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Aging and social vulnerability in the State of Mexico, 2010

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Abstract:

The issue of the people who are aged 60 or more is among the imperative social worries; that is to say that in demographic terms they have been lucky to reach old age. In Mexico, the State of Mexico is the state which has the highest number of population who are aged 60 or more, which exceeds the 1.2 million people in 2010. The figure itself strikes the most, which is why it is proposed to analyze how their life is and what the individuals in their daily lives are exposed to, how exposed they are to risks and how able they are to avoid them, since risks, dependency, and their limited capacities place them in situations of social and personal vulnerability. In this scenario, the objective of this article is to identify the level of social vulnerability senior citizens in the State of Mexico face at municipality level. In order to achieve this, a rate of social vulnerability of the elderly people in the municipalities of the State of Mexico was estimated through the principal components methodology. The data comes from the 2010 Census of Population and Housing. The findings suggest that senior citizens face diverse situations of social vulnerability which differentially have an impact on their living conditions in the municipalities of the State of Mexico.

Key words: Mexico, aging, social vulnerability.

Resumen:

Envejecimiento y vulnerabilidad social en el Estado de México, 2010

Entre las preocupaciones sociales de primer orden está el tema de los grupos etarios de 60 años o más; es decir que en términos demográficos han tenido la fortuna de llegar a la vejez. De la República Mexicana, la entidad mexiquense es el estado con mayor presencia de población de 60 años o más, que supera la cifra de 1.2 millones de personas en 2010. La cantidad por sí misma llama la atención, por ello se propone analizar cómo es su vida y a qué están expuestos los individuos en su cotidianidad, cómo es la exposición a riesgos y cuál es su margen de la capacidad para sortearlos, ya que los riesgos, la dependencia y la limitada capacidad para enfrentarlos los coloca en situaciones de vulnerabilidad personal y social. Bajo este panorama, el objetivo del presente artículo es identificar el grado de vulnerabilidad social que enfrenta la población adulta mayor en el Estado de México a nivel municipal. Para lograr lo anterior, se estimó un índice de vulnerabilidad social de la población envejecida en los municipios mexiquenses a través del método de componentes principales. Los datos provienen del Censo de Población y Vivienda 2010. Los resultados sugieren que los adultos mayores enfrentan situaciones heterogéneas de vulnerabilidad social que impactan diferencialmente en las condiciones de vida de los adultos mayores en los municipios del Estado de México.

Palabras clave: México, envejecimiento, vulnerabilidad social.

Introduction

The following article seeks to address an issue quite delicate due to a wide range of factors, especially when the subject to study is located in one of the most developed states of Mexico, the State of Mexico. More than 16 million inhabitants live in this state, which also has industrial districts that possess the greatest advances in technology, and state of the art means of transport such as the metro and the upcoming interurban fast train which will connect Mexico City and the metropolitan area of Toluca. Besides this, there are also highways and an international airport. All this infrastructure greatly allows capital and people to move in a daily way. Imaginatively it may be thought that the population benefits from excellent life standards, and particularly, their senior population would not have to worry about enjoying life, however, this is just imagination.

For the year 2015, more than 1.5 million people aged 60 or more were registered, that is senior population (INEGI, 2015), figure which accounts for a considerable amount of elderly people, whose analysis becomes a complex issue because their personal, familiar, and social backgrounds have to be taken into account; that is to say, how their lives have been, what are their social and familiar environments, how old they will become and in which circumstances, among other aspects. Two issues regarding this population lie here: On the one hand, how many senior citizens do live well, i.e. with no real risks? And on the other hand, what levels of social vulnerability are they exposed to? This article deals with this last subject.

As they become older, the people aged 60 or more are exposed to risks related to chronical degenerative diseases (*diabetes mellitus*, cardiovascular diseases, among others) which constitute the first causes of morbidity and death of senior citizens (Morewitz and Goldstein, 2008), besides depression, disability, and solitude. Also, most elderly people have to keep working to the extent of their possibilities since they lack a pension or have not retired, and if they do have a pension, it is a minimal amount of money, that is why they seem forced to continue generating their own and their family income. Among many other circumstances, these are the factors which expose this age group to vulnerability conditions due to the risks daily faced at the expense of their safety and their life.

Demographic aging is an emerging and rapid process which is found in contexts where big changes in the family institution take place since the number of family members is becoming lower and lower. Today families consist of fewer members, which leads to new familiar agreements to avoid, among other things, the issues derivate from the aging of their members. This is another concern when vulnerability is referred because it has to do with the care the elderly require.

In essence, how vulnerable elderly people are is related to the conjunction of many factors, which make it multidimensional, and from this view the social vulnerability situation of senior citizenship in the State of Mexico will be analyzed.

It is clear to the authors of this article that the issue of social vulnerability at old age is socially complex, since, among other things, every day the number of people who turn 60 years old increases, and changes in society, family, and public policies are limited before the growth of this population, especially women, whose longevity is longer.

In light of this situation, the general objective of this research is based on identifying and analyzing the level of social vulnerability which senior citizens from every municipality of the State of Mexico face. In order to accomplish this, a social vulnerability rate of elderly people in every municipality of the State of Mexico was estimated through principal components methodology. The data comes from the 2010 General Census of Population and Housing.[1]

The structure of the article consists of five sections. The first section describes the general context of demographic aging in the State of Mexico and their municipalities. In the second section the conceptual elements of the thesis of social vulnerability are found. The following section presents the methodological aspects for the social vulnerability rate, and also the variables and the data source. In the fourth section the results on the social vulnerability levels of senior citizens from every municipality the State of Mexico are presented. In the final section, the conclusions and most important findings are included.

Old age demography in the State of Mexico

The demographic situation of the State of Mexico is part of the logic of the demographic transition that the country has been going through since

[1] The data from the 2010 Census were used since this article was developed as part of the project "Vulnerabilidad social y política pública para los adultos mayores en el Estado de México. Un análisis a nivel municipal" (Social Vulnerability and Public Policy for the Senior Citizens of the State of Mexico. A Municipality Level Analysis) in the year 2014.

the 30s, a decade in which mortality had begun to decrease, keeping high rates of fertility due to the government implementation of a pro-birth policy, whose effects were reflected in the increase of the Mexican population (Partida, 2005; Ordorica, 2014).

Nationwide, the volume of population went from 16.5 million in 1930 to 48.2 million in 1970; during this period the State of Mexico increased from 990 112 inhabitants to 3.8 million (INEGI, 1930; INEGI, 1970). In the 70s the population growth registered a 3.4 nationwide annual growth rate (Valdés, 2014; Ordorica, 2014), whereas the State of Mexico grew a 7.6 rate per cent (Montoya and Montes de Oca, 2011). This growth originated as a consequence of the immigrant exodus in which not only individuals but also whole families from the countryside arrived at the city looking for better living conditions (Navarrete, 2014). It is important to mention that this growth rate has been the highest in the demographic history of Mexico, and above all, of the State of Mexico itself (Ordorica, 2014).

