a decrease in the Nahuatl population. It is the municipality where the Tepehua speaking population is concentrated. The municipalities traditionally Nahuatl can be seen a high growth in most cases and in some few equilibrium, in the remaining municipalities you can see an increase in the growth rates of the Nahuatl population as a process of expansion and search for better conditions work or life.

Map 2. Nahuatl speaking municipalities and its growth rates





Source: own elaboration based on data from population census and counting from INEGI

OTOMI

Otomi is considered a tonal language, whose variants are strongly associated with its geographical distribution. According to its linguistic classification, the otomi, along with the mazahua, the pame, the occuilteca, the chichimecajonaz and the matlatzinca, belongs to the otomianas languages, which as well belong to the otopame branch of the otomangue family.

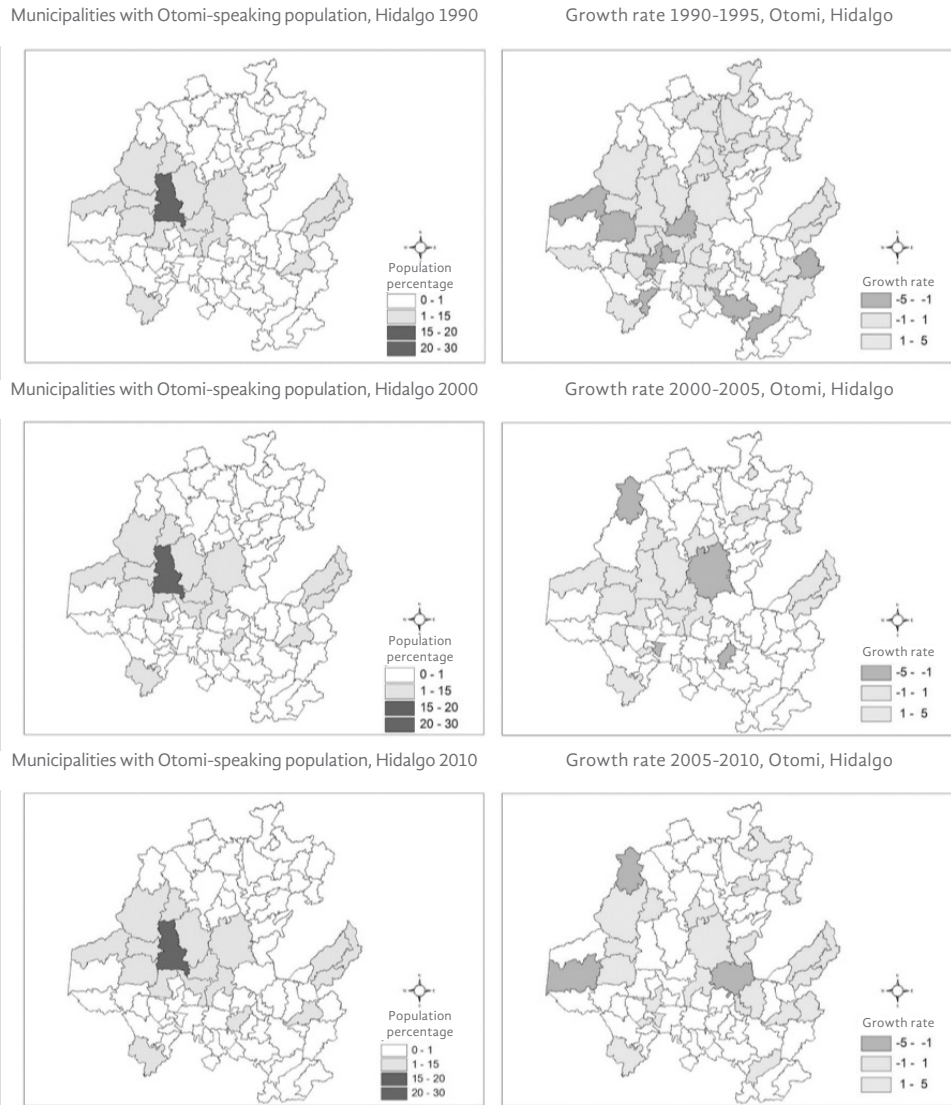
Like other indigenous groups, the Otomies do not occupy a fixed territory, but they are dispersed in the states of: Queretaro, Hidalgo, Puebla, Veracruz and the State of Mexico. In Hidalgo, the Otomi population is the one with the greatest expansion in the territory, its region of origin can be identified in the valleys of Mezquital and Ixmiquilpan with presence in distant areas such as the Sierra de Puebla and the valleys of Tulancingo and Pachuca.

