

Multidimensional analysis of the effectiveness of the implementation of public food programs in Mexico

Análisis multidimensional de la efectividad de la implementación de programas públicos de alimentación en México

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Abstract / Resumen

The effectiveness of public food programs has been questioned in the last years in Mexico due to the rise of food poverty indicators in the country, since between 2018 and 2020, the percentage of people living in poverty in Mexico increased. And although development planning in Mexico has been designed and implemented through public programs and has been guided by objectives that respond to programmatic structures, it has put aside a broad and comprehensive vision of development, given that the predominance of education-oriented programs is evident, followed by programs that address economic well-being and health, which emphasizes that the fact that there food programs, or food policies, are just a part of these governmental mechanisms.

Hence, the objective of this work is to demonstrate, through a multidimensional analysis, the effect that food programs have achieved in effectively reducing food poverty, from a perspective of food insecurity; for this objective the Encuesta Nacional de Salud y Nutrición*

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2019 (ENSANUT by its acronym in Spanish) was used; this survey is a systematic effort from the Mexican government to generate a set of reliable data that allows knowing the current health conditions of the population and its trends. A statistic comparative longitudinal analysis would be carried out, to visualize in a period of five years the effects of public food policy with the measurement of variables of access to food.

Keywords: public policies, food policies, food security, multidimensional analysis, poverty

La efectividad de los programas públicos de alimentación ha sido cuestionada en los últimos años en México debido al aumento de los indicadores de pobreza alimentaria en el país, ya que entre 2018 y 2020 aumentó el porcentaje de personas que viven en pobreza en México. Y si bien la planificación del desarrollo en México ha sido diseñada e implementada a través de programas públicos y ha estado guiada por objetivos que responden a estructuras programáticas, ha dejado de lado una visión amplia e integral del desarrollo, dado que es evidente el predominio de programas orientados a la educación, seguidos de programas que abordan el bienestar económico y la salud, lo que enfatiza que el hecho de que existen programas alimentarios, o políticas alimentarias, son solo una parte de estos mecanismos gubernamentales.

Por lo tanto, el objetivo de este trabajo es demostrar, a través de un análisis multidimensional, el efecto que han logrado los programas alimentarios en la reducción efectiva de la pobreza alimentaria, desde una perspectiva de la inseguridad alimentaria; para este objetivo se utilizó la Encuesta Nacional de Salud y Nutrición 2019 (ENSANUT); Esta encuesta es un esfuerzo sistemático del gobierno mexicano para generar un conjunto de datos confiables que permitan conocer las condiciones actuales de salud de la población y sus tendencias. Se realizaría un análisis estadístico comparativo longitudinal, para visualizar en un período de cinco años los efectos de la política pública alimentaria con la medición de variables de acceso a los alimentos.

Palabras clave: *políticas públicas, políticas alimentarias, seguridad alimentaria, análisis multidimensional, pobreza*

INTRODUCTION

The effectiveness of public food programs has been questioned in the last years in Mexico due to the rise of food poverty indicators in the country. According to the Consejo Nacional de Evaluación de la Política de Desarrollo Social¹ (CONEVAL by its acronym in Spanish), between 2018 and 2020, the percentage of people living in poverty in Mexico increased from 41.9% to 43.9%, which means that 55.7 millions of people live in a state of poverty; derived from this, CONEVAL establishes that, of those 55.7 millions of people, 28.6 million (22.5% by 2020), experience lack of access to nutritious and quality food.

According to CONEVAL (2018) development planning in Mexico has been designed and implemented through public programs and has been guided by objectives that respond to programmatic structures, leaving aside a broad and comprehensive vision of development; between 2010 and 2017, 6,488 social development programs and actions were identified throughout the country, of which 149 were federal, 2,528 state, and 3,811 municipal, from 2010 to 2016, the predominance of education-oriented programs is evident, followed by programs that address economic well-being and health, which emphasizes that the fact that there food programs, or food policies, are just a part of these governmental mechanisms.

Nevertheless, is pertinent to verify the true effects of the implementation of this type of programs. Therefore, the research question for this paper is: does the implementation of public food programs in Mexico has been positive for the targeted population? The objective of this work is to demonstrate, through a multidimensional analysis, the effect that food programs have achieved in effectively reducing food poverty, from a perspective of food insecurity.

