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Scientific articles

***Administración familiar en relación con la ubicación de su vivienda
y necesidad de movilidad***

***Family administration in relation to the location of your home and need for
mobility***

***Administração familiar em relação à localização da sua residência e
necessidade de mobilidade***

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Resumen

El objetivo de esta investigación fue analizar el impacto que tiene el lugar de residencia de las familias mexicanas en sus ingresos. Este tema se ha elegido porque muchos hogares, con la intención de obtener una casa propia, deciden trasladarse a la periferia de la Zona Metropolitana del Valle de México (ZMVM), lo cual, sin embargo, resulta en una inversión insostenible debido al gasto que deben invertir en movilidad. Para profundizar en esta problemática se realizó un análisis bibliométrico con Scopus y se consideraron los datos de la Encuesta Nacional de Ingresos y Gastos de los Hogares 2020 (ENIGH), donde se demuestra que el ingreso trimestral es de \$50 309, obtenido principalmente mediante el trabajo, mientras que el gasto total por trimestre en México es de \$47 396, destinado a cubrir necesidades relacionadas con alimentos y bebidas (38 %), y transporte y comunicaciones (19 %). Además, se determinó que el grupo de individuos que realizan más viajes y utilizan más



el transporte privado es el nivel alto (0.875) y medio alto (0.771), en contraste con los niveles medio bajo (0.720) y bajo (0.327), mayormente caminan, mientras que el estrato medio bajo es el que más utiliza la bicicleta (0.504) y camina (0.720). Finalmente, se aprecia que la Ciudad de México (CDMX), el Estado de México y Querétaro son los que más ingresos perciben, aunque también gastan más de la mitad.

Palabras clave: administración familiar, educación, movilidad urbana y vivienda.

Abstract

The general objective of this research was to describe the way in which Mexican families manage their resources in their home, in relation to their income and the impact of this, directly linked to the location of their home, since, with the intention of obtaining their own house, they agree to move their place of residence to the periphery of the Metropolitan Zone of the Valley of Mexico (ZMVM), resulting in an unsustainable investment due to the expense of their mobility. To point out the impact of this problem, a bibliometric analysis was carried out with Scopus,

Data from the 2020 National Household Income and Expenditure Survey [Enigh] were considered. The quarterly income was \$50,309 and the main way it was earned was through work. The total expense per quarter in Mexico was \$47,396, indicating that the highest expenses are allocated to food and beverages with 38% followed by transportation and communications with 19%. The group of individuals who make more trips and use private transportation more is the high level (.875), medium-high public transportation (.771), in contrast to the medium-low (.720) and low (.327) levels, mostly walk, it is the lower middle stratum, the one that uses the bicycle the most (.504) and walks (.720). Finally, it can be seen that CDMX, the State of Mexico and Querétaro are the ones that receive the most income, and spend more than half of what they earn.

Key words: family administration, education, urban mobility and housing

Resumo

O objetivo desta pesquisa foi analisar o impacto que o local de residência das famílias mexicanas tem na sua renda. Este tema foi escolhido porque muitas famílias, com a intenção de obter casa própria, decidem mudar-se para a periferia da Zona Metropolitana do Vale do México (ZMVM), o que, no entanto, resulta num investimento insustentável devido ao gasto que Eles devem investir em mobilidade. Para aprofundar este problema, foi realizada uma análise bibliométrica com Scopus e foram considerados os dados da Pesquisa Nacional de Rendimentos e Despesas das Famílias (ENIGH) de 2020, que mostra que a renda trimestral é de \$ 50.309, obtida principalmente através do trabalho. a despesa total por trimestre no México é de US\$ 47.396, destinada a cobrir necessidades relacionadas a alimentos e bebidas (38%) e transporte e comunicações (19%). Além disso, constatou-se que o grupo de indivíduos que realiza mais viagens e utiliza mais o transporte particular é o nível alto (0,875) e médio alto (0,771), em contraste com os níveis médio baixo (0,720) e baixo (0,327), que que mais caminham, enquanto o estrato médio inferior é o que mais utiliza bicicleta (0,504) e caminha (0,720). Por fim, verifica-se que a Cidade do México (CDMX), o Estado do México e Querétaro são os que mais recebem receitas, embora também gastem mais da metade.

Palavras-chave: administração familiar, educação, mobilidade urbana e habitação.

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Introduction

The management of resources in homes is increasingly a priority, especially for less fortunate families, who usually travel long distances from their places of residence to their jobs, schools or other destinations (Moreno-Olmos, 2008). This problem is due to the desire to have one's own home, since in the peripheries their prices are usually lower due to the lack of infrastructure, equipment and services. However, it should be noted that the construction of housing developments in distant and disconnected areas of the city generates social fragmentation that results in an increase in the costs and travel times of the inhabitants (Pérez-Barragán, 2020).

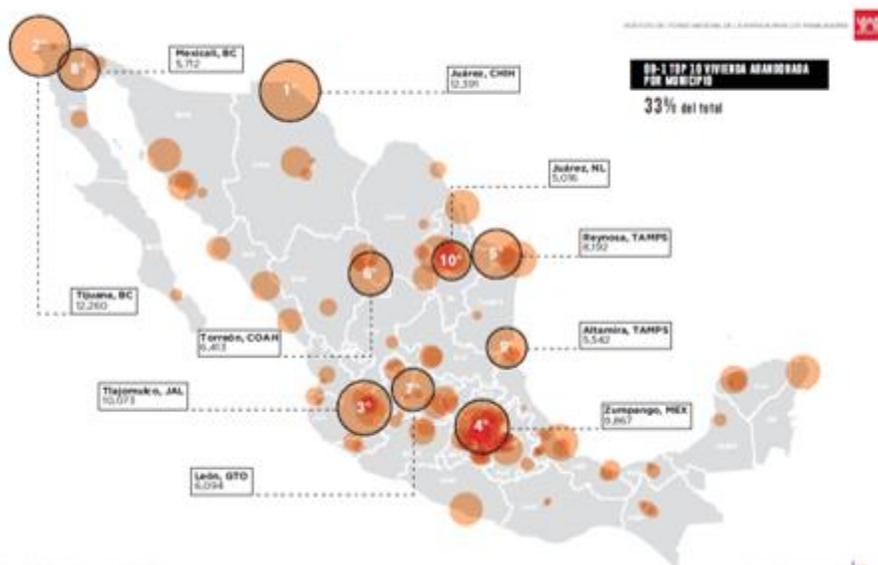
In fact, Ziccardi and González (2015) point out that families living outside cities must employ between two and four to move and invest approximately 22% of their income in transportation. In the specific case of the periphery of the Metropolitan Zone of the Valley

of Mexico, Salinas and Pardo (2020) maintain that people who live there may need up to two and a half hours to get around, which translates into up to 30% of their income.

In this sense, the Institute of the National Housing Fund for Workers (INFONAVIT) (2015), in its Housing Abandonment Atlas, explains that a large part of the housing developments, such as those mentioned above, were built as dormitory cities, which implies high costs in the daily mobility of the inhabitants. Specifically, 15% of households in urban areas must allocate approximately a third of their income on these transfers, a figure very similar to that indicated by Salinas and Pardo (2020) in their research. Furthermore, they point out that the greater the distance between the place of residence and the main employment areas, the greater the probability of incurring high expenses due to travel, which has contributed to the abandonment of homes.

In accordance with this idea, figure 1 shows the ten municipalities with the highest number of abandoned homes in the country. Zumpango, as part of the ZMVM, is positioned in fourth place with 9,867 abandoned homes. In addition, a concentration of housing abandonment areas can be observed within the limits of the ZMVM.

Figure 1. Top 10 abandoned homes by municipality



Source: Atlas of Housing Abandonment (INFONAVIT, 2015)

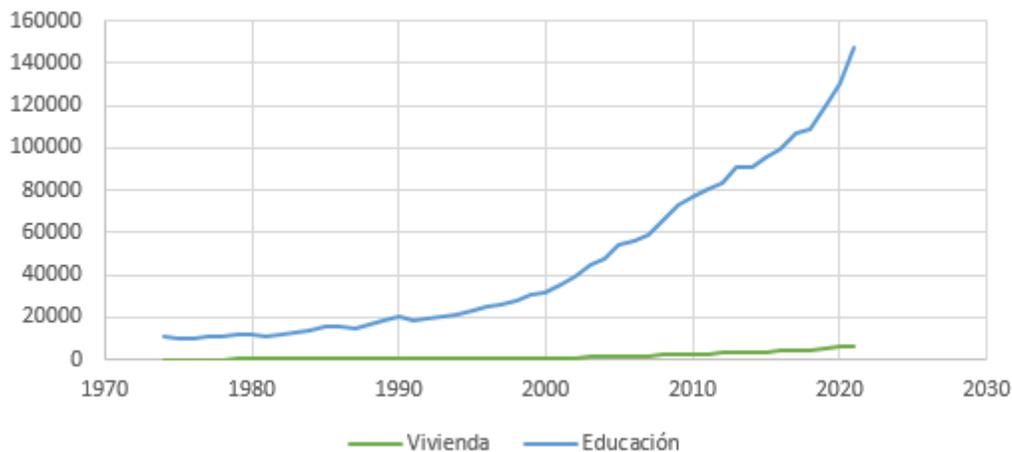
To learn more details about this situation, Cruz-Muñoz and Isunza (2017) surveyed 297 people who live in Zumpango and found that 25% of them mentioned that they spend four hours going and returning by public transportation, which shows the large amounts of time spent in this area and contributes to the high percentage of abandoned homes.