These sudden changes have took place, as Ordorica claims, among other things, due to the legal frameworks that had an important role in demographic tendencies, "in the year 1936, at the initiative of the Mexican Presidency, the Congress passed the first General Law of Population. Our country needed to be populated" (Ordorica, 2014).

Along with this law, diverse health public policies were applied, which allowed the population to grow. One of the outstanding measures was the reduction of child death, carried out by the Secretariat of Health and Assistance as well as the Instituto Mexicano del Seguro Social (IMSS).

After 1970 a reductionist new policy of population is implemented, whose purpose was to decrease the levels of fertility, and with that the population growth, that is to say, a new period in the demographic history of Mexico is opened, which is legally based on the 1974 General Law of Population (Chemor, 2014).

With this implementation, a new period in history of Mexico's population, and particularly in the State of Mexico's population whose demographic transition, let us put it this way, is another child resulting from the modernization of the country. The current modernization has brought great advances in medical science and technology which have shaped the demographic transition, since new knowledge of diet and hygiene, as well as health, has been a determining factor in the decrease and control of fertility and mortality, demographic components of the demographic transition (Valdés, 2014; Juan, 2014). This transition has had an effect on every aspect of population's life, since it has brought changes on the demographic

structure, in the family, in social relations, and indeed, has modified the relations between the State and the society as regards population public policies.

In the issue we address —people aged 60 years or more in the State of Mexico— it might be necessary to see the state context in which this population group is inserted. The State of Mexico has an extension of 121 thousand square kilometers and in the year 2015 had a population of 16 million inhabitants contrastively distributed between rural (only 13 per cent of the population) and urban (87 per cent of the population): this shows an unequal outlook in demographic, economic, social, political, and cultural aspects: so it can be said that the State of Mexico is an entity with a heterogeneous and combined development, since it contains highly populated areas which benefit from an elevated economic progress, and other semi populated areas which suffer from high social and economic backwardness. Before this situation, it is important to quote Leon Trotsky, who claims:

> Unevenness, the most general law of the historic process, reveals itself most sharply and complexly in the destiny of the backward countries. Under the whip of external necessity their backward culture is compelled to make leaps. From the universal law of unevenness thus derives another law which, for the lack of a better name, we may call the law of *combined development* – by which we mean a drawing together of the different stages of the journey, a combining of the separate steps, an amalgam of archaic with more contemporary forms (Trotsky, 1997:17).

The development of capitalism in the State of Mexico has generated diverse complexities that have modified what should have been a "natural" or gradual development of population volumes, and on the contrary, it may have been determined by the ups and downs of a developing country like Mexico, specifically by the current capital interests. When workforce was needed to foster industrialization in the country, a pro-birth Law was applied in order to encourage the growth of the population, and so it was done at once, when the capital reached an excess of workforce, a reductionist Law was enforced so that growth rates were reduced, as PhD. Raul Benitez Zenteno (1998) has pointed out in the round table *Envejecimiento demográfico: el desafio del siglo XXI*. (Demographic aging: the XXI century challenge).

Socially speaking, one of the most relevant issues today is demographic aging that derives from two transitions: on the one hand the transition

from the nationalist-protectionist capitalist economic model, which is also socially benefactor, and which lasted from 1930 to the mid-seventies, into another neoliberal and globalized model of capitalism, where private market prevails and economic dependency is prominent (Montoya and Montes de Oca, 2006). On the other hand, a demographic transition marked by the decline of birth and mortality, which led to a rise in life expectancy and with that an aging process of the population (Ham, 2001; Partida, 2005). These are the two current transitions in which the country is immersed, and consequently the State of Mexico.

With respect to the data on aging, according to the 2010 General Census of Population and Housing, the population aged 60 years old or more added up to 1,171,859 Senior Citizens (SC). It is important to mention that the majority of this today old population were born during the first period of the 1950s, when the capitalist industrialization model was at its peak, and as a consequence, so was migration from the countryside into the city. This process caused an unprecedented urbanization in the history of the State of Mexico, which can be seen in the data showed in Chart 1, where 86.9 per cent of senior population are found in urban areas, and the remaining 13.1 per cent in rural areas distributed throughout the State of Mexico territory (Chart 1).

Chart 1: Population aged 60 or more, urban and rural, State of Mexico, 2010

Area	Population	Percentage
Urban	1,018,039	86.9
Rural	156,820	13.1
Total	1,171,859	100.0

Source: The authors based on INEGI (2010) General Census of Population and Housing.

Additionally, the distribution of senior population at municipality level in the year 2010 shows that five municipalities holds 40 per cent of people aged 60 or more: Ecatepec de Morelos, Nezahualcóyotl, Naucalpan, Tlalnepantla de Baz, and Toluca, in absolute terms the figure varies from 132 to 58 thousand, being the most populated municipalities in the State as well (INEGI. 2010a). On the other hand, it should be pointed out that five municipalities which concentrate less than 575 senior citizens relatively represent less than 0.05 per cent, these are Temamatla, Otzoloapan, Texcalyacac, Zacazonapan, and Papalotla (INEGI, 2010a). This shows an important diverse distribution of senior citizens who live in the 125 muni cipalities of the State of Mexico.

These elderly people were the ones who felt the weight of industrialization during the bloom of their youth, and it may be believed that they would be currently enjoying the benefits promised by modernization, that is to say, enjoying a pension or retirement which would take them away from the labor market, and having a comfortable life away from all economic and work vulnerability. However, the data in Chart 2 show a very different and unequal situation. In the year 2010, 82.2 per cent of the 60 aged or more population are not retired or do not have a pension, 68.3 per cent do not work, and 43.9 are not entitled to any healthcare institution. This draws forth the heterogeneity and the multiple lacks (economic, social, health) senior citizens in the State of Mexico have. This is also due to the fact that a part of this population had a limited access to formal labor market, and besides, because of economic cycles, a great amount of people got and quit from formal employment, which at the end of their work history left them at disadvantage when receiving the benefits of retirement, a pension, or affiliation with a social security institution.

Chart 2: 60 aged or more population from the State of Mexico with a pension or retired, with a job, and with an affiliation with a social security institution, 2010

Situation	Population	Percentage
With a pension or retired	192,271	16.4
Without a pension or not retired	963,226	82.2
N.S	16,362	1.4
Total	1,171,859	100.0
With a job	355,259	30.3
Without a job	800,238	68.3
N.S	16,362	1.4
Total	1,171,859	100.0
Affiliated	652,110	55.6
No affiliated	514,688	43.9
N.S	5,061.0	0.4
Total	1,171,859	100.0

Source: The authors based on INEGI (2010). General Census of Population and Housing.