For this objective the Encuesta Nacional de Salud y Nutrición² 2016 and 2019 (ENSANUT by its acronym in Spanish) was used; this survey is a systematic effort from the Mexican government to generate a set of reliable data that allows knowing the current health

1 National Counsel of Evaluation of the Social Development Policy in Mexico.

2 National Health and Nutrition Survey.

conditions of the population and its trends. A statistic comparative longitudinal analysis would be carried out, to visualize in a period of five years the effects of public food policy with the measurement of variables of access to food.

CONEVAL defines food poverty as the incapacity to acquire a basic food basket, even if all of the household income available is used only to purchase the goods of said basket; meanwhile a basic food basket is defined as the set of foods whose value serves to build the line of minimum well-being, these are determined according to the consumption pattern of a group of people who satisfy their energy and nutrient requirements with them.

An important consideration to take into account, is that, for the Mexican case, CONEVAL has established three different types of poverty: poverty, extreme poverty and moderate poverty, all this in the line of understanding and measuring poverty as a multidimensional phenomena. Hence, poverty (and multidimensional poverty according to Mexican laws) is defined as a situation that a person experiences when they have at least one social deprivation³, and their income is insufficient to purchase the goods and services required to meet their food and non-food needs.

Extreme poverty is defined as a situation that a person experiences when they have three or more deficiencies within the Social Deprivation Index and, in addition, they are below the minimum well-being line; people in this situation have such a low income that, even if they dedicated it entirely to the purchase of food, they would not be able to acquire the necessary nutrients for a healthy life. Moderate poverty is defined as a person who, being poor, is not extremely poor.

Another categorization made by CONEVAL is the one of income poverty, which consists of comparing people's income with the monetary values of different food lines, capacities and assets; and derived from that three types of income poverty were established: 1) food poverty (the inability to obtain a basic food basket, even if all available income in the household were used to buy only the goods in said basket), 2) capability poverty (insufficient income available to acquire the value of the food basket and make the necessary expenses in health and education, even dedicating the total income of the households only for these

3 For CONEVAL there are 6 social indicators: educational lag, access to health services, access to social security, quality and spaces in the home, basic services in the home, and access to food (Social Deprivation Index).

purposes), and 3) patrimonial poverty (insufficient income available to purchase the food basket, as well as to make the necessary expenses in health, clothing, housing, transportation and education, even though the entire household income was used exclusively for the acquisition of these goods and services).

Whilst the Food and Agriculture Organization of the United Nations (FAO), establishes that food insecurity is the lack of regular access to enough safe and nutritious food for normal development and an active healthy life, this definitions proposes four main dimensions for food security: physical availability of the food, economic an physical access to the food, use of the food (nourishment), and the stability in time of the other three dimensions.

When one or more of this dimensions is not fulfilled, a person experiences food insecurity, which is insufficient food intake, and it can be transitory (when it occurs in times of crisis), seasonal or chronic (when it occurs continuously). Transitory food insecurity is temporary and of short-term and is the result of shocks and short-term fluctuations in food availability and access, including factors such as national food production, food prices and household income.

Seasonal food insecurity represents an intermediate point between chronic and transitory food insecurity, it is similar to chronic food insecurity in that it is usually predictable and follows a known sequence of events, however, is of limited duration, and a cyclical pattern of lack of availability and access to food occurs, for example, climatic oscillations by season, harvest patterns or job opportunities (labor demand). And chronic food insecurity is persistent and of long-term, people are unable to meet their minimum food needs for a prolonged period due to long periods of poverty, lack of assets and access to productive or financial resources.

An important consideration to take into account for the Mexican case, is that the country is governed by sectorial public policies, these policies are established by the National Development Plan, and the sectoral programs derived from it establish the objectives, priorities and policies that will guide the activities of a each administrative sector; and for the design and implementation of said policies, programs and actions, the government has different secretaries.

HISTORICAL BACKGROUND OF FOOD POLICIES IN MEXICO

Mexico's food policy began in the early 1920s with the design and implementation of assistance programs which were directed to aid the final consumer, specifically children of urban areas who were attending school by providing them with school lunches. By 1925 a subsidy to production was created with the aim of increasing agricultural production and to improve livestock production; this policy was carried out by the organization of popular cooperatives, giving out loans to producers, a national livestock exposition and the control of milk production.

One decade later, the Almacenes Nacionales de Depósito (National Warehouses of Deposit) were created so the State could control the market price of grains and to improve the access of low-income population to basic consume products or necessities. The main strategy was to store the grains so there could be price regulation, and also regulating the subsistence market by adapting the economy to the social needs, importing corn and wheat.