In the same sense, Ziccardi (2016) explains that people who acquire a home in the periphery - and that does not have the minimum conditions of quality and accessibility - will experience a decrease in their income due to the long journeys they must take to get there. to their places of work or study. This situation has been promoted, according to Galindo -Pérez *et al.* (2020), due to the increase in labor supply in the central area of the ZMVM, which has generated a reorientation in daily mobility.

Based on the above, it can be stated that the topic addressed in this work is a constant and current concern of society. Therefore, through a bibliometric analysis with the support of Scopus, we sought to delve deeper into this topic, which was addressed using language or subject area filters.

Figure 2 shows the number of documents published per year for the *housing* and *education variables*. It should be noted that both have an ascending representation, which indicates a growing interest in these constructs, which is why they are currently becoming a trend. Specifically, the aforementioned variables (*housing* and *education*) reached a maximum of 147,089 and 6,681 documents, respectively, in 2021.

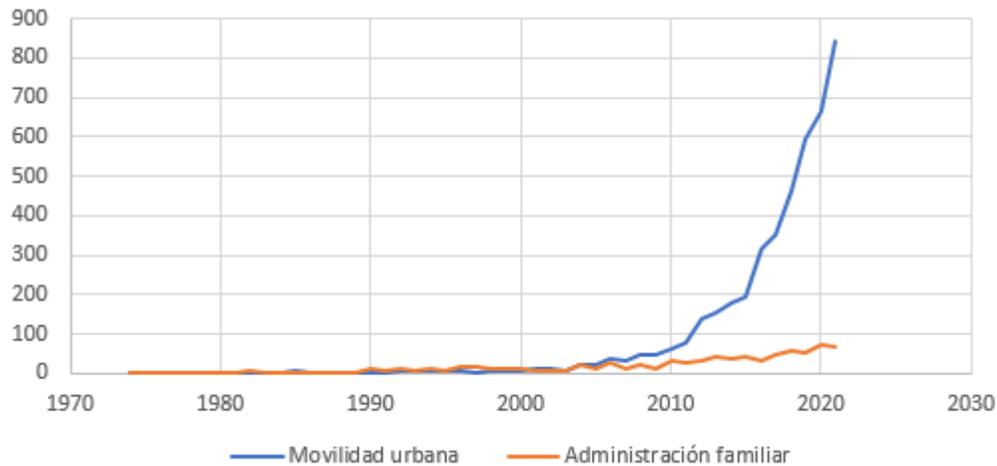
Figure 2. Documents published per year for the *housing* and *education variables*



Source: Own elaboration based on Scopus search

Figure 3 also shows ascending lines regarding the importance of the variables *urban mobility* and *family administration*. In fact, in 2021 the former reached its peak with 842 published documents, while the family administration reached 72 documents on the same date.

Figure 3. Documents published by year for the variables *urban mobility* and *family administration*



Source: Own elaboration based on Scopus search

Table 1 summarizes the bibliometric analysis carried out. From a list of ten results for each section studied, those positioned in first place are shown.

Table 1. Summary of bibliometric analysis results

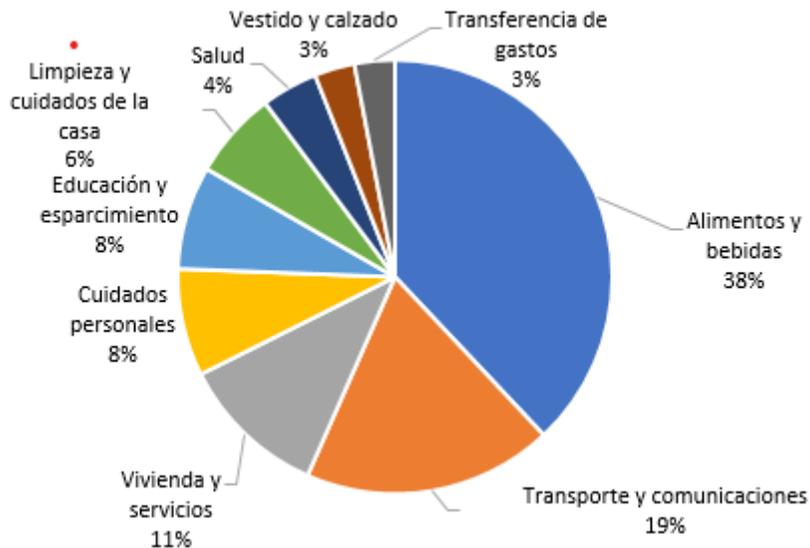
	Living place	Urban mobility	Family management	Education
Type of document with the highest number of publications	Article	Article	Article	Article
Author with the largest number of documents	Barrett-Connor	Ratti	Deatrick .	Añón
Country with the highest number of documents	USA	USA	USA	USA
Source with the highest number of publications	Journal of the American Geriatrics Society	Swiss Sustainability	Family Nursing Diaries	Medicine

Source: Own elaboration based on Scopus search

The United States is the country with the highest number of documents in all variables. However, it is important to highlight that, in urban mobility, family management and education, Brazil, as part of Latin America, occupies places three, ten and eight, respectively. This data shows that the topic has been addressed in few Latin American countries, which makes this research a development of interest to expand its analysis on the continent and in Mexico, mainly.

According to data from the National Institute of Statistics and Geography (Inegi) (2021) in the National Survey of Household Income and Expenses 2020 (ENIGH), Mexico's total quarterly income is located at \$50,309, an amount that is achieved through work, while the total expense per quarter is \$47,396. The following figure shows the percentage distribution of the most significant expense areas. Note that the highest expenses correspond to food and beverages with 38%, followed by transportation with 19% and communications with 18.6%. Regarding spending on education and recreation, it represents only 8%.

Figure 4. Percentage distribution of total quarterly monetary current expenditure



Source: Own elaboration with data from Inegi (2021)

The information provided by Inegi (2021) allows us to compare the results obtained in the questionnaire carried out in 2020, which is used for the development of this article. Table 2 shows the percentage participation of the sample by federal entity, where it is evident that the majority belongs to the ZMVM.

Table 2. Percentage of participation in the questionnaire sample

Federal entity	Percentage of participation in sample
State of Mexico	57.77%
Mexico City	39.81%
Hidalgo	0.97%
Guerrero	0.49%
Queretaro	0.49%
Tabasco	0.49%

Source: Own elaboration with data from the survey carried out in 2020

The information collected reflects that the most representative amounts of minimum wages per month are one to two and more than six, both with 31.6%. Now, in relation to the quarterly average current income by federal entity, taking into account those that participated in the survey carried out, the data specified in the following table is obtained.

Table 3. Quarterly average current income by state

Federal entity	Quarterly average current income
State of Mexico	\$49,620
Mexico City	\$67,357
Hidalgo	\$40,090
Guerrero	\$32,516
Queretaro	\$60,435
Tabasco	\$41,665

Source: Own elaboration with data from Inegi (2021)

Mobility and its dimensions

The concept of *mobility* encompasses the social activity in which people travel to different destinations to carry out their daily responsibilities, and can be considered both a need and a desire, since it implies the subjective and objective capacity of each individual (Gutiérrez, 2012). On the other hand, urban mobility is distinguished by its specificity in geographical and temporal terms, since it takes place exclusively in urban spaces (Gutiérrez, 2012).

On the other hand, daily mobility—according to Isunza (2010)—refers to trips to work areas, which is why it is considered a periodic transfer that covers activities such as shopping, access to education, among others, and whose point of origin is home. Casado-Izquierdo (2008) define it as recurring and constant actions – but of short duration and distances – towards various destinations, such as work and school, although they do not exclude other reasons.

Finally, sustainable urban mobility refers to the ability to move using means of transportation that satisfy economic, social and environmental needs equitably in order to avoid adverse consequences and their associated costs (Lizárraga, 2006).

Family administration (economics)

In our country, we face a situation similar to that of other nations, where the contraction of wages and the deterioration of working conditions have led to more family members being forced to contribute financially as a way to compensate for low wages. and the lack of adequate recognition of labor (Oliveira, 1999).

Education

Education is one of society's most important renewable resources; However, paradoxically, it continues to be one of the least attended to in practice, which makes it a prevailing need to meet the demands of life and society (Casanova, 2012).

In the case of Mexico, the current government emphasizes that education is a fundamental right. Specifically, article 5 of the General Education Law specifies the following:

Every person has the right to education, which is a means to acquire, update, complete and expand their knowledge, abilities, skills and aptitudes that allow them to achieve their personal and professional development; As a consequence, contribute to their well-being, to the transformation and improvement of the society of which they are part (General Education Law, 2019).

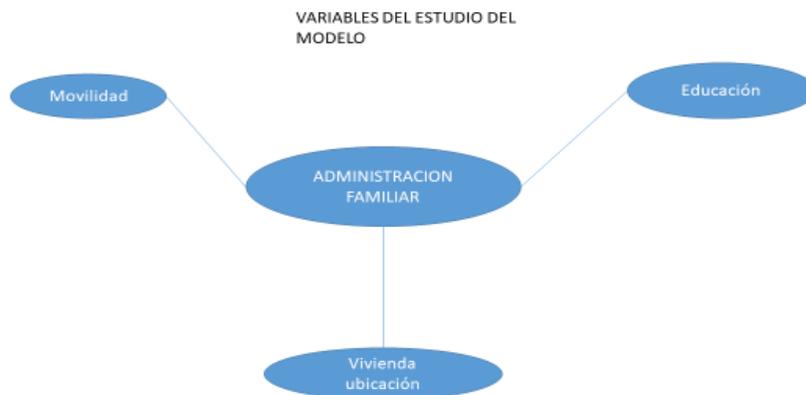
In this sense, it is presumed that the social and economic well-being of countries will increasingly depend on the quality of education and the ease of access and coverage in relation to the urban planning of governments. For this reason, Espinal (2017) refers to the

education indicator in relation to the equipment of the communities and their coverage, which is directly associated with planning and territorial ordering.