The figures of this chart show an unfavorable situation for the well-being of the senior citizens from the State of Mexico, and as a consequence, the population are exposed to situations of social vulnerability. It is important to point that the data from Chart 3 allow to see that the majority of the population live in urban areas, which consist of municipalities located on the proximity to Mexico City and Toluca, which rejuvenated first

thanks to migration, but now are becoming old such as Tlalnepantla, Nezahualcóyotl, Naucalpan, Metepec, Coacalco, Ecatepec, Cuautitlan Izcalli, Ocoyoacac, Huixquilucan, and Toluca, municipalities that account for a larger than 5.4 percent rate of aging (Martínez and Montes de Oca, 2012) as can be seen in Chart 3. Chimalhuacán, Ixtapaluca, and Valle de Chalco Solidaridad are among the municipalities that are part of the metropolitan areas which do not have much old population.

Chart 3: 60 aged or more population from the State of Mexico per urban-rural municipality according to their rate of aging, 2010

Rural municipalities	Total population	60 aged or more population	Rate of aging
Amatepec	26,334	3,816	14.5
Tlatlaya	32,997	4,716	14.3
Tonatico	12,099	1,512	12.5
Luvianos	27,781	3,216	11.6
Otzoloapan	4,864	561	11.5
Zacualpan	15,391	1,712	11.3
Sultepec	25,809	2,775	10.8
Timilpan	15,391	1,649	10,7
San Simón de Guerrero	6,272	629	10.0
Morelos	28,426	2,856	10.0
Tejupilco	71,077	6,838	9.6
Almoloya de Alquisiras	14,856	1,429	9.6
Malinalco	25,624	2,375	9.3
Zumpahuacán	16,365	1,482	9.1
Zacazonapan	4,051	363	9.0
Texcalititlán	17,390	1,512	8.7
Temascaltepec	32,870	2,821	8.6
Ixtapan de la Sal	33,541	2,800	8.3
Tenango del Aire	10,578	876	8.3
Coatepec Harinas	36,174	2,795	7.7
Tenancingo	90,946	6,949	7.6
Mexicaltzingo	11,712	854	7.3

Source: The authors based on INEGI (2010). General Census of Population and Housing.

From the municipalities away from the metropolitan areas which have high rates of aging —among other reasons for the effect of population expulsion, since young population migrate from their place of origin, while children, women, and senior people stay— Amatepec, Tlatlaya, Tonatico, Luvianos, Otzoloapan, Zacualpan, Sultepec, Timilpan, San Simón de Guerrero, y Morelos excel, for presenting a rate of aging which equals or exceeds ten per cent (Martínez and Montes de Oca, 2012).

Chart 3: 60 aged or more population from the State of Mexico per urban-rural municipality according to their rate of aging, 2010 (continuation)

Urban municipalities	Total population	60 aged or more population	Rate of aging
Tlalnepantla de Baz	664,225	74,935	11.3
Nezahualcóyotl	1,110,565	116,148	10.5
Naucalpan de Juárez	833,779	81,063	9.7
Metepec	214,162	17,265	8.1
Coacalco de Berriozábal	278,064	21,801	7.8
Ecatepec de Morelos	1,656,107	129,783	7.8
Cuautitlán Izcalli	511,675	39,561	7.7
Ocoyoacac	61,805	4,758	7.7
Huixquilucan	242,167	18,144	7.5
Toluca	819,561	57,691	7.0
Calimaya	47,033	3,153	6.7
Nicolás Romero	366,602	23,331	6.4
Tultitlán	486,998	30,360	6.2
La Paz	253,845	15,486	6.1
Chapultepec	9,676	592	6.1
Almoloya de Juárez	147,653	8,676	5.9
San Mateo Atenco	72,579	4,257	5.9
Zinacantepec	167,759	9,955	5.9
Tecamac	364,579	19,512	5.4
Valle de Chalco Solidaridad	357,645	18,824	5.3
Ixtapaluca	467,361	22,298	4.8
Chimalhuacán	614,453	29,083	4.7

Source: The authors based on INEGI (2010). General Census of Population and Housing.

The data referenced in this text and in the charts serve as a starting point to construct a rate of social vulnerability at municipality level. With this rate the indicators of social regional inequity will be seen in relation to the concept of uneven and combined development.

This section is concluded keeping in mind that Mexico, and specifically the State of Mexico, have demographically started a historical period of full aging and big personal, familiar, and social challenges, as Manuel Ordorica summarizes:

> The longest longevity of women will be reflected in the fact that the relation of men between the ages of 65 or more years old will be 85 men for every 100 women. Among the most vulnerable senior citizens to a series of diseases, there will be more ill women. If we add up poverty, we have a gathering of characteristics which could make an alarming amount of elderly women: wo-

man, poor, ill, and old in a society that discriminates against all this conditions (Ordorica, 2006: 30).

Of social vulnerability

In accordance with the "Diccionario de la Real Academia Española", the concept of "vulnerability" considers that everything in this world is "vulnerable": vulnerable to weather, diseases, insecurity, the economic situation, among others. For the specific case of this research, 60 aged or more population —senior citizens—, their work energy seems to be diminished, their health is fragile or in this case their existence conditions (housing, food, healthcare, family in many cases, etc.) are not guaranteed, and if they are, they are relative, and as a result, not enjoying a certain level of well-being can affect them; it can be said that the population who face any of these situations are socially vulnerable.

Vulnerability, when comprises large amounts of people and causes, becomes into a social phenomenon, reason why the conceptual element of the thesis of this article is social vulnerability, because thousands or millions of people in this situation will be referred. It is important to mention that not all people aged 60 or more are or could be in this condition, since society is unequal and this inequality is reflected in the socioeconomic strata of the population, and as a consequence, in their levels of vulnerability.

From this perspective, the conceptual element of the thesis of social vulnerability identifies senior citizens as one of the potentially vulnerable disadvantaged groups, where social inequities are seen due to the fact that this population sector presents high delicacy, the risk of losing their quality of life, their health, their economic and social resources, and even cultural changes (Villagómez and Sánchez, 2014; Sánchez and Egea, 2011; Rodríguez, 2000). As Busso (2001) claims, the 60 years or more population group is the one who faces unprecedented conditions that make it a vulnerable group.

Vulnerability in its various displays such as health, home, family, or society, is caused essentially by material conditions of existence, defined by their economic and social situation, whether the social context where the person lived allowed them to have a formal job which would offer security, like an affiliation with a social security institution, work benefits, and the right for retirement or pension. On the contrary, those people who have lacked work opportunities have a non-existent or restricted well-being. For this research, such circumstances determine if elderly people are exposed or not to a vulnerable and risky life.

When it comes to social vulnerability, the multiple lacks of the population are referred to. Particularly for this research, it is addressed the social vulnerability of senior citizens who because of their age should already have left the labor market, however, their limited incomes make them continue working informally. The high percentage of women who have never got a formal job is another example of this situation.