The 1940s came around with a new technical perspective: the mechanization of agriculture in hopes of improving both, the agricultural production, and the nutritional condition of the population. The main population of this policy was economically weak population, and the actions and strategies implemented included the acquisition of agricultural machinery, giving credits for production, the creation of popular dining rooms (also known as soup kitchens), and the implementation of a popular retail chains for milk.

Here it is important to note that the first rehydrated milk is available to be purchased for Mexicans, which was part of a general plan to educate the population in how to eat in a healthier way so they could be well nourished with the products available on the market; and for that the National Institute of Nutrition was created, and by 1942, the first national program on food and nutrition was launched: the Salt Iodization Program; the intention of this program was to decrease the rate of diseases generated by the deficiency of iodine in the population, specifically the segment of the population that had endemic goiter, the actions were mainly to distribute salt and to teach the population how to use it and iodize.

By 1946 and up until the 1950s, the new policy was of popular supply and the subsidy

of food production, with the intention of making cheaper the food goods available at the market and to improve production of foods, and once again, this policy was aimed at low-income population. During this time a lot of products that weren't produced in the country were imported, also price control on basic consume products was implemented and a big leap towards technification was taken, specifically in agriculture and livestock.

This policy sustained until 1958 when the policy changed to popular supply and subsistence, which was a immediate action plan for the regulation of all basic consume products prices with the intention of protecting the popular economy, and once again, this policy was aimed at the low-income population, but a difference in regards to the previous policies, is that in this one, there was an explicit goal of surveillance and direction of the national economy, alongside the price control.

From 1961 to 1965 the policy was mainly the subsidy of consumption of farm products, here the main objective was to increase the income with guarantee prices for farm products, especially for rural population and low-income population, the strategy was to maintain reserves of basic consume products and to regulate the prices of them in the market.

In the year 1972 a new policy was established, its main focus was to subsidize consumption in aims of protecting the economy and therefore, to improve the purchasing power of consumers and to regulate market prices; once again, the target population of this policy were rural population and low-income population, the actions taken to achieve this policy were to establish regulations for corn and bean purchases.

By 1975, and up until 1980, a more educational and comprehensive policy was implemented with the creation of the Sistema Nacional para el Programa de Apoyo al Comercio Ejidal (National System for the Ejidal⁴ Commerce Support Program) and the Sistema Alimentario Mexicano (Mexican Food System), which were intended for two mains goals: the firs one, educating the population in food habits, and the second one, the distribution of dietary complements.

This goals objectives were to improve the nutritional state of the population and to subsidize the production, and, for the first time, the target population changed, since

4 Ejidal means a union of ejidos, an ejido, in Mexico, is the gathering or rural lands, which are owned by different people; they are for common use by the community, mainly for agriculture and livestock.

pregnant mothers and children population were the focus of the strategies, which included school breakfasts, the manufacturing of milk for infants, the creation of popular kitchens and the distribution of seeds and vegetables, all this alongside market prices regulation and credit for production.

Not much changed during the 1980s, the policies continued to be aligned with assistance programs focused on improving the production, distribution and consumption of food, and the enhance the nutritional state of the population; especially pregnant women and children. One important aspect to note about the actions taken in this decade, is the increase of the minimum wage over the basic basket, in hopes that the population were able to purchase more food.

Throughout the 1990s food policies in Mexico were oriented towards improving the levels of health and nutrition of the population, especially providing aid to avoid vitamin A deficiencies; the target population remained rural and low-income population, as well as children (under five years) and pregnant women. The strategies and actions taken were to maintain surveillance over the health and nutritional condition of the population, the distribution of food supplements, health and nutrition educational programs and vaccination campaigns.

By the 2000s, the Programa de Educación, Salud y Alimentación⁵ (Progresas by its acronym in Spanish) was established, although the program was created in 1997, by the next decade, Mexico was experiencing the aftermath of one of the most serious economic crisis the country had been through, alongside the economic crisis, a social crisis and a political crisis as well, wore out the country and left its population in a very fragile situation.