Methods and materials

In this research, an exploratory, descriptive and correlational approach was adopted, for which a quantitative method and a deductive process were used (Hernández-Sampieri *et al.*, 2006). Specifically, to evaluate the impact of the problem, a bibliometric analysis was carried out using Scopus, specifically on the variables housing, urban mobility, family administration and education. Table 4 and Figure 5 present these variables along with their description and the type of response to which they correspond.

Figure 5. Model variables



Source: self-made

Table 4. Mobility expense management study variables

Variable	Description	Variable type
Family management (homes)	Family (household) income and distribution of expenses.	Dependent: It is related to mobility to determine the way of organizing and allocating family income.
Urban mobility	Moving from place of residence to different places.	Independent: Cause of the purpose of the person's travel to their place of work and return. Strata.
Housing location	Place of location of the place of residence.	Independent: Determinant to establish the administration of the necessary movements or routes.
Education	Level of studies.	Independent: Impact on the management of your family resources.

Source: self-made

Measurement and development instrument

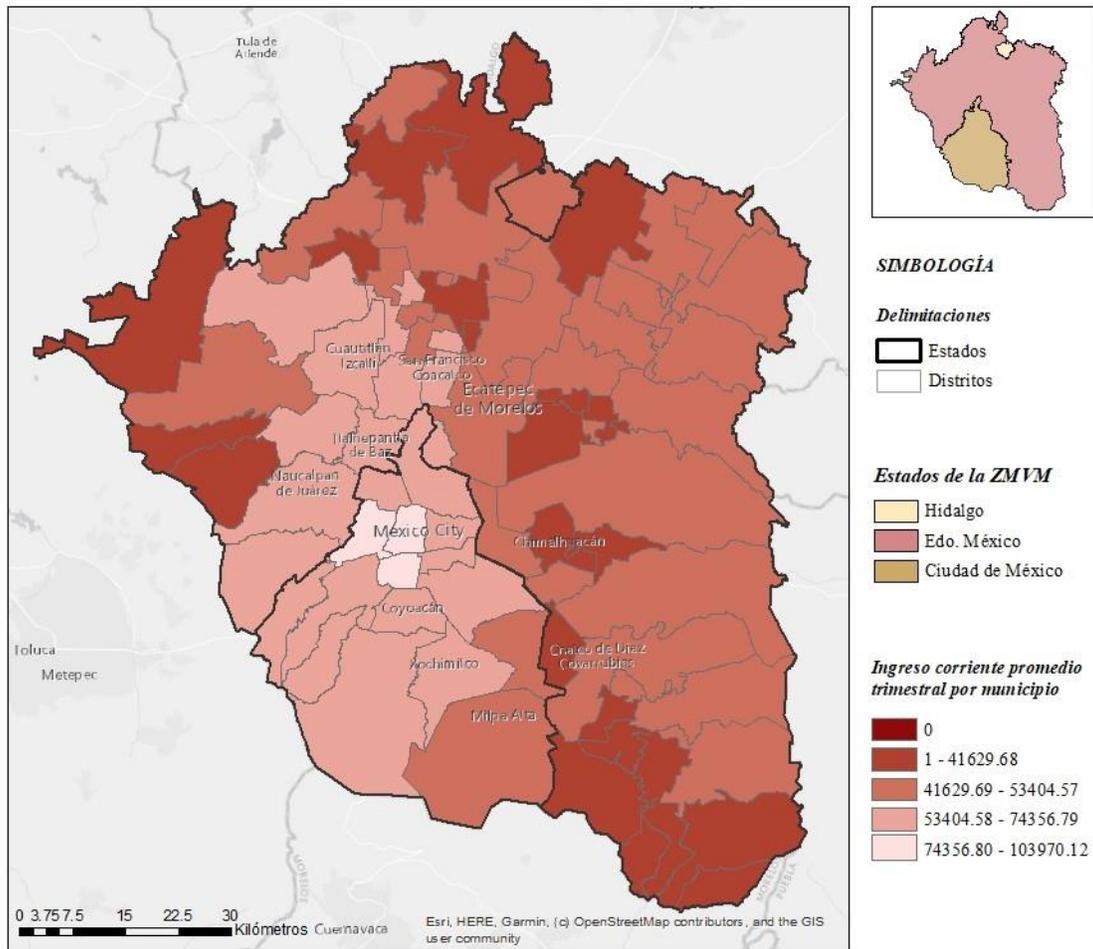
The main references considered were the data obtained from the 2020 National Survey of Household Income and Expenses (ENIGH), which provides information on the behavior of household income and expenses, including the amount, how it is obtained and its use. Data from the Origin-Destination Survey (EOD) (2017) were also used, which collects information on how inhabitants move, especially in the Metropolitan Zone of the Valley of Mexico (ZVMV), both provided by Inegi (2020).

Furthermore, using the ArcGIS program, the data collected and consulted in each of the instruments were geoprocesed and geographically represented. This allowed pertinent comparisons to be made to collect the results and issue conclusions.

Results

Figure 6 shows the average quarterly current income by municipality in the ZMVM. Note that the municipalities with lower incomes are distributed throughout a large part of the State of Mexico, especially in the peripheries.

Figure 6. Quarterly average current income by municipality in the ZMVM



Source: Own elaboration with data from Inegi (2020)

Housing expenses

Inegi (2021), in the ENIGH, specifies that the average quarterly total expenditure is \$47,396. Table 5 indicates the average quarterly current expenditure by federal entity, although only the entities that participated in the questionnaire are listed.

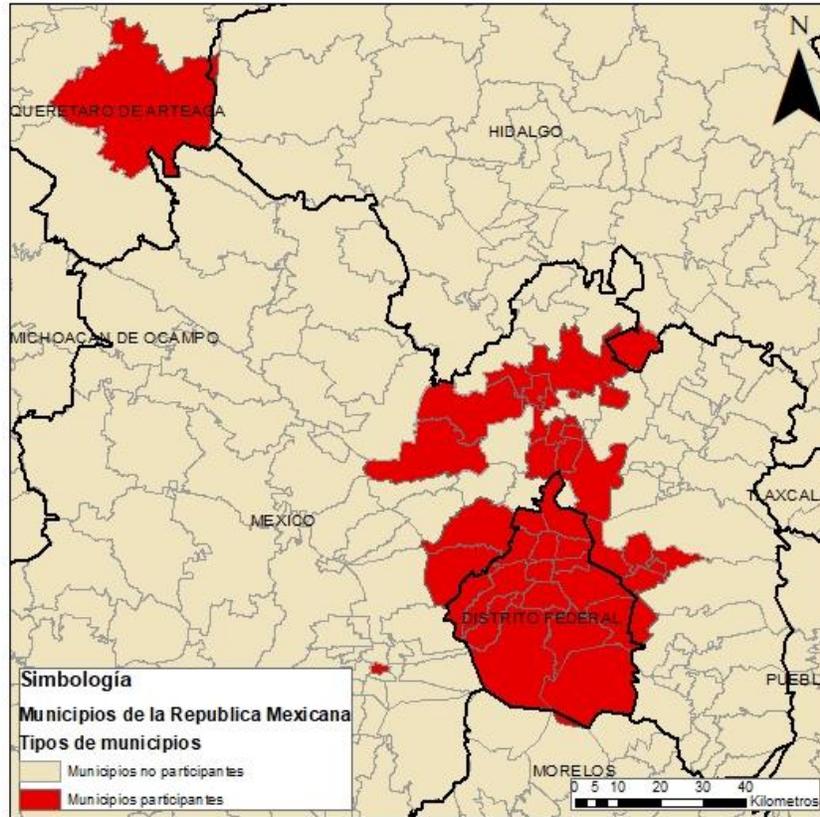
Table 5. Quarterly average current monetary expenditure by state

Federal entity	Quarterly average current monetary expenditure
State of Mexico	\$30,463
Mexico City	\$37,771
Hidalgo	\$24,584
Guerrero	\$21,846
Queretaro	\$36,361
Tabasco	\$41,665

Source: Own elaboration with data from Inegi (2021)

The average quarterly current expenditure by federal entity, listing only the entities that participated in the questionnaire (figure 7), reveals that Mexico City, the State of Mexico and Querétaro are the ones that receive the most income, although they also spend more than half.

Figure 7. Participating municipalities



Source: Own elaboration with data from Inegi (2021)

On the other hand, a correlational analysis was carried out using the Pearson coefficient with the help of IBM SPSS *software*, version 22. The main result can be seen in table 6.