In accordance with the "Diccionario de la Real Academia Española" (2000:2110), another definition of being vulnerable is to be wounded or injured, in summary, to talk about social vulnerability is to make reference to poor, and in many cases helpless, people who depend on public charity or the State aid programs in order to survive.

Derived from this concept, social vulnerability can be found in different aspects of people's life. Hence vulnerability can be seen depending on its dimension, either economic, familiar, health, housing, among others. These aspects or dimensions are mentioned since vulnerability permeates or finds itself in every different part of people's life, as will be analyzed in the following pages.

Though poverty is a concept which shows familiar or people's income rates, it is just a quantitative indicator. The concept of social vulnerability takes into account the poverty indicator but it correlates with the risk factor in different dimensions such as health, dependency, family, margination, and the abandonment of public policies.

The concept of social vulnerability, just like all concepts, has its own history and context. This term has become a trend since the 1990s and at the beginning of the 21st century; it originated from the effects of the new late capitalist economic model, "the economic and market neoliberalism" which brought with it consequences in every aspect of social and political life. This economic model started to have its peak in Mexico and Latin America from the 1980s (Zaman, 1999).

Neoliberalism meant that the State dissuaded from being the economy conductor, it restricted this function to the limit, and it focused on more administrative than economic functions, leaving their social function to a large extent. The State modified its social policy whose purpose was the well-being of the people; Well-being in this context meant that the State looked after people's work and social security, and therefore it created institutions which care about people's health, pensions, and retirement (Garabito, 2011; Bouzas, Hernández and Reyes, 2013).

Social vulnerability is directly linked to the limitations of the globalized capitalist development model, since it highlights impoverishment of the

standards of living and places wide groups of the population on the verge of having risks and insecurities in many aspects (Busso, 2011). In this regard, it is important to mention that the United Nations (UN) through the Economic Commission for Latin America and the Caribbean (ECLAC) has conducted research on the vulnerability of the population in this region, emphasizing the concept of "social vulnerability", and in order to point their analysis range, the following quote is presented:

> a) The growing interest in the notion of social vulnerability is explained due to the usefulness of characterizing objective and subjective conditions of uncertainty and defenselessness, and understanding the oscillations of social mobility of communities, housing, and people. It also offers an alternative but supplementary view of other approaches or concepts, which depicts social disadvantages such as poverty and exclusion.
> b) A social vulnerability approach requires public policies to be dynamic, in the sense of being in permanent harmony with the changing risks and demands that entail modern life (UN-ECLAC, 2002: 16).

Along these lines Roberto Pizarro, an expert from ECLAC, analyzes the concepts of poverty and vulnerability by establishing the scopes and limitations of the given terms as can be seen in the following quote:

> The analytic dissatisfaction of poverty approaches and their methods of measuring has enlarged vulnerability research. Thus, these specialists point out that the concept of poverty, by expressing a necessity condition that derives only from the insufficiency of incomes, is limited in understanding the multifaceted world of the helpless. However, by taking into account concepts like defenselessness, insecurity, exposure to risks, shocks, and stress (Chambers, 1989), the vulnerability approach offers an integrative vision of the living conditions of the poor, and at the same time, it considers the availability of resources and strategies of families themselves in order to face the impacts which affect them. In fact, the poverty approach describes particular attributes of people and families without accounting for the causal processes which originate it (Pizarro, 2001: 12).

In the case of the research of the sociodemographic conditions of senior citizens older than 60 in the context of Mexican society, particularly the State of Mexico, the notions of poverty and vulnerability are complementary and each of them addresses their specificity depending on the research objective. In this article an analysis of the situation of social vulnerability at municipality level is proposed, and the concept that allows a more complete approach to this condition is the concept of "social vulnerability"

which, applied on population research, becomes part of the sociodemographic area, concept that permits to consider quantitative and qualitative elements which are directly linked to typical risks of that age and of the social condition which people suffer in many cases such as poverty, exclusion, and social discrimination, in their family as well as from the public policies, which are the State's responsibility.

Derived from what has been presented throughout this section, four conceptual aspects or dimensions have been considered, which from our point of view allow to analyze what is the situation of social vulnerability that senior citizens in the State of Mexico have. Those analyzed dimensions are the following: economy, health, family, and housing.

Within the economic dimension it can be outlined that senior citizens are exposed to a greater vulnerability due to their social lacks and their low incomes. It is stated that this population group shows a risk situation almost three times above the national average of becoming poor. Additionally, it is evidenced that women tend to be under threat more frequently than men do, since they have fewer internal and external resources (incomes, studies, employment, retirement, social benefits coverage, social and care aid networks) to face risks and unexpected changes (Bueno and Valle, 2008; Villagómez and Sánchez, 2014).

According to Wong *et al*., 2007: Montoya and Montes de Oca (2006); Bravo (2000); Wong and Aysa (2001), the health dimension is relevant due to the fact that senior citizens have greater possibilities of facing risks associated to a chronic-degenerative disease, a situation that could lead to conditions of disability and dependence, in addition to an increase of specialized and highly expensive medical services.

On the other hand, according to Jelin (2005) and Solís (1999), the family dimension turns out to be relevant because a rise of one-person housing is registered, which increases the lonesomeness and isolation threat, as well as changes in intergenerational relations (leisure society, individualism, woman's integration into the labor market, among others) that threaten the informal aid system for the dependent senior citizen.

With respect to housing dimension, the social vulnerability of senior citizens is linked to a precarious infrastructure which is characterized by deficient equipment, few goods, unhealthy elements, which represents an unfavorable or disadvantageous situation in relation to other people, groups, or communities (ECLAC, 2001 and 2002; Sánchez and Egea, 2011). In turn, Coneval (National Council for the Evaluation of the Social Development Policy) (2007) emphasizes that to analyze the type of mate-

rial which senior citizen's houses are made of represents a key element in order to determine the level of risk elderly people are exposed to. Besides, such aspects are usually considered when estimating poverty, margination, life standards, and human development.

In this way, in this current research, social vulnerability is understood as the combination of risks senior citizens face, risks associated to socio-economic factors such as incomes, familiar context, health conditions, housing conditions, services and their facilities, situations which have an influence on their standard of living, and places them in situations where they are weak or at disadvantage. Therefore, it is accepted that social vulnerability in senior citizens is not attributed to a single individual, but it is determined by different factors.

Once the conceptual definition of social vulnerability has been developed, in the following section the methodology used to estimate empirically social vulnerability through the economic, health, family, and housing dimensions is presented.

Methodology

Concept of vulnerability operationalization

Arising from the previous section where the concept of social vulnerability in demographic aging was presented, in this section the relevant variables and indicators taken into account for the four dimensions of analysis used to calculate the rate of social vulnerability will be break down, which despite considering to include a greater number of variables in order to present a more precise view, these indicators represent an approximation which allows to have a large view of social vulnerability, even though the selection was delimited according to the variables registered by the sample of the 2010 General Census of Population and Housing.