In the 1990-1995 period, the growth rate, in 60 percent of the municipalities of Hidalgo, was moderate, between equilibrium and low growth, but its territorial behavior was disordered, as in search of new territories (see Map 3).

For 2000-2005 there is a stable growth in the new occupied spaces, with high growth in some traditional or new municipalities, while in others the small population shows decreases as a sign of migration.

In the case of the Mixtec and Zapotec-speaking populations, it is presumed that these are immigrant populations to Hidalgo since their home regions are found in other states of the country. The immigration situation can be linked to another type of population behavior (World Bank, 2009), since 1990 a pattern conditioned by the supply and demand of employment and housing has been identified, especially in the municipalities of Tulancingo, Ixmiquilpan and those close to the Metropolitan Area of Mexico City.

Map 3. Otomi speaking municipalities and their growth rates



Source: own elaboration based on data from population census and counting from INEGI

TEPEHUA

Tepesua is the traditional language of the eastern highlands of Hidalgo (municipality of Huehuetla), mountains of northern Puebla (municipality of Pantepec) and the municipalities of Ixhuatlán of Madero, Texcatepec, Tlachichilco and Zontecomatlán of Veracruz.

Tepesua is a language strongly related to the Totonac; some centuries ago it was only one and with the passage of time they diversified into two languages. The geographical location of these languages allows us to suppose that at

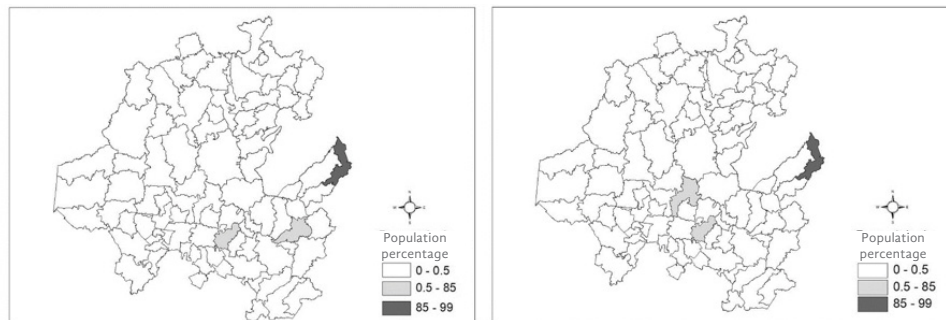
some point a single language was spoken, or a variant of them in the entire Gulf of Mexico region.

On average, during the 1990-2010 period, 93 percent of the Tepehua speaking population in the state of Hidalgo was concentrated in the municipality of Huehuetla. This means that this ethnolinguistic group has a high level of concentration, which has resulted in a growth rate of less than 0.7% per year, which places this population on a path of slow extinction.

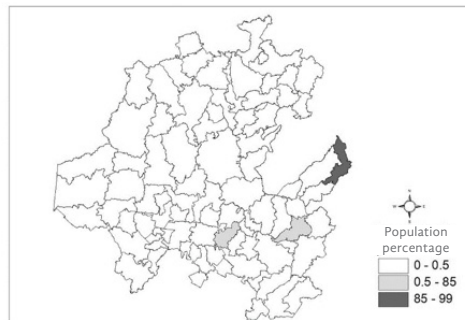
The negative growth of the Tepehua population can also be explained by the emigration to different metropolitan areas of Mexico, or to the United States; situation that has been caused by the need to access better working conditions and life (Camarena and Cortés, 2008).