Table 6. Number of trips by stratum

		Public transport	Private transport	Mixed	Bicycle	Other	Walk
Low	Pearson correlation	.029	-.072	-.036	.120	.162	.327 **
	Sig. (bilateral)	.731	.394	.672	.156	.125	.000
	N	143	143	142	141	91	143
Medium low	Pearson correlation	.629 **	.368 **	.368 **	.504 **	.481 **	.720 **
	Sig. (bilateral)	.000	.000	.000	.000	.000	.000
	N	196	196	195	192	123	196
Medium high	Pearson correlation	.771 **	.703 **	.599 **	.056	.201 *	.114
	Sig. (bilateral)	.000	.000	.000	.443	.026	.110
	N	196	196	195	192	123	196
High	Pearson correlation	.614 **	.875 **	.569 **	.020	.192 *	-.092
	Sig. (bilateral)	.000	.000	.000	.781	.035	.199
	N	195	195	194	191	122	195
Public transport	Pearson correlation	1	.825 **	.722 **	.255 **	.405 **	.360 **
	Sig. (bilateral)		.000	.000	.000	.000	.000
	N	196	196	195	192	123	196
Private transport	Pearson correlation	.825 **	1	.709 **	.184 *	.359 **	.077
	Sig. (bilateral)	.000		.000	.011	.000	.281

	N	196	196	195	192	123	196
Mixed	Pearson correlation	.722 **	.709 **	1	.166 *	.275 **	.090
	Sig. (bilateral)	,000	,000		.022	.002	.209
	N	195	195	195	191	122	195
Bicycle	Pearson correlation	.255 **	.184 *	.166 *	1	.365 **	.444 **
	Sig. (bilateral)	,000	.011	.022		,000	,000
	N	192	192	191	192	120	192
Other	Pearson correlation	.405 **	.359 **	.275 **	.365 **	1	.349 **
	Sig. (bilateral)	,000	,000	.002	,000		,000
	N	123	123	122	120	123	123
Walk	Pearson correlation	.360 **	.077	.090	.444 **	.349 **	1
	Sig. (bilateral)	,000	.281	.209	,000	,000	
	N	196	196	195	192	123	196

*. The correlation is significant at the 0.05 level (2-tailed).

** The correlation is significant at the 0.01 level (2-tailed).

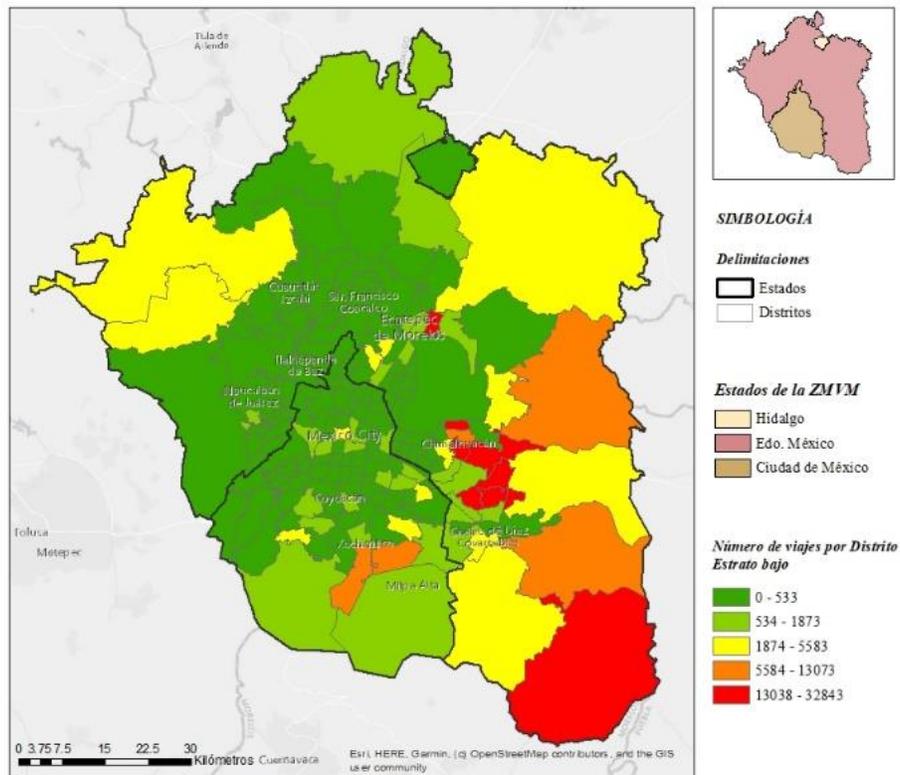
Note: Only trips made during the week were considered.

Source: self-made

Analyzing the observed data, the correlation becomes evident in the following dynamic: the group of individuals who make more trips and use more private transportation corresponds to the high level (0.875) and the medium-high level with public transportation (0.771), in contrast with the medium-low (0.720) and low (0.327) levels, where travel on foot predominates. This is due to the long distances they must travel daily from their places of residence to the points where they can access public transportation, which is most frequently observed in the Metropolitan Zone of the Valley of Mexico (ZMVM). This results in a waste of time and money.

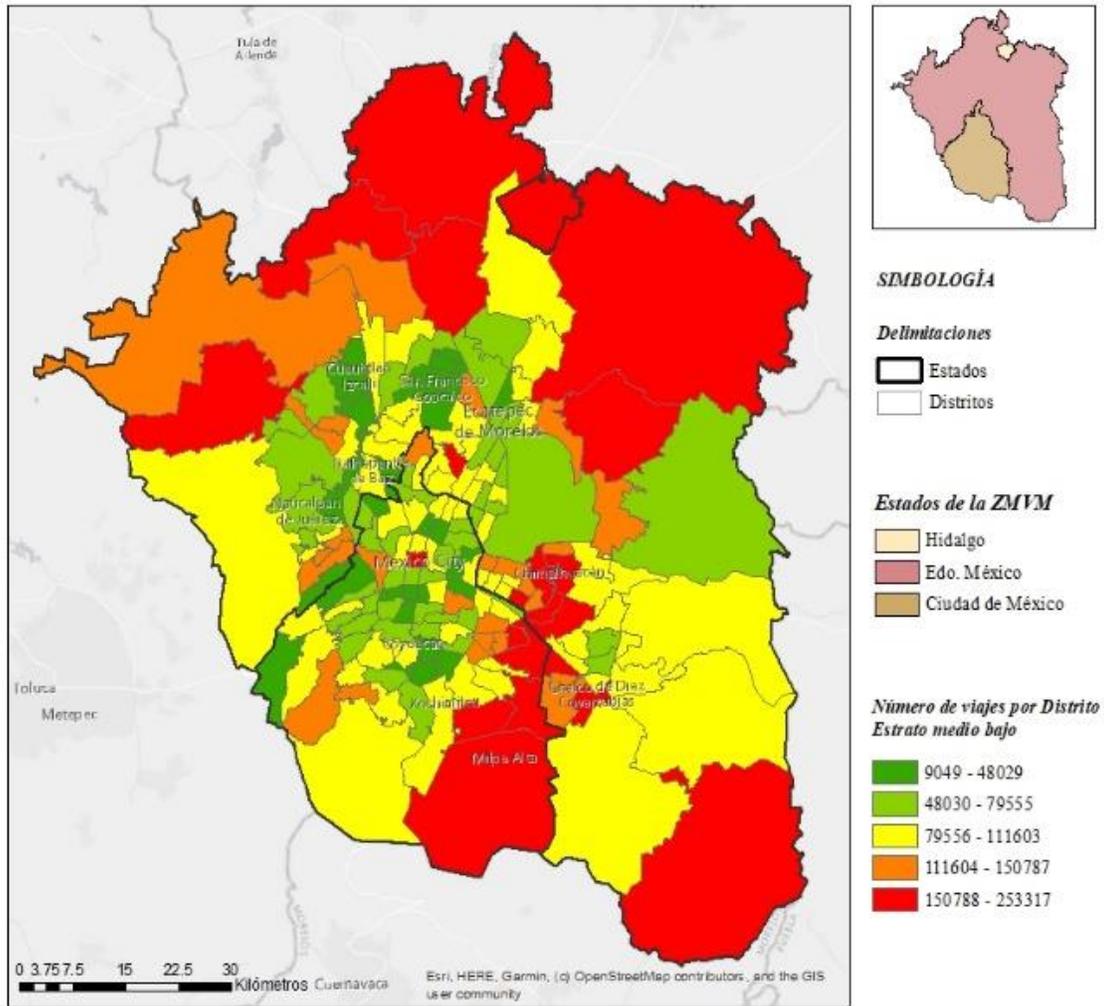
Furthermore, taking the type of transportation and socioeconomic stratum as a reference, it is observed that the lower-middle stratum is the one that uses the bicycle the most (0.504) and walks (0.720). Now, with the aim of identifying more precisely the relationship between spending and the need for mobility, figures 8, 9, 10 and 11 represent the number of trips made in the ZMVM by district in the low, medium and low strata, medium high and high, respectively.

Figure 8. Number of trips by district (lower stratum)