In the economic dimension four variables related to access to pension, work conditions, level of income, and government support were selected. The selection of these indicators is owing to the relation they have with central elements about economic position, work conditions, the kind of job, as well as the benefits that senior citizens have obtained throughout their career, which allow to visualize the total of financial resources this group of people have (or lack), in order to analyze important aspects of economic survival, standard of living, basic market basket satisfaction, and other needs.

With respect to the health dimension the variables taken into account were access to health services, attention in a healthcare center, and the presence of a physical or mental limitation which can be defined as a disability. To have the right to receive medical services is considered as a fundamental element which guarantees the elders' protection to preserve their health and their well-being. Additionally, the aspect of disability was considered since it brings fewer opportunities for labor, professional, and personal development, and senior citizens tend to be victims of abuse and health problems. In this sense, disabilities can have a direct or indirect impact on the standard of living, and with that, on senior citizens' social and human development.

In the family dimension variables such as the type of housing and the marital status of senior citizens are found. These indicators were considered since family bonds help the stability and emotional relief of senior citizens in order to have a stable social and family life. Besides, they enhance the communication between the home members.

The fourth dimension is concerned with housing characteristics, in terms of infrastructure, goods, and services senior citizens have or lack at home. Including these indicators is important because of the importance of possessing assets at home, which determines the situation of social vulnerability within their home, the level of well-being, and their capacity to come out from poverty, or in this case, react and mitigate negative events (Cervantes and Bueno, 2009; Ochoa, 2013). At the same time, considering the availability of home services turns out to be fundamental due to the key strategies these generate for economic, social, and human development; additionally they represent defense strategies or, otherwise, prompts vulnerability and weakness situations. Besides, they constitute key indicators of municipality development (Coneval, 2007).

In Chart 4 the four dimensions and indicators considered to calculate the rate of social vulnerability at municipality level can be seen. These indicators allowed to analyze the diversity of risks senior citizens face, and to classify in this way their social vulnerability situation.

Once the indicators related to social vulnerability have been presented, the source of information used to calculate the rate of social vulnerability is introduced below.

Chart 4: Dimensions, variables, and social vulnerability indicators

Dimension	Variables	Indicators
Economy	Work	Percentage of senior citizens without pension or retirement
	Work conditions	Percentage of senior citizens who work on their own Percentage of family senior citizens who work with no payment
	Income	Percentage of senior citizens who get less than two minimum wages
	Government support	Percentage of senior citizens without any program of government support
Health	Access to medical services	Percentage of senior citizens without the right to receive medical services
	Disability	Percentage of senior citizens with a physical or mental limitation
	Medical attention	Percentage of senior citizens who are not cared in an institution
Family	Marital status	Percentage of sometime married senior citizens Percentage of single senior citizens
Housing	Type of housing	Percentage of senior citizens who form a one-person housing
	Infrastructure	Percentage of senior citizens who live in houses with earthen floor Percentage of senior citizens who live in single-room houses
	Services	Percentage of senior citizens who live in houses without electricity. Percentage of senior citizens who live in houses without a toilet Percentage of senior citizens who live in houses without running water Percentage of senior citizens who live in houses without drainage service
	Goods	Percentage of senior citizens who live in houses without refrigerator Percentage of senior citizens who live in houses without washing machine

Source: The authors.

Data sources

The data consulted comes from the micro-data presented by the 2010 General Census of Population and Housing, obtained through the website of INEGI. The processing consisted of three stages. The first took place by merging two basis: people and housing (enlarged version). For the second the data base was codified. The third consisted in selecting the senior population from every municipality.

It should be pointed out that the 2010 General Census of Population and Housing is the most complete source of statistical information on which the demographic situation at state, municipality, locality, and other subdivided geographical levels can be analyzed.

It is important to mention that the design of the Census Sample guarantees precise estimators and an acceptable reliability for the vast majority of the variables at a municipality level of disaggregation. About 2.9 million of houses in the country were registered in the census, and selected according to certain probabilistic criteria.

In addition, it is necessary to specify that when municipalities had fewer than 1,100 houses, all of them were surveyed (INEGI, 2010b). Despite that, using census samples involves, in most cases, assuming certain level of error, even though the results are reliable in terms of interpretation.

The total of the sample added up to 71, 880 senior citizens. By applying the expansion factor, senior citizens represent 1,880,245 individuals at state level, which account for 11.57 per cent of the total of senior citizens in Mexico.

Besides, the election of this source of data is owing to the fact that this research is part of a project called "Vulnerabilidad social y política pública para los adultos mayores en el Estado de México. Un análisis a nivel municipal" (Social Vulnerability and Public Policy for the Senior Citizens of the State of Mexico. A Municipality Level Analysis) which was carried out during the first semester of the year 2014.

Estimate and stratification of the rate of social vulnerability

The rate of social vulnerability was estimated through the factorial analysis, using principal components methodology with the standardized indicators.[2] The factors analysis was appropriate because it identifies the basic

[2] The standardization of the indicators was done so the variables could be compared with each other, since if the data is not normalized, the analysis of the main components would be more influenced by the variables with a greater variance.

dimensions or factors which explain the interrelationships between a grouping of variables, and with that, the maximum of information within the data (De Vicente and Manera, 2008).

The factor scores led to build the rate of social vulnerability for every municipality, combining every factor with the variability explained for every one of them. In this case five factors emerged which account for 72.99 per cent of the total of data variability, in such a way that every obtained factor was multiplied by their weight, and finally the results were added.

Besides, two tests were performed to know the viability of applying the rate of main components. The feasibility of the rate of social vulnerability was tested using KMO statistics (0.870) and Bartlett's Test (0.000). The summary of both tests shows that it is viable to perform the factor analysis with the proposed indicators, since the data analyzed are interrelated.

Once the Rate of Social Vulnerability was obtained, this was stratified through the Dalenius and Hodges approach (1959) and three levels of vulnerability were obtained: high, medium, and low. In order to explain the diversity that senior citizens in the State of Mexico present concerning this phenomenon, these three levels of social vulnerability were selected.

The Dalenius-Hodges approach consists in finding an ideal stratification in which it is considered that the estimator variance is minimum within the groups, while maximum within the groups at the same time. The resulting variable from stratification, stated in scores, is defined by being continuous and having an approximately normal distribution, which guarantees the optimal partition of strata. To validate the three levels of social vulnerability the analysis of internal and external consistency was carried out.

The internal test consisted in comparing the indicators included in the calculation of the rate of social vulnerability with the value obtained from this. In this way it was verified that a positive value of the rate (high level) means that the senior citizens of a particular municipality would suffer from bad economic, health, family, and housing conditions. On the contrary, a negative value of the rate (low level) would indicate that senior citizens have acceptable standards of living. In this way it was proved that the hierarchy of the levels of social vulnerability are concordant with the progressive inclination of the standards of living the indicators refer to. This analysis showed that the findings are consistent.