Hence the need for a social policy that improved the provision and quality of the general social services and that also provided specific attention to the population with greater economical and social disadvantage, whom were located mostly in rural areas (60% of this population experienced extreme poverty). Therefore Progresas was directed towards population living in extreme poverty, and the program

“sought to simultaneously influence three of the factors that were identified as obstacles for families in poverty to overcome their situation and avoid their inheritance between generations: nutritional deficiencies (low birth weight and

5 Education, Health and Food Program, Progresas by its acronym in Spanish.

malnutrition), health problems (maternal and infant mortality, low cognitive development, preventable diseases, early pregnancy) and limited investment in education”. (Hernández Licon, De la Garza, Zamudio and Yaschine, 2019, 36)

The main goals of this program was to improve the welfare situation of families by increasing their consumption capacity and to develop human capital (education, health and nourishment) of its members, mainly of children and young people, as a mechanism to improve their future welfare situation. The actions and strategies implemented included direct delivery of monetary transfers to families to improve their household consumption, the inclusion of an impact monitoring and evaluation system of the actions derived from the program and inter-ministerial coordination of policy actions.

For the last decade Progresa had been “the axis of social policy and the main food program” (CEDRRSA, 2011, 42) in Mexico, nonetheless, by 2010, Mexico had a new health crises: obesity and overweight, since 70% of the adult population had an inadequate body mass, from which 39.5% was overweight and 31.7% was obese (CEDRSSA, 2011). This caused that *diabetes mellitus* type B became the number one cause of premature death, given that 90% of the cases were referable to overweight and obesity, and this carried a secondary effect: the increase in the cost of care for these diseases (approximately \$77,919 million pesos by the year 2017 (CEDRSSA, 2011)).

This situation was categorized as a pandemic for the country, so the Acuerdo Nacional para la Salud Alimentaria: Estrategia contra el Sobrepeso y la Obesidad⁶, was signed in hopes to diminish the elevated rates of obesity and overweight in the country. Some of the axes of the agreement were to promote physical activity, drinking water, to reduce sugar and fats in drinks and to improve the consumption of fruits and vegetables, legumes, whole grain cereals and fiber in the diet. With this actions the government aimed to improve the general state of health and nutrition of the population, alongside improving the food habits and consumption habits of the families, in hopes of decreasing the number of people with overweight and obesity.

But all this efforts weren't enough, since Mexico still has high percentages of its population with obesity and overweight; by the year 2021, 36.7% of adults were obese and

6 National Agreement for Food Health: Strategy against Overweight and Obesity.

35.7% were overweighted, meanwhile 18.6% of the children were obese and 18.8% were overweighted (Global Obesity Observatory, 2023).

FOOD POLICIES OF MEXICO IN THE 21ST CENTURY

The National Development Plan 2006-2012 of the Mexican government was based on the sustainable human development approach, therefore it included policies and programs oriented towards ensuring the population the satisfaction of their fundamental needs, by the design and implementation of policies from different action fronts.

The Social Development Sector Program included, as one of its objectives, to reduce extreme poverty and to ensure equal opportunities for all Mexicans so they can improve their quality of life and have guaranteed food, health, education, decent housing and an adequate environment for their development.

Amongst the social programs that the government implemented during this period of time with the objective of decreasing the food poverty, are

Table 1. Social Development Sector Programs (2006-2012)

Program	Objective
Abasto Rural (Rural Supply)	Contribute to the strengthening the effective fulfillment of the social right to food, by facilitating physical or economic access to food products for the population living in highly marginalized localities.
Abasto Social de Leche (Social Supply of Milk)	Improve the access to food for the beneficiary families through the access to low-priced, of quality, fortified milk.
Oportunidades (Opportunities)	Promote the development of capacities associated with education, health and nutrition of the families, in order to contribute to breaking the intergenerational cycle of poverty.

<p>Apoyo Alimentario (Food Support)</p>	<p>Contribute to the strengthening of the effective fulfillment of social rights that enhance the capacities of people in poverty, through actions that positively affect food, health and education, through schemes that improve the access to food.</p>
<p>Programa de Apoyo a Zonas de Atención Prioritaria (Support Program for Priority Attention Areas)</p>	<p>Contribute to the reduction of regional inequalities through the strengthening of physical capital and the development of actions that allow the integration of marginalized, lagging or poor regions into development processes.</p>
<p>Asistencia Alimentaria a Familias en Desamparo (Food Assistance to Homeless Families)</p>	<p>Contribute to the diet of families in situation of helplessness, through direct and temporary food support, accompanied by training actions, which allow the promotion of adequate eating habits in the family.</p>
<p>Asistencia Alimentaria a Sujetos Vulnerables (Food Assistance to Vulnerable Subjects)</p>	<p>Contribute to the food security of people in conditions of risk and vulnerability, through the delivery of nutritional supports designed based on the Nutritional Quality Criteria and accompanied by food orientation actions, quality assurance and food production.</p>
<p>Atención a Menores de 5 años en riesgo, No Escolarizados (Care for Children Under 5 Years at Risk, Not Enrolled)</p>	<p>Contribute to the food security of children under five years of age, who are in risk and vulnerable conditions by providing nutritional support appropriate to their age and providing food guidance to their parents.</p>
<p>Desayunos Escolares (School Breakfasts)</p>	<p>Contribute to the food security of the school population, subject to social assistance, through the delivery of cold breakfasts, hot breakfasts or meals, designed based on the Nutritional Quality Criteria, and accompanied by food orientation actions, quality assurance and food production.</p>