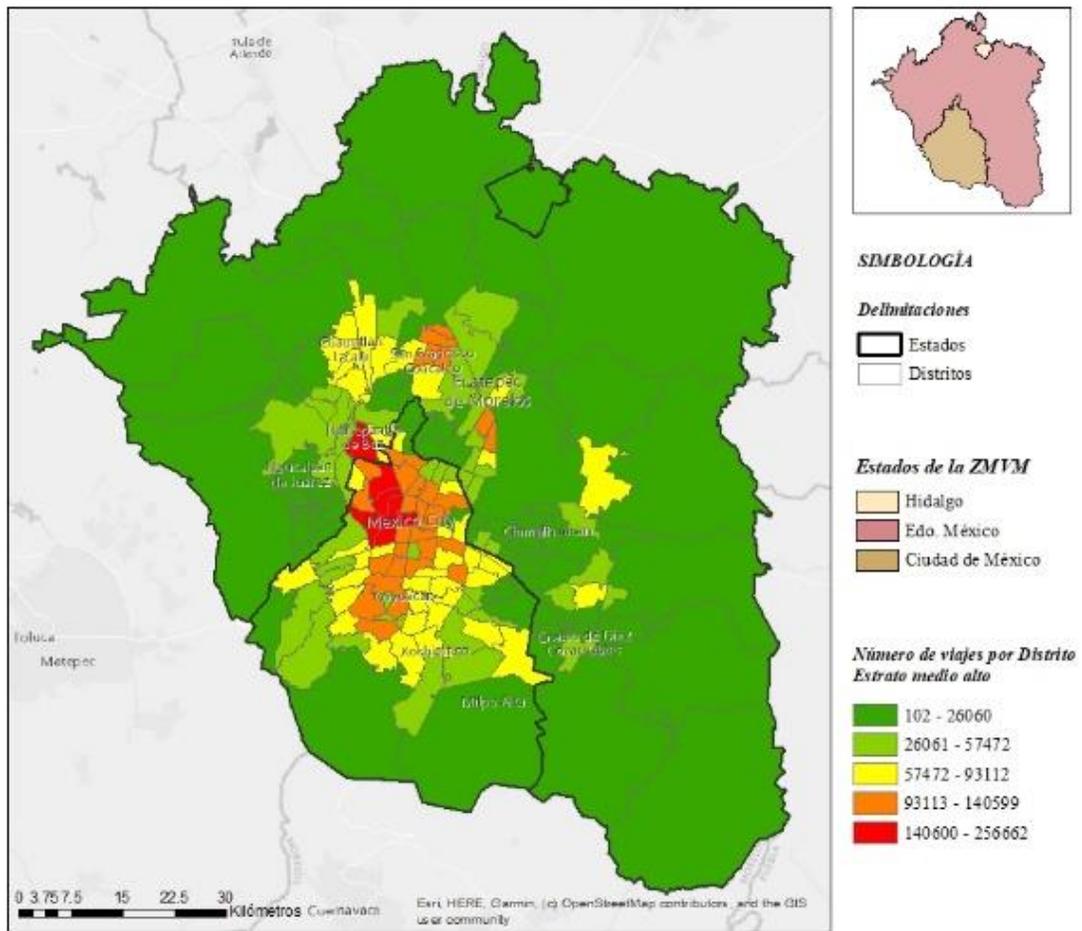
Source: Own elaboration with data from Inegi Origin-Destination Survey (2020)

Figure 9. Number of trips by district (lower middle stratum)



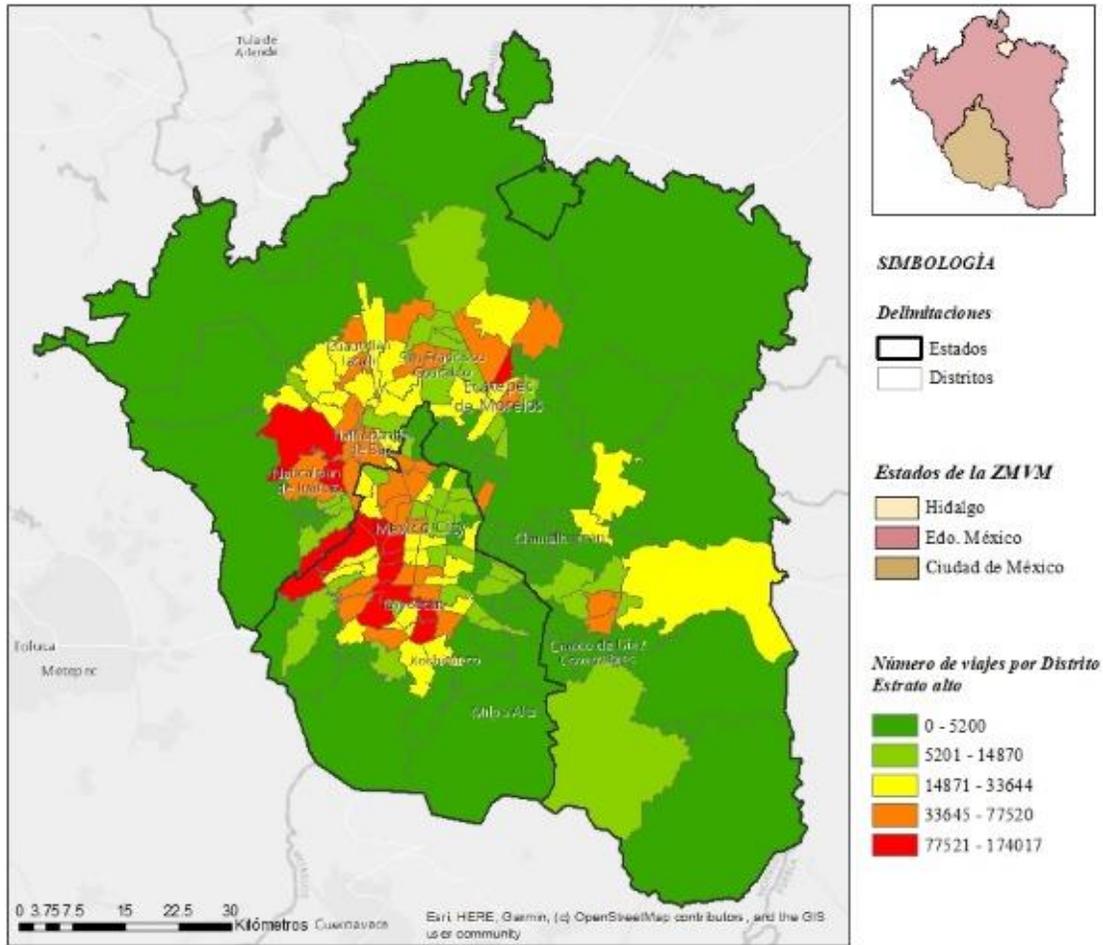
Source: Own elaboration with data from Inegi Origin-Destination Survey (2020).

Figure 10. Number of trips by district (medium-high stratum)



Source: Own elaboration with data from Inegi Origin-Destination Survey (2020)

Figure 11. Number of trips by district (high stratum)

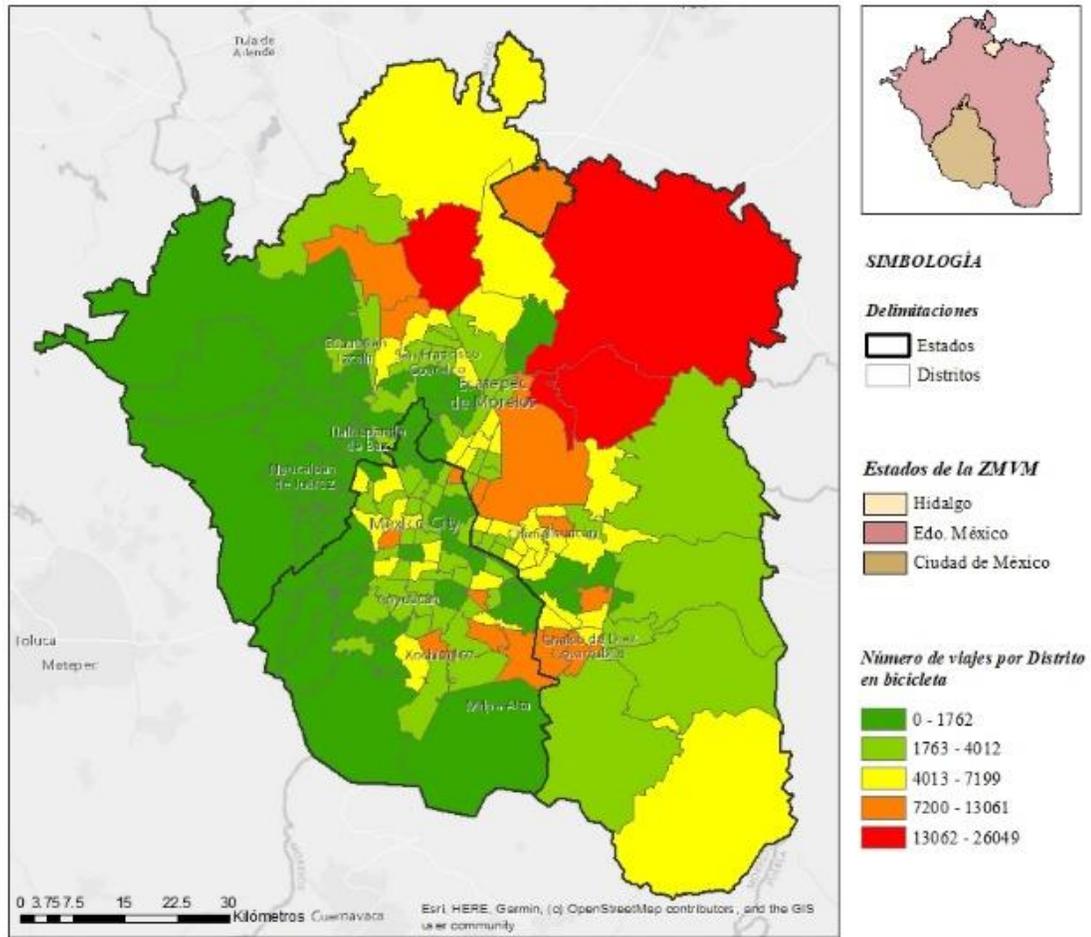


Source: Own elaboration with data from Inegi Origin-Destination Survey (2020)

It is evident that the lower middle stratum is the one that makes the greatest number of trips and walks the most, which confirms what was stated in the Pearson correlation. Once again, this pattern is observed mainly in the peripheries of the districts located in the State of Mexico because they must walk longer distances from their places of residence to public transportation areas. Furthermore, it is observed that the majority of trips in this stratum are made by public transport.