In turn, the external test was analyzed comparing the three levels of social vulnerability with an external variable, this external variable was "if the house has internet service". An inverse relation between this va-

riable and the level of social vulnerability was expected. The basis of this approach comes from the empiric findings of other research (Garrocho, 2013). In this respect, the findings showed that the more presence of internet, the lower the level of social vulnerability is. The conclusion suggests that the findings are reliable.

In order to accomplish the stratification through the Dalenius-Hodges approach the following steps were taken:

The observations were ordered in ascending order where *n* represents the set of observations and *h* the number of strata.

They were grouped together in *J* classes, where J=min{h*10,n}

The limits of every class were estimated in the following way:

$$\liminf C_k = \min(x_i) + (k-1) * \frac{\max(x_i) - \min(x_i)}{J}$$

$$\limsup C_k = \min(x_i) + (k) * \frac{\max(x_i) - \min(x_i)}{J}$$

The intervals were taken open on the left, and closed on the right, with the exception of the first one which will be closed on both sides.

From these limits, the frequency of observations was obtained in each class f_i where $i \varepsilon \{1,\ldots.J\}$

The square root of the frequencies of each class was calculated.

The square root of the frequencies of each class was accumulated:

$$\sum_{1=1}^{J} \sqrt{f_i}$$

The square root of the frequencies was divided by the number of strata:

$$Q = \frac{1}{h} \sum_{i=1}^{J} \sqrt{f_i}$$

The intersection points of every stratum were taken on the total of the square root of the frequencies of each class according to the following: Q, 2Q,…, (h – 1)Q. When the value of Q resulted between two classes, the intersection point taken was that class which presented the minimum distance to Q. The limits of the strata h conformed were those which match to

the inferior and superior limits of the corresponding classes in each stratum (INEGI, 2010a).

By applying the Dalenius-Hodges approach the superior and inferior limit of the rate of social vulnerability in every municipality of the State of Mexico was identified (see Chart 5), according to their economic, health, family, and housing conditions.

Chart 5: Inferior and superior limit of the rate of social vulnerability of senior citizens, 2010

Level	Inferior limit	Superior limit
Low	-1	0
Medium	-0.25818	0.311702
High	0.311702	1.024055

Source: The authors based on INEGI (2010) Census of Population and Housing.

As can be seen in Chart 5, the rate of social vulnerability is found between -1.11 and 1.02, which shows that negative values mean a lower level of vulnerability risk, while positive values indicate a higher level of social vulnerability.

By using the Dalenius-Hodges approach the range between levels is different, the low level of vulnerability is within a score of 0.85, while the medium level is only within 0.05, and for the high level is up to a score of 0.71. This can show something closer to the existent gaps between groups of municipalities.

Although the estimate rate can have certain limitations such as: considering just transversal information and putting aside previous situations or background information which have an influence on the current living conditions, and exclude variables like state of health, social and affective relationships, among others, the important thing is that it represents a concise measurement of a complex conceptual framework that allows to identify certain indicators for which action must be taken in order to face the risks of social vulnerability, and from that collaborate to guarantee adequate living conditions for senior citizens. In this sense, the rate of vulnerability provides a broken down measurement of the condition of social vulnerability of senior citizens at municipality level. The level of vulnerability senior citizens from the State of Mexico face is analyzed below.

Rates of social vulnerability at municipality level

The findings of the stratification of the Rate of Social Vulnerability are showed in Map 1; geographically it can be seen that the municipalities

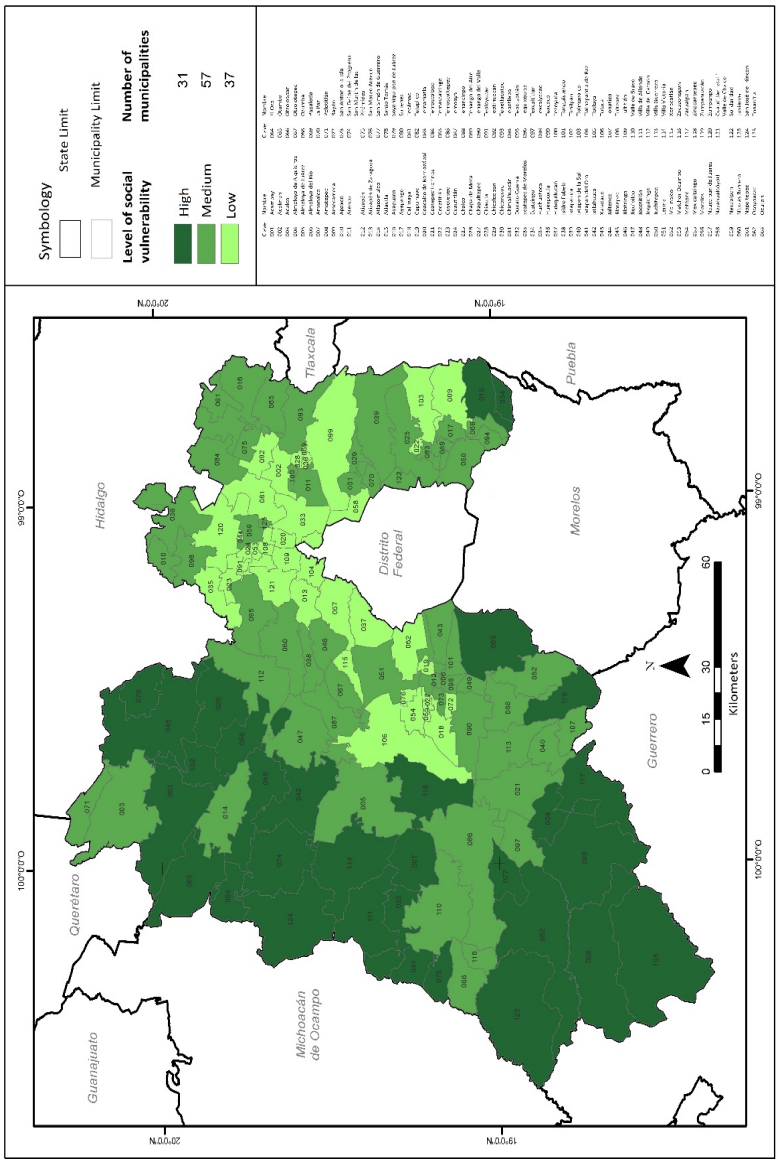
with low levels of social vulnerability are the closest to Mexico City, and the further from the capital city of the country, the higher the level of vulnerability of senior citizens. In this sense, the furthest municipalities from Mexico City and which border on the states of Guerrero and Michoacán (states which are characterized by having a low socioeconomic level) present a high level of social vulnerability. Apparently, the proximity to Mexico City represents an economic and social opportunity that leads to an increase in the conditions of living of senior citizens, and with that, a decrease in the level of vulnerability.