Map 4. Tepehua speaking municipalities

Municipalities with Tepehua-speaking population, Hidalgo 1990 Municipalities with Tepehua-speaking population, Hidalgo 2000



Municipalities with Tepehua-speaking population, Hidalgo 2010



Source: own elaboration based on data from population census and counting from INEGI

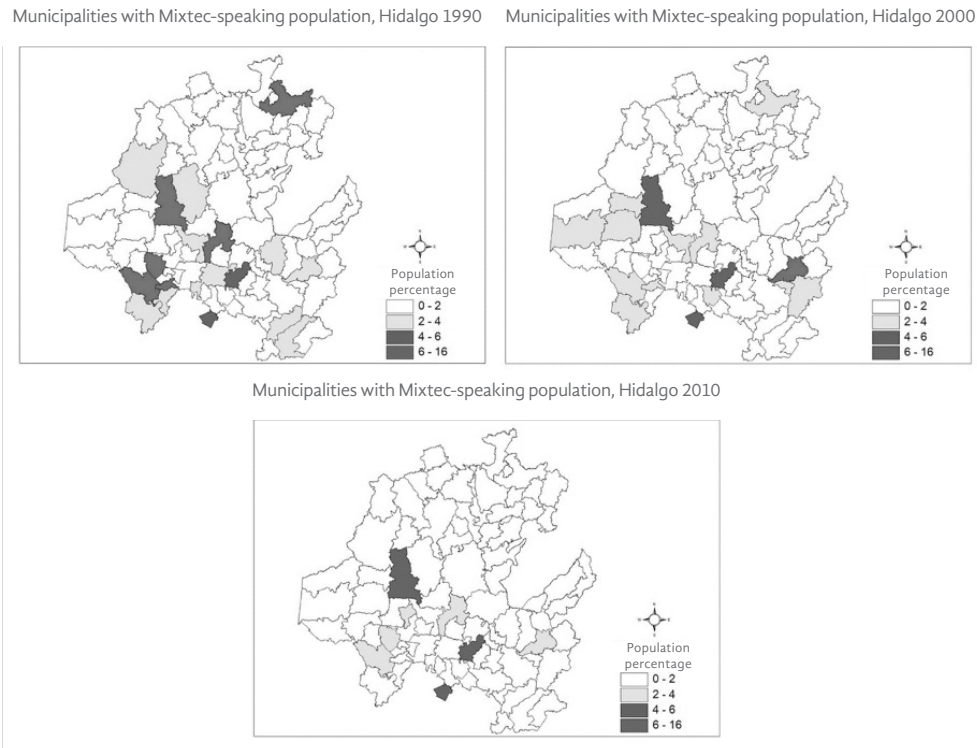
MIXTEC

The Mixtec is a tonal language, that is, the meaning of words changes according to the tone with which it is expressed. In addition, it is a language that includes many variants, in whose number and classification there is no consensus.

The Mixtecs are the fourth largest indigenous people in Mexico, after the Nahuatl, the Maya and the Zapotec. The Mixtecs originally settled in a vast territory that covers the northwest of the State of Oaxaca, the southern part of the State of Puebla and a strip east of the State of Guerrero. This region is known as the Mixtec region. That is to say, the Mixtecs are not a native people of the State of Hidalgo, so it is presumed that they arrived via a recent immigration.

The Mixtec population in the state reached a figure of 677 speakers in the year 2010, increasing from 122 in the year of 1990, that is to say that it presented a growth of 8.5% per year during the period indicated. However, the scarcity of the population does not allow a serious estimate of population growth rates by municipality.

Map 5. Mixtec speaking municipalities



ZAPOTEC

The Zapotec term includes a large number of dialects which are not always mutually intelligible, this means that these variants began to diverge from

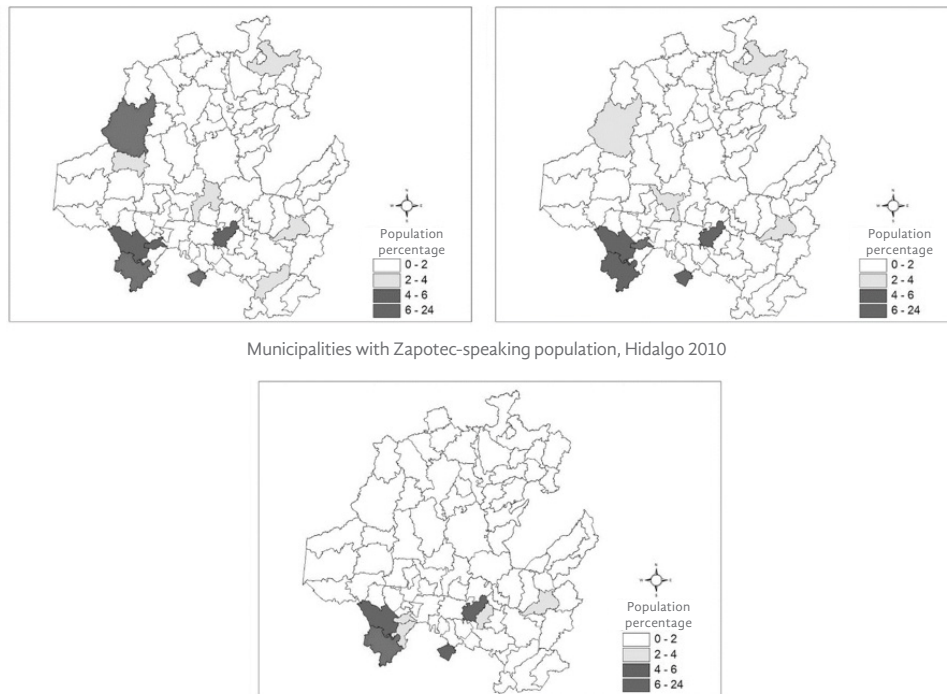
proto-Zapotec some centuries ago. The Zapotec is composed of between 8 to 38 variants depending on the type of classification.