Source: prepared by the authors with information supplied by the websites of the Mexican government.

These programs were denominated as food consumption support programs, since they were implemented to face the food crisis that the country was experiencing. One important detail is that the program Progresá changed its name to Oportunidades, the main modifications focused on seeking to consolidate and increase the positive results that had been registered in the improvement of the household consumption and the development of human capital.

Among the most important changes were the expansion of the program's coverage to semi-urban and urban localities, with the same intervention model used for rural areas, the extension of educational scholarships to the upper secondary level and the creation of two new components: Jóvenes con Oportunidades (Youths with Opportunities) and Apoyo a Adultos Mayores (Support for Older Adults). These changes are highly relevant, due to the fact that the scope of population beneficiary of the program expanded, including older adults and young people as permanent recipients of the program's benefits.

The National Development Plan 2012-2018 of the Mexican government brought a new change for the Oportunidades program, which was renamed as Prospera and modified to be a more comprehensive social program:

“the transition from Oportunidades to Prospera was proposed within what the federal government described as a “new generation social policy, more inclusive, that transcends assistance, incorporates social participation, productive inclusion, emphasizes inter-institutional coordination and between orders of government, and articulate institutional efforts for effective attention to poverty” (Sedesol, 2014: 2)”. (Hernández Licona, De la Garza, Zamudio and Yaschine, 2019, 40)

Said modifications meant an expansion of the scope of the program, which implied changes in its intervention model and the aim to directly influence the current state of poverty in the country; it was also added to the program's scope of action being able to articulate and coordinate the offer of social policy programs and actions beyond the areas of education, health and nutrition, including those related to productive promotion, income generation, financial and labor inclusion, and social inclusion.

In 2013, the Mexican government established the Cruzada Nacional contra el Hambre⁷ whose objective was to improve the living conditions of millions of Mexicans who have been identified as experiencing extreme food poverty. It was a strategy of inclusion and social welfare, with the intention that the people living in conditions of extreme poverty and lack of access to food, will overcome this situation:

“The general objective of the Crusade was to reduce the lack of access to food in the population that was in a situation of extreme poverty and presented a lack of access to food; 7.01 million Mexican men and women were in this condition in 2012”. (CONEVAL, 2018a, 6)

In 2014 it was published the Mexico Hunger Free National Program, which became the governing document of the Crusade in normative, conceptual and methodological terms. The six main objectives of the Crusade were established in this document: 1) zero hunger for people living in extreme poverty, 2) decrease acute and chronic child malnutrition, 3) increase food production and the income of farmers and small agricultural producers, 4) minimize post-harvest and food losses during storage, transportation, distribution, and marketing, 5) promote economic development and employment of the areas with the highest concentration of extreme food poverty, and 6) to promote community participation for the eradication of hunger.

The general conclusion of the results of this program is that the actions of the Crusade have focused support on households living in extreme poverty (target population of seven million people) and have managed to reduce the social deprivations of that population; however, mechanisms must be found to achieve broader poverty reduction, which involves 55 million people (living in poverty).

By 2016, 43.2% of the population in Mexico lived in poverty, 7.2% of the population lived in extreme poverty and 21.9% of the population had no access to healthy and of quality food; and by 2017 the Prospera program attended around 6.6 million homes, which was equivalent to 27 million people (approximately 22.7% of the population), in near 114,000 localities (52% were rural areas, 20% semi-urban areas and 27% urban areas) of all the states of the country.

7 National Crusade Against Hunger.

The end of this presidential term, in 2018, came around with the verification of the conditional relation existing between income and food, since Mexican households with the lowest income spent 50.6% of their spending on food and beverages, while people in the highest decile spent 25.2%; to this factor it must be added the rise in food prices, which makes the situation to worsen, because these variations generate drastic changes in household food consumption, especially in foods of high nutritional quality.