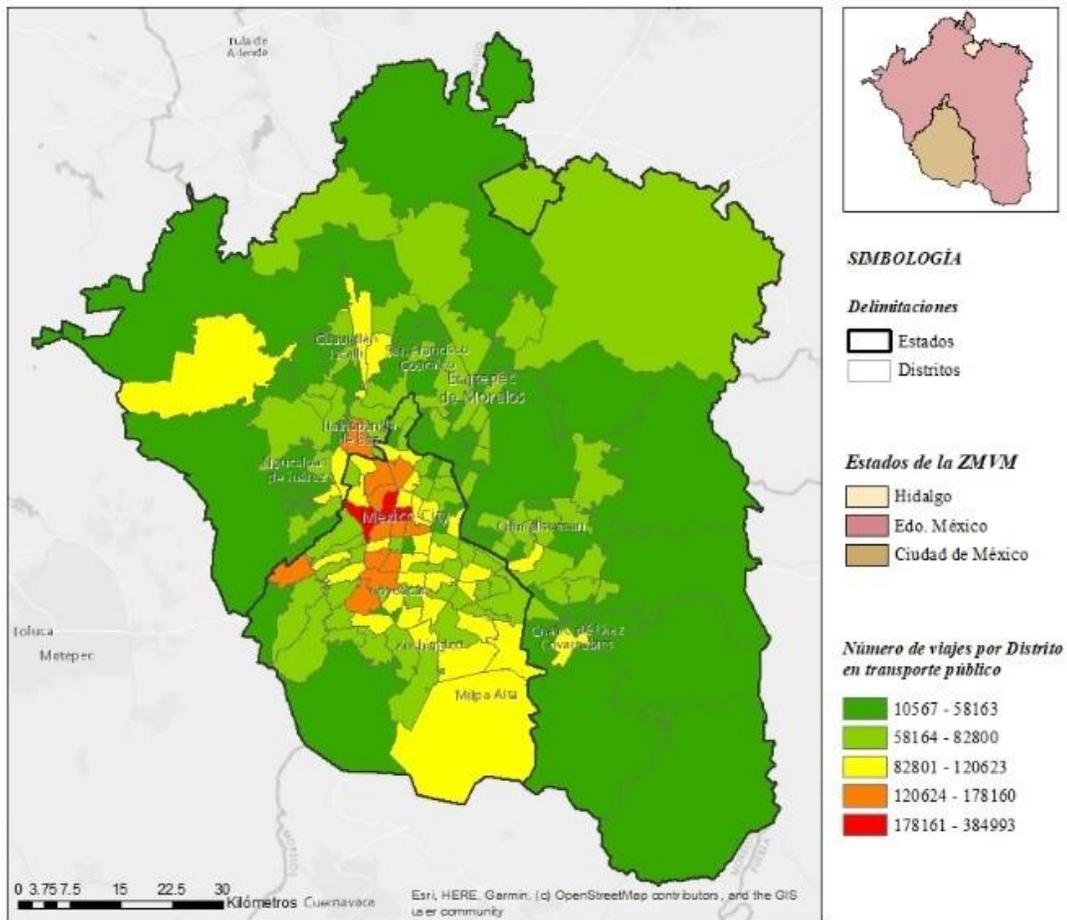
To know the type of transport used, figures 12, 13, 14, 15 and 16 show the number of trips made by bicycle, public transport, private transport, mixed transport or other types of transport, respectively.

Figure 12. Number of trips per district made by bicycle



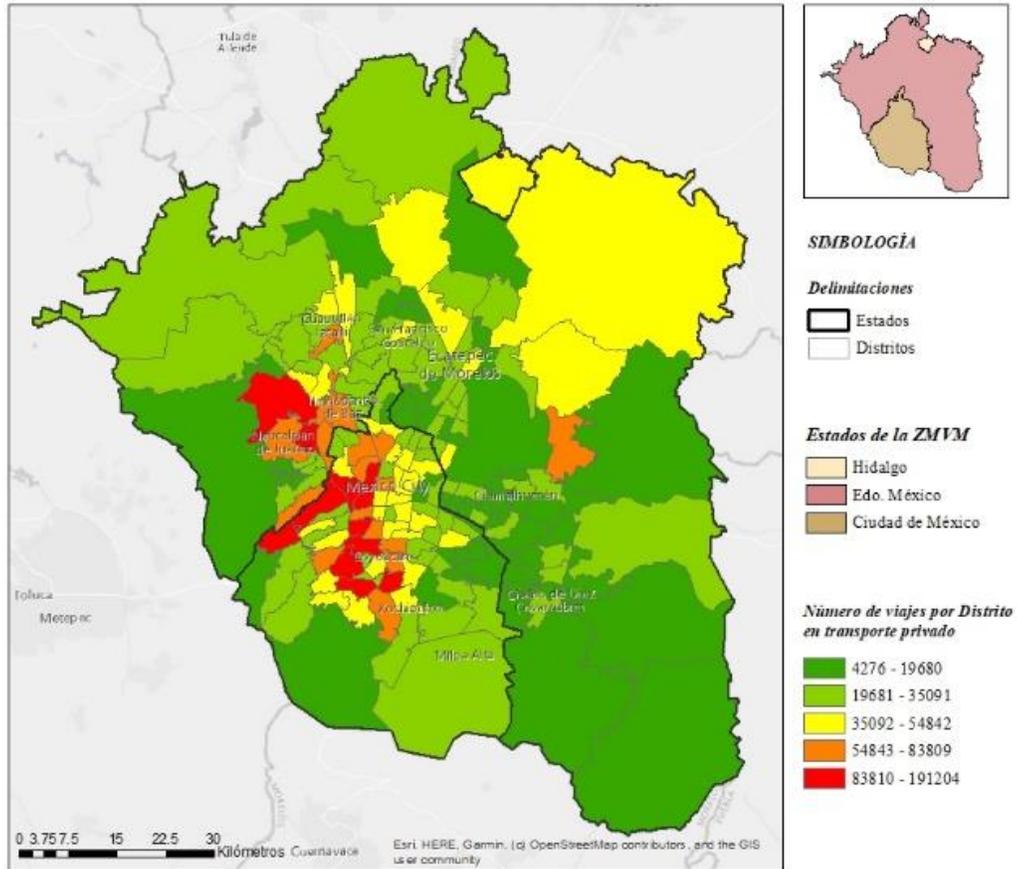
Source: Own elaboration with data from Inegi Origin-Destination Survey (2020)

Figure 13. Number of trips per district made by public transport



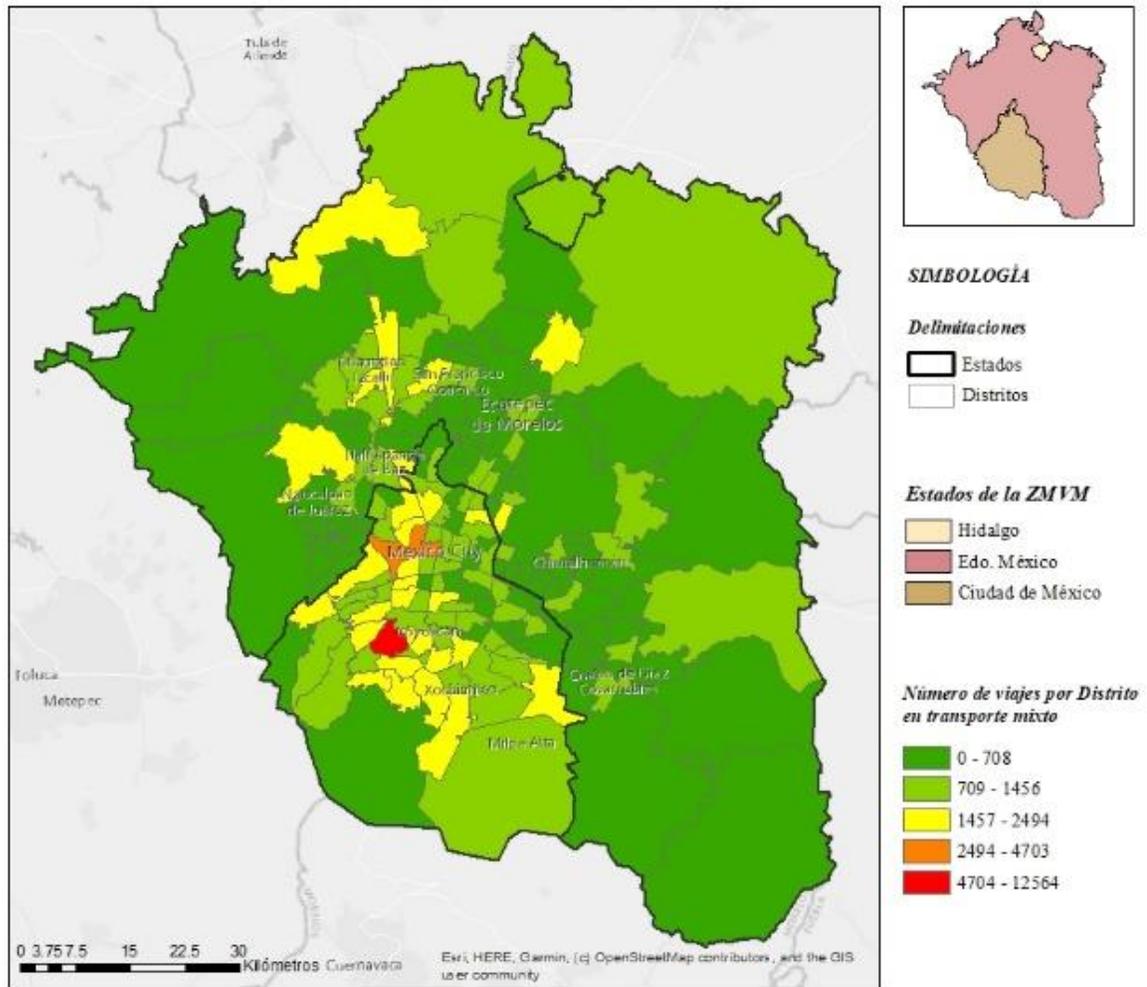
Source: Own elaboration with data from Inegi Origin-Destination Survey (2020)