Historically, Zapotecs are located in the mountainous area in the north of the city of Oaxaca, in the southern region of the Isthmus of Tehuantepec and in the mountainous area in the south of the state of Oaxaca. Like the Mixtec population in the state of Hidalgo, the Zapotec population came to the entity due to an emigration that occurred a few decades ago.

The Zapotec speaking population reached a figure of 533 speakers in 2010, increasing from a figure of 308 in the year of 1990, that is to say that it presented an annual growth of 2.7% during the aforementioned years. However, the scarcity of the population does not allow a serious estimation of population growth rates either. However, an analysis of the evolution of the population by municipality is presented.

Map 6. Zapotec speaking municipalities

Municipalities with Zapotec-speaking population, Hidalgo 1990 Municipalities with Zapotec-speaking population, Hidalgo 2000



Source: own elaboration based on data from population census and counting from INEGI

CONCLUSIONS

It can be observed throughout the study period that the Nahuatl language-speaking population was basically concentrated in 8 municipalities of the Huasteca, and that it is currently in a phase of slow expansion towards the surrounding municipalities, which is undoubtedly due at the speed in which this population group is growing in recent decades, especially in the municipalities where it has a greater presence. In other words, concentrating on a few municipalities has allowed the Nahuatl population to maintain high growth rates over time.

The Otomi speaking population in the early 1970s could be dispersed throughout the Mezquital valley, however, in recent years, the population has been slowly concentrating in the central municipalities of the valley, bringing its growth rate, at least in the 2005-2010 period, it has reached levels above the country's average. This means that the Otomi population has opted for the strategy of concentrating on the municipalities where it has a strong presence.

Thus, it can be concluded that two indigenous populations with high rates of population growth have opted to choose a concentration strategy, while the Nahuatl people have begun a process of colonization in the surrounding territories; the Otomi population has preferred to concentrate on the municipalities where it has greater presence

The speaking population of Tepehua presents a very particular characteristic, that of being concentrated in only one municipality (Huehuetla), together with a negative growth rate. That is to say, the concentration strategy has led the Tepehua group to a situation of high vulnerability with respect to its long-term survival, although it is known that there are some Tepehua population scattered throughout Mexico and the United States, the preservation of their language and culture is not guaranteed.

The Mixtec and Zapotec population represent two ethnolinguistic groups whose concentration-dispersion strategies are opposed: while the first group opted for a concentration strategy, the second dispersed in a larger number of municipalities (see table 2), despite the fact that the observed growth rates for both populations turned out to be positive. One of the reasons that can explain the evolution of both groups in the State of Hidalgo is the immigration recently observed from the state of Oaxaca.

In general, it can be concluded that the growth rates experienced by the indigenous populations of the State of Hidalgo may be related to the concentration-dispersion strategy observed, but this relationship is mediated by factors that may be linked to the population density present in a specific area of the territory, that is, that a greater critical mass of population living together in the same space and time can effectively increase the growth rate of a population group over time in a sustained manner (Boix, 2003). However, it is clear that there are also other factors that mediate the relationship between population growth and the concentration-dispersion strategy, among which are: the available natural and economic resources and the peoples' empowerment capacity, which is reflected in the capacity of a population to protect and impose the basic elements of its culture such as its language, religion and clothing.

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