And this situation implied that the government had still a lot to do in order to improve the results of its social policies and programs, including those that include food security, for example, to improve economic and physical access to food, guaranteeing that this food is of quality and nutritious, and considers the cultural dimension of its consumers, to reverse the growing trend in the prevalence of overweight and obesity, to increase food production of small agricultural, livestock and fishing producers (subsistence activities) and to implement actions to reduce chronic malnutrition.

The National Development Plan 2018-2024 of the Mexican government had a tough start since poverty in the country had increased, by 2018 41.9% of the population lived in poverty and 7% lived in extreme poverty, and by 2020 43.9% of the population lived in poverty, whilst 8.5% lived in extreme poverty; and out of those percentages, 22.2% of the population, by 2018, didn't have access to nutritious and of quality food, and by 2020, it had increased to 22.5% of the population.

Given that situation, the government created the Secretaría de Bienestar (Welfare Secretary), its mission is to:

“Contribute to the establishment of the welfare state where people as subjects of law, particularly historically vulnerable groups, improve their levels of well-being, inclusion and equity during their life course considering cultural, social and territorial diversity, through the consolidation of comprehensive public policies, with sustainable development and productive inclusion”. (Gobierno de México, 2023)

The general objectives of said Secretary are to contribute to guarantee basic human rights for all, especially those who need them the most, to reduce the socio-economic gap between territories, to contribute to social welfare by means of enough income, self-sufficient

nourishment, reconstruction of the social fabric, and to generate productive inclusion of the rural farmers to make the land productive.

The main programs this Secretary has implemented are:

Table 2. Priority Programs, Welfare Secretary (2018-2024)

Program	Objective
Programa para el Bienestar de las Personas Adultas Mayores (Program for the Well-being of the Elderly)	Contribute to the well-being of the elderly through the delivery of a non-contributory pension that helps improve their living conditions and, in turn, allows access to social protection.
Programa Pensión para el Bienestar de las Personas con Discapacidad (Pension Program for the Welfare of People with Disabilities)	Seeks to improve the monetary income of people with permanent disabilities and thus contribute to the effective enforcement of the rights of girls, boys, adolescents, youth, indigenous and Afro-Mexican people living with disabilities, in order to eliminate marginalization, discrimination and the racism they face.
Programa Sembrando Vida (Planting Life Program)	Seeks to contribute to the social well-being of sowers through the promotion of food self-sufficiency; it addresses two problems: rural poverty and environmental degradation. In this way, its objectives are to rescue the countryside, reactivate the local economy and the regeneration of the social fabric in the communities.

Programa para el Bienestar de Niños y Niñas, Hijos de Madre Trabajadoras (Program for the Well-being of Boys and Girls, Children of Working Mothers)	Contribute to improving the conditions of access to care and education, which allow the full exercise of the social rights of girls, boys, adolescents and young people up to 23 years of age who are in a situation of vulnerability due to the absence of one or both parents, through the delivery of financial support.
Programa Tandas para el Bienestar (Tandas for Wellness Program)	The objective of the program is to contribute to the development of the basic financial and business capacities of the beneficiaries. Its purpose is to promote the economic development of families and communities through the consolidation of businesses and the improvement of people's living conditions from a gender and social inclusion perspective.
Fondo de Aportaciones para la Infraestructura Social (Contribution Fund for Social Infrastructure)	Its objective is the financing of public works, basic social actions and investments that directly benefit the population in extreme poverty, localities with a high or very high degree of social backwardness in urban and rural areas, in order to reduce the backwardness in basic social infrastructure.

Source: prepared by the authors with information supplied by the websites of the Mexican government.⁸

In addition to these programs, the government has created a decentralized government agency called Seguridad Alimentaria Mexicana⁹ (SEGALMEX) which has as its objective to promote agri-food productivity, its distribution for the benefit of the most backward

⁸ A “tanda” is a common practice between families and communities in Mexico, its a way of saving money since each member of the tanda contributes with the same amount of money each period of time (weekly, monthly) and a raffle decides the order in which each member receives the total amount of saved money.

⁹ Mexican Food Safety.

population in the country and to provide food of nutritional quality at affordable prices; seeks food self-sufficiency in four basic grains (corn, wheat, rice, beans) and milk, promoting the economic and social development of the country.

The main actions and programs of this agency are focused on providing agricultural producers fertilizers and to ensure the price of the grains they produce (which are the ones categorized as basic grains), another important strategy of the agency is the implementation of rural stores, called SEGALMEX-DICONSA¹⁰ community stores (they can also be mobile), whose objective is to bring a supply of food and complementary items to remote and vulnerable populations where there are no other supply systems.