In addition, it is possible to outline that the people aged 60 or more from Toluca, Metepec, Tlalnepantla, Huixquilucan, Naucalpan, Atizapan de Zaragoza, and Ecatepec de Morelos –to name just a few-, are found in the low level of social vulnerability, while the elder from Lerma, Nicolás Romero, Otumba, Tepotzotlán, among others located in the central strip of the state recorded a medium level of social vulnerability. On the contrary, municipalities close to Michoacan and Guerrero such as Tlatlaya, Villa Victoria, Villa de Allende, and San José del Rincón show a high level of social vulnerability.

Quantitatively, the findings of the Rate of Social Vulnerability allow to confirm that 30 per cent of the municipalities from the State of Mexico were found in a low level of vulnerability (Chart 6) which provides evidence of the fact that the senior population from these places present a lower risk in economic, labor, social, health, and housing aspects. Besides, it could be seen that these municipalities are located around the metropolitan area which suggests that the means of communication and the economic relations these municipalities have with Mexico City allow the senior population to carry out economic activities to register better incomes, more health services, and more housing goods, important factors that reduce the level of social vulnerability.

In addition, the figures show that 46 per cent of the municipalities presented a medium level of social vulnerability, these places are located in the central area of the State of Mexico. This level of vulnerability causes senior citizens who live in these municipalities to have certain risks that bring out bad conditions of living.

Map 1: Levels of social vulnerability of the senior citizens from the municipalities of the State of Mexico



Source: The authors based on INEGI (2010). Census of Population and Housing

Chart 6: Distribution of the number of municipalities according to the level of social vulnerability, 2010

Rate of social vulnerability	Number of municipalitites	Percentage
Low	37	30
Medium	57	46
High	31	25
Total	125	100

Source: The authors based on INEGI (2010). Census of Population and Housing.

In contrast, 25 per cent of the municipalities of the State of Mexico face a high level of vulnerability, and with that, the people aged 60 or more present a greater frailty at risks or threats, which means that these population are less capable of realizing, resisting, facing, and recovering from an economic, health, family, and housing risk, that is to say, they are more likely to suffer an eventuality, get harm, or be affected by any unfavorable circumstance which diminishes their level of well-being, besides the fact that their houses lack basic services and they do not have enough home access to information and communication technologies.

To understand and explain the findings of the rate of vulnerability, some indicators were selected for their dimension in order to show the great inequality at municipality level that strengthen the different levels of social vulnerability.

The indicator selected from the economic dimension was the condition regarding access to a pension, owing to the relevance it had at explaining the levels of vulnerability. The data show the economic insecurity 82.2 per cent of senior citizens from the State of Mexico who do not receive an economic support for their career in the labor market have.

In addition, the percentage of senior citizens without pension at municipality level allows to explain and understand the high level of social vulnerability of certain municipalities since in most municipalities the proportion of senior citizens who receive a pension or have retired is lower than the registered figure at state level. Specifically, in 16 municipalities the proportion of the pensioned and retired is lower than one per cent, a really alarming figure. The municipalities of San José del Rincón, Villa Victoria, and Villa de Allende are the most vulnerable in the light of this situation, a condition which places them at high economic vulnerability. On the contrary, in the municipality of Tlalnepantla the number of senior citizens almost doubles the register at state level with a 30.4 per cent.

One of the strategies of the State of Mexico's government to cover senior citizens' expenses was the "Programa de Gente Grande" (Elder

People's program), whose purpose is to support poor senior citizens with a basic food basket, and cleaning and personal hygiene products to improve their living conditions, however, only 12.6 per cent of senior citizens from the State of Mexico benefit from this program according to figures obtained from Consejo Estatal de la Mujer y Bienestar Social (CEMyBS) (Woman's and Social Well-being State Council).

The indicator about access to medical services which is part of the dimension of health is also relevant at explaining the levels of vulnerability. From the total of senior citizens, 44 out of every 100 do not have the right to receive medical attention, a right granted for having worked in the formal sector or for still working in it. The outlook of this indicator reflects that a high proportion of senior citizens are more vulnerable to health risks due to the lack of medical services.

At municipality level the vulnerability situation of senior citizens without access to medical services looks more disquieting. In 95 of the municipalities of the State of Mexico at least one out of every two elders lack the right to have access to health services, a situation that exposes them and their families not only to health, but also to economic and social risks. The most alarming case is found in Hueypoxtla where seven out of every ten elders do not have this benefit; indeed, this municipality is in medium level of social vulnerability.

For the family dimension the indicator of marital status was selected, and the findings showed that five out of every hundred senior citizens are single, while 27 per cent of the elderly population are widowed. In general, the widowed population tends to be older than the population whose marital status is different, being more predominant the proportion of women due to the excess men mortality. These two marital status were considered as important to increase or decrease the senior citizens' situation of vulnerability since living together with another person can bring positive consequences in case of an eventuality, disease, or incapability, and with that, having more elements to face any risk situation.

At municipality level, the proportion of people aged 60 or more who are single is low. However, municipalities like Tonatico, Tepetlaoxtoc and Ixtapan de la Sal registered that around 10 per cent of senior citizens have never married or lived with their couple, municipalities which are in medium level of social vulnerability. With respect to widowhood, Villa de Allende registered the highest proportion, 37.4 per cent, a municipality that is in high level of social vulnerability, which shows that the widow

and the never-married are more exposed to risks which have an impact on their well-being.

For the housing dimension, the availability of basic goods at home such as having a refrigerator constitutes a key indicator of the economic and social development related to aspects like income, health, and diet. At state level it was found that one out of every four senior citizens do not have a refrigerator at home. The data at municipality level allow to see that in every municipality in the State of Mexico a lack of this good at home exists. The proportion of senior citizens who lack a refrigerator at home varies among 76 per cent and 3 per cent. There are three municipalities where the proportion exceeds 70 per cent: San José del Rincón, Villa de Allende, and San Felipe del Progreso, places which indeed are in high level of social vulnerability. On the contrary, Atizapán de Zaragoza registered 2.0 per cent and Coacalco 3.0 per cent, municipalities in low levels of social vulnerability.

From all indicators considered in the rate of social vulnerability, housing had the most influence on the level of vulnerability of elder population, thus public policies aimed at improving infrastructure, services, and goods at home will be essential in decreasing the condition of vulnerability of this group of people.

Therefore in order to improve the social vulnerability conditions of senior citizens, decision makers are recommended to implement effective strategies for the improvement of housing in its three components and implement a comprehensive public policy which has an impact on the improvement of the quality of housing, as well as strengthen the already existing programs.

From the obtained findings in the current research, the municipality of Atizapán de Zaragoza stands out as the one which registered the lowest rate of social vulnerability, with a value of -1.11, which means favorable conditions in terms of economy, health, family, and housing for this population group who lives in this place. On the contrary, the municipality of Villa de Allende registered the highest estimate rate with a value of 1.02 which leads to conclude that people aged 60 or more from this municipality present a difficult economic situation, with deteriorate health conditions, a problematic family life, and a house where goods and services are limited.