Figure 14 . Number of trips per district made by private transport



Source: Own elaboration with data from Inegi Origin-Destination Survey (2020)

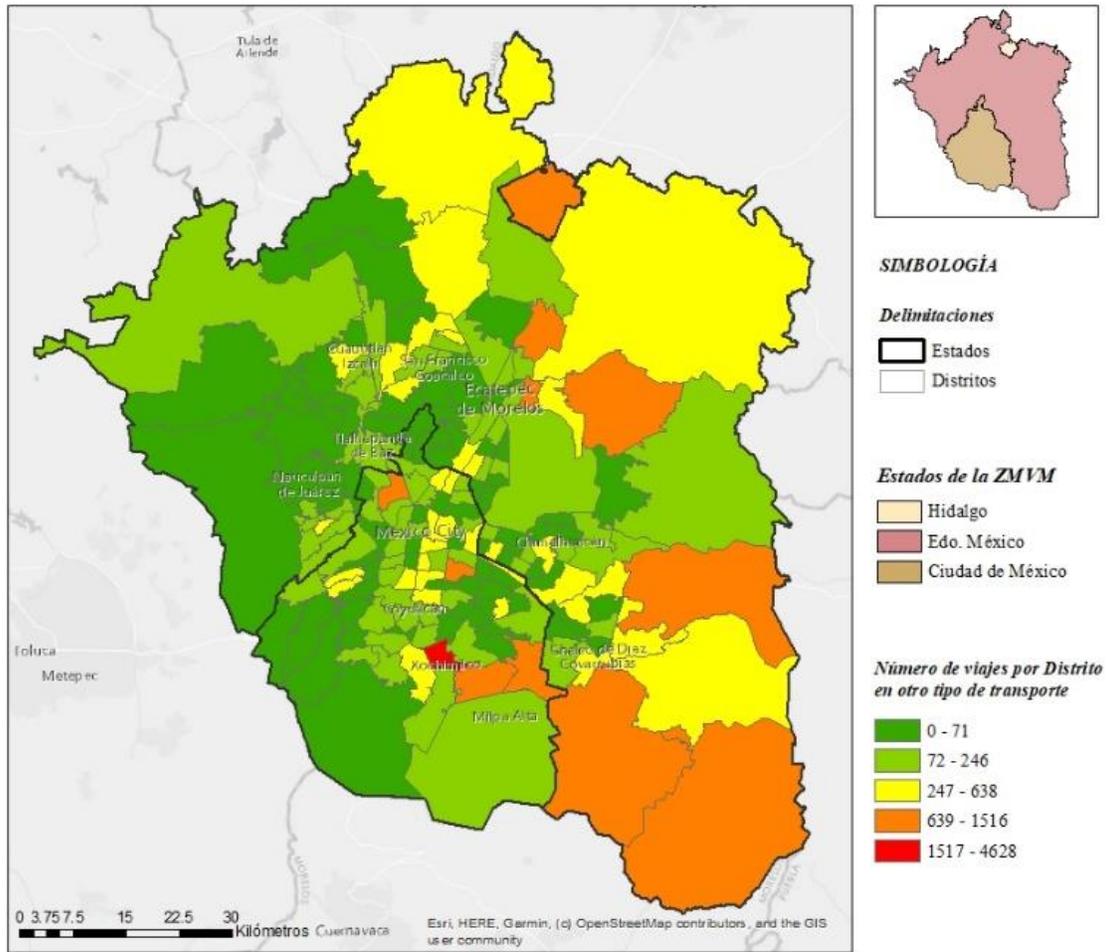
Figure 15. Number of trips per district made in mixed transport



Source: Own elaboration with data from Inegi Origin-Destination Survey (2020)

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Figure 16. Number of trips per district made in other types of transportation



Source: Own elaboration with data from Inegi Origin-Destination Survey (2020)

Trips made by public transportation are scarce in almost all municipalities of the State of Mexico, which could reflect a deficiency in the supply of this infrastructure. This is evidenced by the fact that these areas have a greater number of trips classified as other types of transportation.

Table 7. Trips₁ (2017) by stratum and means of transportation

Stratum	Type of transport	Total trips 2017	% of total trips 2017
1 Bass		313,775	0.91%
	Public	136,125	43.38%
	Private	22,479	7.16%
	Mixed ₂	736	0.23%
	Bicycle	8,386	2.67%
	Walk	143,367	45.69%
	Other	2,682	0.85%
2 Medium Low		18,844,084	54.52%
	Public	8,663,828	45.98%
	Private	2,420,481	12.84%
	Mixed ₂	86,993	0.46%
	Bicycle	502,157	2.66%
	Walk	7,027,500	37.29%
	Other	143,125	0.76%
3 Medium High		10,771,819	31.16%
	Public	5,085,893	47.21%
	Private	2,255,482	20.94%
	Mixed ₂	66,769	0.62%
	Bicycle	150,204	1.39%
	Walk	3,141,252	29.16%
	Other	72,219	0.67%
4 High		4,635,813	13.41%
	Public	1,495,768	32.27%
	Private	2,133,536	46.02%
	Mixed ₂	38,948	0.84%
	Bicycle	39,625	0.85%
	Walk	838,847	18.09%
	Other	89,089	1.92%
Total trips		34,565,491	100.00%

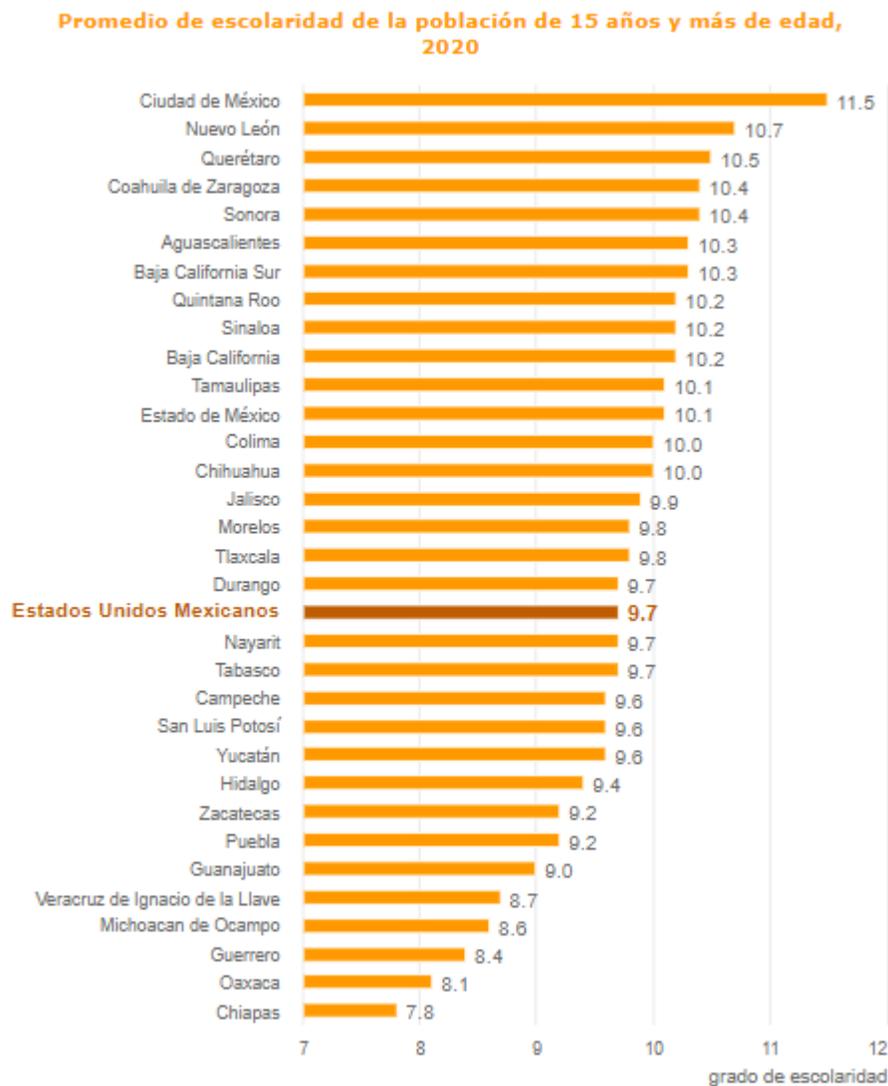
1 Trips: These are transfers made for a single purpose and may consist of one or more sections in the same or different modes of transportation (subway, car, motorcycle, etc.)

2 Mixed: These are trips whose sections were made by private and public means of transport.

Those who travel the most by private transportation are the high level, with 46.2%, although compared to the total by stratum, they occupy third place with 13.41%. The strata that make the most trips are the middle-high, with 31.16%, occupying second place. In this stratum, 29.16% of trips are made on foot and 20.94% by private transportation. The lower middle stratum makes the greatest number of trips, with 54.52%, occupying first place, and they do so mainly by public transportation, with 45.98%, followed by walking, with 37.29%. In this regard, it can be interpreted that, due to the lack of infrastructure, there is a greater participation of the high, medium-high and medium-low levels, since for the lower strata the dynamics of displacement are more complex.

To correlate the *education variable*, the Inegi 2020 Population and Housing Census was used, as shown in the following figure:

Figure 17 . Education level by state



Source: 2020 Population and Housing Census (Inegi, 2021)

Based on the previous figure, it can be stated that Mexico City is the entity with the highest educational level, with an average of 11.5 years, followed by the State of Mexico with 10.1 years and Hidalgo with 9.4 years. Therefore, we do not find a direct indicator that age influences the administrative process of households in Mexico.