These stores have available the basic products that Mexicans commonly consume in rural areas, such as corn, beans, rice, sugar, milk, coffee, corn flour, wheat flour, table salt, oil, chocolate, chili, tuna, sardines, cookies, pasta for soup, groceries and merchandise in general; there are near 26,000 stores throughout the country and more than 300 rural warehouses. In addition to facilitating the access to food, these stores also have a nutritional education strategy, through this strategy the population is instructed to consume healthy foods and to combine them correctly, in addition to teaching them the preparation of dishes with regional products that favor their health.

METHODS

The methodological analysis was constructed with two main objectives in mind: 1) to quantify the levels of food insecurity in Mexican households, this was achieved through the creation of a Food Insecurity Index (FII) which shows the multidimensional behavior of the current level of food security; and 2) to develop a multidimensional characterization between socioeconomic factors and the Food Insecurity Index, with the aim of verifying the perception of the population regarding their condition of food insecurity.

¹⁰ DICONSA is a company with majority state participation that belongs to the Social Development Sector. Its purpose is to contribute to overcoming food poverty, through the supply of basic and complementary products to highly and very highly marginalized rural locations.

FOOD INSECURITY INDEX (FII)

The FII was created to quantify the level of food insecurity of Mexican households using the Latin American and Caribbean Food Security Scale (ELCSA for its acronym in Spanish). This scale was created by characterizing the experiences of household members based on variables related to inadequate access to nutritional resources. The scale is represented through the food security module included in the ENSANUT 2018-19 survey, and comprises fifteen questions, it also distinguishes between households with children under 18 years of age and households in which all members are over 18 years of age.

The FII was adapted for this study to only include households with members over 18 years of age. Households were then categorized into three levels of food insecurity, according to the number of affirmative answers: Mild (1-3 answers), Moderate (4-6 answers), and Severe (7-8 responses).

DATA SOURCE

The data source for the calculation of the FII was the 2018-19 National Health and Nutrition Survey (ENSANUT). This survey is carried out at the national level in Mexico, it consists of a health component and a nutrition component. It included a sample size of 32,000 for the nutrition component, which represents 125.5 million inhabitants (under a probabilistic, stratified and conglomerate scheme). ENSANUT integrates demographic, socioeconomic, health and nutritional factors. For the construction of the index, a total of 9,426 records were used, with an expansion to 6,765,390, since these records represent the set of households in which all the individuals are over 18 years of age and who have completed the survey for all variables used.

RESULTS AND ANALYSIS

Table 3 shows the distribution that three of the main food support programs have had, making notorious the differentiation in the implementation of said programs, since

Mexico is a country with great differences, it demands different interventions in the different regions.

It is notorious that in the southern states there is a higher percentage of beneficiaries of these public programs, likewise, the greater application in rural areas is evident in comparison with urban spaces, it is also notorious that the higher percentage of beneficiaries are those who are in the first quartile, which corresponds to the individuals who report lower economic income.

Table 3. Multidimensional distribution of food public programs

	N	COMMUNITY KITCHENS	OPORTUNIDADES	LICONSA
NATIONAL	9426	36.5	82.2	39.1
REGIONS				
NORTH		13.60%	28.40%	30.80%
CENTER		12.70%	34.40%	36.90%
MEXICO CITY		11.30%	31.40%	33.80%
SOUTH		21.50%	43.90%	47.20%
POPULATION TYPE				
URBAN		14.30%	32.80%	35.40%
RURAL		20.40%	45.40%	48.60%
INCOME QUARTILES				
1ST QUARTILE		19.00%	41.50%	44.40%
2ND QUARTILE		10.80%	27.60%	29.30%

3RD QUARTILE	5.90%	15.90%	18.50%
4TH QUARTILE	3.80%	10.10%	12.20%

Source: prepared by the authors with information of 2018-19 ENSANUT.

Figure 1 exemplifies the difference between the levels of food intake in the different regions of Mexico, the following map is presented with the distribution of the FII, where it becomes evident that southern Mexico represents the highest levels of food insecurity, in federative entities such as Chiapas, Guerrero, Oaxaca and Veracruz.

Figure 1. Distribution of the Food Insecurity Index (FII) by state in Mexico.



Source: prepared by the authors with information of 2018-19 ENSANUT.