The state of the best and the worst position of the municipalities of the State of Mexico show that the state represents a place of contrasts, since within its borders municipalities with high standards of living can be found, as well as places with precarious quality of life.

In conclusion, the obtained findings show that an important part of the elderly population from the State of Mexico represent a group of vulnerable people in terms of economy, health, family, and housing; dimensions which have a direct impact on their standards of living, and which are presented in a differential way at municipality level.

Specifically, the situation of vulnerability which the senior citizens from the State of Mexico face, and in most municipalities it is worrying, in virtue of the problem in the social, economic, and labor field, a condition caused by inefficient state public policies. This problem will become worse when the proportion of unemployed senior citizens increases, within a framework of insufficient social security and a broke pension system, besides the high levels of social vulnerability, especially those west and southwest municipalities where several isolated places are concentrated such as: Tlatlaya, Almoloya del Río, and San José del Rincón, municipalities which present a backwardness in the educational level, which is a social determiner that favors a state of well-being. Also, they are municipalities which registered the lowest life expectancy, and a high rate of economic dependency.

Conclusions

What is to say about vulnerability of the elderly to conclude this article? A way to conclude is to adhere to the data and the quantitative analysis here presented, but this has some limitations when the tendencies of the projections are seen, and when the social, economic, and public policies situations in the matter are complex and difficult to improve on a short and on a medium term.

In terms of the tendencies, the aging demography, according to the year 2015 intercensal survey, registered a volume of 12,436,321 people aged 60 or more at national level, a volume that will increase to 20,365,839 for the year 2030, based on the projections of the Consejo Nacional de Población (CONAPO, 2012); that is to say, it approximately will go from 10 to 15 per cent of the total of the Mexican population. For the State of Mexico the total is 1,461,061 and will be 2,972,420 for the same year.

In this article it has been presented that the social vulnerability of senior citizens is directly linked to the economic situation and social, and constantly familiar, indifference, and of course, the limited consideration of public policies. It is expected that if this condition improved, vulnerability would decrease in many aspects such as health, housing, and dependency, to mention a few. However, the demographic inertia shows that the volume

of elderly people will continue increasing, and without changes in social conditions for the sake of the people at this age.

As it has been mentioned, the demographic inertia exceeds the volume of this population, which makes this situation a population policy issue, that is to say, a State matter, and the State has to take responsibility for their population, especially when most of them live in poverty, and are exposed to many different ways of social vulnerability. On this matter Welti claims "what is necessary is to discuss the significance of a comprehensive fiscal reform that allows to generate the resources in order to have a universal social protection policy which meets the needs of this and other population groups" (Welti, 2013:56).

It is important to mention that elderly people contributed with their work to the development of the society of their country and their State, who today are ethically obliged to respond to them. They must apply public policies which see on them and ensure a decent old age with less pain and suffering that allows the elderly to inherit the following generations their love and joy for life, but not their poverty and anxiety.

Particularly in this research, the different rates of social vulnerability senior citizens present depend on how uneven is their incomes reception, their health conditions, their family situations, and the living conditions in which this population group live in every municipality of the State of Mexico. This becomes a public policy issue that must be urgently dealt with, and which must not be conceptualized as the elderly's private problems but a collective support issue, as Huenchuan (2009) claims.

In conclusion, population aging has imposed new and bigger challenges, which can increase the needs for economic, medical, institutional, and family support, among others. Therefore, when designing and implementing public policies for this population group, it is necessary to take into account the context where they live, the level of vulnerability they face, their health situation, their living conditions, and at the same time, an unevenness situation must be visualized.

APPENDIX

Municipalities of the State of Mexico

Number	Municipality	Number	Municipality
001	Acambay	038	Isidro Fabela
002	Acolman	039	Ixtapaluca
003	Aculco	040	Ixtapan de la Sal
004	Almoloya de Alquisiras	041	Ixtapan del Oro
005	Almoloya de Juárez	042	Ixtlahuaca
006	Almoloya del Río	043	Xalatlaco
007	Amanalco	044	Jaltenco
008	Amatepec	045	Jilotepec
009	Amecameca	046	Jilotzingo
010	Apaxco	047	Jiquipilco
011	Atenco	048	Jocotitlán
012	Atizapán	049	Joquicingo
013	Atizapán de Zaragoza	050	Juchitepec
014	Atlacomulco	051	Lerma
015	Atlautla	052	Malinalco
016	Axapusco	053	Melchor Ocampo
017	Ayapango	054	Metepec
018	Calimaya	055	Mexicaltzingo
019	Capulhuac	056	Morelos
020	Coacalco de Berriozábal	057	Naucalpan de Juárez
021	Coatepec Harinas	058	Nezahualcóyotl
022	Cocotitlán	059	Nextlalpan
023	Coyotepec	060	Nicolás Romero
024	Cuautitlán	061	Nopaltepec
025	Chalco	062	Ocoyoacac
026	Chapa de Mota	063	Ocuilan
027	Chapultepec	064	El Oro
028	Chiautla	065	Otumba
029	Chicoloapan	066	Otzoloapan
030	Chiconcuac	067	Otzolotepec
031	Chimalhuacán	068	Ozumba
032	Donato Guerra	069	Papalotla
033	Ecatepec de Morelos	070	La Paz
034	Ecatzingo	071	Polotitlán
035	Huehuetoca	072	Rayón
036	Hueypoxtla	073	San Antonio la Isla
037	Huixquilucan	074	San Felipe del Progreso

Municipalities of the State of Mexico (continuation)

Number	Municipality	Number	Municipality
075	San Martín de las Pirámides	101	Tianguistenco
076	San Mateo Atenco	102	Timilpan
077	San Simón de Guerrero	103	Tlalmanalco
078	Santo Tomás	104	Tlalnepantla de Baz
079	Soyaniquilpan de Juárez	105	Tlatlaya
080	Sultepec	106	Toluca
081	Tecámac	107	Tonatico
082	Tejupilco	108	Tultepec
083	Temamatla	109	Tultitlán
084	Temascalapa	110	Valle de Bravo
085	Temascalcingo	111	Villa de Allende
086	Temascaltepec	112	Villa del Carbón
087	Temoaya	113	Villa Guerrero
088	Tenancingo	114	Villa Victoria
089	Tenango del Aire	115	Xonacatlán
090	Tenango del Valle	116	Zacazonapan
091	Teoloyucán	117	Zacualpan
092	Teotihuacán	118	Zinacantepec
093	Tepetlaoxtoc	119	Zumpahuacán
094	Tepetlixpa	120	Zumpango
095	Tepotzotlán	121	Cuautitlán Izcalli
096	Tequixquiac	122	Valle de Chalco Solidaridad
097	Texcaltitlán	123	Luvianos
098	Texcalyacac	124	San José del Rincón
099	Texcoco	125	Tonatitla
100	Tezoyuca		

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