Discussion

Agostini and Palmucci (2008) reflect on the relationship between the location of homes and mobility, and affirm that, regardless of the conditions of the home, its location in areas with better accessibility increases its value. This is because more favorable locations have greater access to public goods and generate lower mobility expenses to daily destinations. In this research, the capitalization of homes is determined due to the implementation of a metro line in Santiago. In this sense, Cabrera, Velásquez and Orozco (2015) highlight the importance of mobility as a natural right, and the implications that manifest in the individual by impacting their comprehensive development. Security based on and manifested in regulations is a responsibility of governance and must be noted in public policies.

On the other hand, Fuentes (2008) examines travel times by public and private transportation, land use (including housing), socioeconomic aspects, and land ownership in a comparative analysis using the 1997 Origin-Destination Survey, the 2000 Population and Housing Census, and the 1999 Economic Census through regression models.

The average travel time by public transport and the average travel time to work by private transport were considered as dependent variables, and the *employment/housing ratio*, *manufacturing employment/housing ratio*, *population density* and *land value* as variables independent in the land use category. In addition, the *proportion of the population with low income*, *proportion of owned homes*, and *proportion of rented homes* were included as independent variables in the socioeconomic characteristics category. Based on the above, the author concludes that “travel time increases in neighborhoods with a high proportion of low-income population and with a high percentage of own homes” (Lee, 2005 cited by Fuentes, 2008, p. 56).

The results show that the variables *jobs/housing*, *population density* and *proportion of rented housing* are the ones that offer the greatest explanation for the long times invested in mobility by public transport. In particular, the proportion of rented housing can be related to resource management.



On the other hand, Correa and Edwards (1997) address the issue of resource management and housing location by comparing the expenses incurred by users for different locations in housing projects, evaluating it at five different levels.

Regarding the *education variable*, Meza and Pederzini (2009) investigate schooling in boys and girls from eleven to nineteen years old. Their results indicate that the level of schooling significantly impacts school attendance according to gender, since the female population is the most affected. Furthermore, a relationship is observed between economic capacity and the probability that boys and girls study, which increases at higher levels.

Likewise, in an analysis similar to that described above, Meza and Pederzini (2009) find a relationship between economic administration and schooling. In fact, it is observed that “mother's education and family income” promote education, unlike what “community economic activity” causes.

Conclusions

Based on the bibliometric analysis, the importance of the variables chosen in this study is highlighted. In this sense, it was found that the United States is the country with the most research, which highlights its direct impact on comprehensive human development.

On the other hand, it should be noted that the main references considered were the data obtained from the National Survey of Household Income and Expenses (ENIGH) of Inegi (2021) and Household Expenses 2020. In this regard, the data show that the Average quarterly total income is \$50,309, earned primarily through work.

For its part, the total quarterly expense is \$47,396, allocated to food and beverages (38%), followed by transportation and communications (19%). However, it is worth noting that due to confinement due to the covid-19 pandemic, a considerable percentage of people were unable to work formally, which served to increase the type of work from home and mixed work, and even for a greater number of family members will contribute financially.

Likewise, it was determined that 11% of spending is allocated to housing and services, while transportation and communications are mainly attributed to the need for mobility from the place of residence to work. Furthermore, if the infrastructure is not sufficient, spending on communication services also increases significantly. In this sense, it is observed that Mexico City, the State of Mexico and Querétaro are the entities that receive the most income, although they spend more than half.

Finally, and based on the Pearson correlation, it was found that the group of individuals that makes the most trips and uses private transportation the most is the high level (.875), followed by the medium-high level in public transportation (.771), while the low-medium (.720) and low (.327) levels mostly walk. This dynamic is due to the lack of infrastructure that forces people to travel long distances to access public transportation, especially in peripheral areas. This results in a direct economic expense for individuals, as well as in time used in these trips. Regarding the type of transport and stratum, it is observed that the lower-middle stratum is the one that uses the bicycle the most (.504) and walks (.720).

Future lines of research

It is recommended to continue analyzing transportation times and costs in detail through comparisons with the data recorded year after year. Likewise, aspects related to educational level, gender and their correlation with income and its distribution should be investigated to seek a deeper understanding of how to plan family spending in relation to income. Furthermore, it is crucial to investigate how the educational level specifically influences household spending management.

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References

- Agostini, C. y Palmucci, G. (2008), Capitalización Heterogénea de un Bien Semipúblico: El Metro de Santiago, *Cuadernos de Economía*, 45, 105-128.
<http://dx.doi.org/10.4067/S0717-68212008000100004>.
- Cabrera-Arana, G., Velásquez-Osorio, N. y Orozco-Arbeláez, A. (2015). Movilidad: aporte para su discusión. *Revista, Facultad Nacional de Salud Pública*, 33(3), 429-34
<https://doi.org/10.17533/udea.rfnsp.v33n3a13>.
- Casado-Izquierdo, J. M. (2008). Estudios sobre movilidad cotidiana en México. *Scripta Nova*, 12. <https://raco.cat/index.php/ScriptaNova/article/view/118845>.
- Casanova, M. A. (2012). La evaluación de competencias básicas. *La Muralla*, 16.
- Correa, F. C., y Edwards, G. (1997). Análisis económico de la localización de viviendas sociales. *Estudios Públicos*, (68), 307-333.
- Cruz-Muñoz, F. e Isunza, G. (2017). Construcción del hábitat en la periferia de la Ciudad de México: estudio de caso en Zumpango. *EURE*, 43(129), 187-207.
<http://dx.doi.org/10.4067/S0250-71612017000200009>.
- Espinal-Ospina, D. (2017). Habitabilidad urbana en ciudades intermedias: caso Manizales, Colombia. *GIGAPP Estudios Working Papers*, 4(60-65), 113-134.
<https://www.gigapp.org/ewp/index.php/GIGAPP-EWP/article/view/46>.
- Fuentes-Flores C. (2008), La Estructura urbana y las diferencias espaciales en el tiempo de traslado del viaje al trabajo en Ciudad Juárez, Chihuahua, *Estudios Demográficos y Urbanos*, 23, I (67), 55-81, <https://doi.org/10.24201/edu.v23i1.1303>.
- Galindo-Pérez, M. C., Pérez-Campuzano, E. y Suárez-Lastra, M. (2020). Movilidad intrarregional en la región Centro de México, 2000-2015. *Investigaciones Geográficas*, (102). <https://doi.org/10.14350/rig.60093>.
- Gutiérrez, A. (2012). ¿Qué es la movilidad? Elementos para (re)construir las definiciones básicas del campo del transporte. *Bitácora Urbano-Territorial*, 21(2), 61-74.
- Hernández-Sampieri, R., Fernández-Collado, C. y Baptista-Lucio, M. (2006). Metodología de la investigación. *McGraw Hill*.
- Instituto del Fondo Nacional de la Vivienda para los Trabajadores (INFONAVIT) (2015). *Atlas del abandono de vivienda*. Instituto del Fondo Nacional para la Vivienda de los Trabajadores.

- Instituto Nacional de Estadística y Geografía (Inegi) (2017). *Encuesta Origen Destino en Hogares de la Zona Metropolitana del Valle de México*. Instituto Nacional de Estadística y Geografía. <https://www.inegi.org.mx/programas/eod/2017/>
- Instituto Nacional de Estadística y Geografía (Inegi) (2020). *Ingreso corriente para los municipios de México (ICMM) 2020*.
- Instituto Nacional de Estadística y Geografía (Inegi) (2021). *Encuesta Nacional de Ingresos y Gastos de los Hogares (Enigh.2020)*.
- Isunza, G. (2010). Política de vivienda y movilidad residencial en la Ciudad de México. *Estudios Demográficos y Urbanos*, 25(2), 277-316. <https://doi.org/10.24201/edu.v25i2.1352>
- Ley General de Educación (2019). *Secretaría de Gobernación*. México. <https://dof.gob.mx/>.
Obtenido de Ley General de Educación: <https://dof.gob.mx/>
- Lizárraga, C. (2006). Movilidad urbana sostenible: un reto para las ciudades del siglo XXI. *Economía, Sociedad y Territorio*, 6(22), 283-321.
- Meza-González L. y Pederzini-Villarreal, C. (2009), Migración, internacional y escolaridad como medios alternativos de movilidad social: El Caso de México, *Estudios Económicos*, El Colegio de México, 163-206.
- Moreno-Olmos, S. H. (2008). La habitabilidad urbana como condición de calidad de vida. *Palapa*, 3(2), 47-54.
- Oliveira, O. D. (1999). Familia, ingreso y desarrollo/Políticas económicas, arreglos familiares y perceptores de ingresos. *Demos*, (12).
DOI: <https://doi.org/10.22201/%256741>
- Pérez-Barragán, M. (coord.) (2020). *Accesibilidad, habitabilidad e inclusión en el entorno urbano-arquitectónico*. UASLP.
- Salinas, L. A. y Pardo, A. M. (2020). Política de vivienda y habitabilidad en la periferia de la Zona Metropolitana del Valle de México. *Revista de Geografía Norte Grande*, (76), 51-69. <http://dx.doi.org/10.4067/S0718-34022020000200051>
- Ziccardi, A. y González, A. (comps) (2015). *Habitabilidad y política de vivienda en México*. Universidad Nacional Autónoma de México.
- Ziccardi, A. (2016). *Cómo viven los mexicanos. Análisis regional de las condiciones de habitabilidad de la vivienda*. Universidad Nacional Autónoma de México.

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