Similarly, for the characterization of the distribution of the FII, the index of some socio-economic characteristics is presented in Table 4, where it is evident that a higher percentage of women in conditions of food insecurity are characterized by being in severe food insecurity with a 19.5 % compared to 10.8% for men. On the other hand, also for the characterization regarding the educational levels of the individuals, note that the higher the levels of academic training, the lower the FII is. Regarding the levels of economic income, the first and second quartiles represent the individuals with the highest percentage in the severe FII.

Table 4. Multidimensional distribution of the Food Insecurity Index

FOOD INSECURITY INDEX				
	%	Mild FI	Moderate FI	Severe FI
n=9426				
SEX				
MALE	48.50%	80.60%	8.60%	10.80%
FEMALE	51.50%	68.1%	12.40%	19.5%
LEVEL OF STUDIES				
NONE		38.00%	33.10%	28.90%
BASIC EDUCATION		54.80%	26.60%	18.60%
UPPER SECONDARY EDUCATION		65.30%	20.80%	13.90%
HIGHER EDUCATION		81.60%	13.30%	5.10%
POSTGRADUATE		89.20%	10.80%	0.00%
ACCESS TO MEDICAL SERVICE				
WITH ACCESS		69.40%	17.80%	12.80%
WITHOUT ACCESS		57.50%	24.50%	18.00%

ACCESS TO PRIVATE HEALTH INSURANCE			
WITH ACCESS	83.90%	8.40%	7.70%
WITHOUT ACCESS	59.80%	23.40%	16.90%
POPULATION TYPE			
URBAN	77.10%	10.30%	12.60%
RURAL	69.80%	14.20%	16.00%
REGIONS			
NORTH	65.70%	19.60%	14.80%
CENTER	63.30%	22.90%	13.80%
MEXICO CITY	62.40%	21.30%	16.30%
SOUTH	53.50%	27.30%	19.20%
INCOME BY QUARTILES			
QUARTILE 1	70.60%	12.80%	16.60%
QUARTILE 2	82.40%	8.80%	8.80%
QUARTILE 3	89.80%	5.70%	4.50%
QUARTILE 4	93.50%	3.30%	3.30%

Source: prepared by the authors with information of 2018-19 ENSANUT.

In order to approximate the effect that food programs have achieved, Table 5 shows the perception of the individuals who have been beneficiaries of public programs and their relationship with the total level of food insecurity, it becomes noticeable that greater access to programs is, lower is their perception of food insecurity, however it is also notorious that as the FII gets higher the perception of food insecurity remains constant.

Table 5. Perception of food insecurity in relation to access to public food programs.

In the last three months, due to lack of money or other resources, did you ever worry that food would run out at your home?

Food Insecurity level	Beneficiary of 1 food program	Beneficiary of 2 food programs	Beneficiary of 3 food programs
Mild	63.20%	22.70%	14.10%
Moderate	58.90%	28.60%	12.80%
Severe	36.50%	39.75	23.80%

Source: prepared by the authors with information of 2018-19 ENSANUT.

CONCLUSIONS

Public food programs have been designed and implemented in Mexico since the 1920s, hence, the country has accumulated experience in what “works” and what “doesn’t work” for its population, relating to food security and the structures needed to guarantee food security for its population, such as agricultural policies, economic development and the implementation of social rights for all.

Given that Mexico is a country with sectorial public policies, this meaning that all of its programs and actions emanate from policies that are designed and thought of from a “specialist” perspective, it is hard to face the fact that such specialization hasn’t had a real impact in the lives of the population and throughout the territory, since every year Mexico registers higher numbers of people in poverty and of people who may not experience extreme poverty, but do experience food insecurity.

As the analysis of the ENSANUT data shows, there is a clear distinction between the welfare state of the federative states from the north than the states from the south; this means that the northern states experience a “better” welfare state, meanwhile the southern states experience food insecurity and all three dimensions of poverty, particularly vulnerable population, like women, children and indigenous people.

This multidimensional analysis of the effectiveness of the implementation of public food programs in Mexico is the first approach made in hopes to better understand why these programs haven't had the expected outcome, for the sake of improving the real impact they have on people's lives, since in many cases, these programs and the help they provide, either economic or in kind, are the only source of income or food the beneficiaries have.

As lines of research that will allow to continue with the identification of food insecurity in Mexico and the effect that the implementation of public programs of a food nature has had, the particular characteristics of the implementation stage of this type of public policies should be known with greater focus, applying more far-reaching methodologies.

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