Volume 9, Issue 23 – January – June – 2023

ISSN 2414-4835

Journal of Social Researches

ECORFAN®

Journal of Social Researches, Volume 9, Issue 23, June 2023, is a journal edited sixmonthly by ECORFAN-Nicaragua. Southwest Avenue, San Sebastian – LeónNicaragua. WEB: www.ecorfan.org/republicofnicaragua, journal@ecorfan.org. Editor in Chief: VALLE-CORNAVACA, Ana Lorena. PhD, ISSN On line: 2414-4835. Responsible for the latest update of this number ECORFAN Computer Unit. ESCAMILLA-BOUCHÁN, Imelda. PhD, LUNA-SOTO, Vladimir. PhD, last updated June 30, 2023.

Journal of Social Researches

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The works must be unpublished and refer to topics of history, economics, geography, tourism, history, anthropology and sociology and other topics related to Social Sciences.

Presentation of Content

In the fist article we present *Conflicts in the land of tequila: a geographical approach to the socio-spatial challenges in Guadalajara*, by NIÑO-GUTIÉRREZ, Naú Silverio, MACÍAS-HUERTA, María del Carmen, ANDRADE-GARCÍA, María Dolores and AMARO-LÓPEZ, José Antonio, with adscription in the Universidad Autónoma de Guerrero and Universidad de Guadalajara, in the next article we present *Automatic identification of misogynistic sentiments on social networks*, by MORALES-CASTRO, José Carmen, HERNÁNDEZ-RAYAS, Angelica, RUÍZ-PINALES, José and GUZMÁN-CABRERA, Rafael, with adscription in the Universidad de Guanajuato, in the next article we present *Statistical analysis of psychological and physiological stress in public transport drivers*, by HERNÁNDEZ-ANGEL, Francisca, MEDINA-ALVAREZ, Juana Elizabeth and MENDEZ-PEDRAZA, Francisco Javier, with adscription in the Universidad Politécnica de Altamira, in the next article we present *Perception of academic training and job placement of graduates of the nursing degree UAM-X*, by CONTRERAS-GARFIAS, María Elena, GARCÍA-JIMÉNEZ, María Alberta, RIVERO-RODRÍGUEZ Luis Fernando and VERDE-FLOTA, Elsy Elizabeth, with adscription in the Universidad Autónoma Metropolitana Xochimilco.

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June 2023, Vol.9 No.23 1-9

Conflicts in the land of tequila: a geographical approach to the socio-spatial challenges in Guadalajara

Conflictos en la tierra del tequila: un enfoque geográfico de los desafíos socioespaciales en Guadalajara

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DOI: 10.35429/JSR.2023.23.9.1.9 Received January 10, 2023; Accepted June 30, 2023

Abstract

The global population faces a series of emerging conflicts related to marginalization and insecurity. The Mexican population also presents these signs as a result of the growing economic inequality that exacerbates social tensions whose evidence is the increase in violence and crime. Hence, the objective was to synthesize the problems presented by the Guadalajara Metropolitan Area (ZMG) between 2010 and 2019 regarding the degree of marginalization of its population from the point of view of geography. Methodology considered office work for the selection of publication that address the topics: indicators of marginalization and insecurity, complemented by field work such as the three exploratory tours in the area during 2017-2019. The results were: a) map of the ZMG and its conurbation in 2019; b) distribution of marginalization in the ZMG related to the type of road in 2019 and c) the degree of marginalization in relation to the location of the central municipalities and those outside the study area. Therefore, the conclusions were: 1) between 2010 and 2019 the standard of living of the ZMG population decreased since the marginalization index went from being mostly low to medium and 2) the public policies implemented between 2010-2019 failed to break with the delays and insecurity among the population residing in the ZMG, a trend that was consolidated at the national level.

Social exclusion, Human geography, Population marginalization, Policies, Vulnerability

Resumen

La población global afronta una serie de conflictos emergentes relacionados con la marginación y la inseguridad. La población mexicana también presenta dichos signos como resultado de la creciente desigualdad económica que exacerba las tensiones sociales cuyas evidencias son el aumento de la violencia y los delitos. De ahí que, el objetivo fue sintetizar la problemática que presentó la Zona Metropolitana de Guadalajara (ZMG) entre 2010 y 2019 respecto del grado de marginación de su población desde el punto de vista de la geografía. Metodología consideró trabajo de gabinete para la selección de las publicaciones que abordan los tópicos: indicadores de marginación e inseguridad, complementado con trabajo de campo como los tres recorridos exploratorios en el área durante 2017-2019. Los resultados fueron: a) mapa de la ZMG y su conurbación al año 2019; b) distribución de la marginación en la ZMG relacionado con el tipo de vialidad al año 2019 y c) el grado de marginación en relación con la ubicación de los municipios centrales y exteriores al área en estudio. Por tanto, las conclusiones fueron: 1) Entre 2010 al 2019 el nivel de vida de la población de ZMG disminuyó ya que el índice de marginación pasó de ser mayormente bajo a medio y 2) las políticas públicas implementadas entre 2010-2019 no lograron romper con los rezagos y la inseguridad entre la población residente en la ZMG, tendencia que se consolidó a nivel nacional.

Exclusión social, Geografía humana, Marginación poblacional, Políticas, Vulnerabilidad

Citation: NIÑO-GUTIÉRREZ, Naú Silverio, MACÍAS-HUERTA, María del Carmen, ANDRADE-GARCÍA, María Dolores and AMARO-LÓPEZ, José Antonio. Conflicts in the land of tequila: a geographical approach to the socio-spatial challenges in Guadalajara. Journal of Social Researches. 2023. 9-23:1-9.

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Introduction

All over the world, conflict is a situation that can generate problems and difficulties between two or more parties with dissimilar and opposing positions (definicionabc, 2018). To resolve these disputes, "negotiation, mediation and arbitration are relevant forms of conflict management... conflicts are divided into latent and manifest conflicts, with marginalisation and insecurity being examples of these" (Ahumada, 2002:10).

The growing inequality in Latin America due to diverse socio-economic and environmental situations has recently been observed to generate an increase in violence and crime (Paredes, 2023). The slums of Guadalajara and Acapulco (Niño-Gutiérrez, 2022) as well as peripheral communities are particularly affected, with high rates of poverty, lack of access to basic services and limited employment opportunities with low wages. Added to this is the presence of criminal groups that have established illegal control in certain areas, leading to a climate of fear and vulnerability among the inhabitants of Latin American cities (Segrelles-Serrano & Niño-Castillo, 2022 and Niño et al., 2020).

Guadalajara, Mexico is the second largest city where it unfortunately currently faces a number of emerging conflicts related to marginalisation and insecurity. The lack of effective policies to address these problems has led to a sense of hopelessness and frustration among the population that clamours for immediate and sustainable solutions (Acevedo, 2023).

In this essay, the characteristics of marginalisation and insecurity in the Guadalajara Metropolitan Area (ZMG) will be presented. This topic is framed within human geography, which is based on social theory to explain phenomena and facts related to well-being and marginalisation. Since 2000, the geographical sciences have analysed the concept of social justice in greater depth in what has been called "moral geographies" (Smith, 1973 and 1980). According to Smith, the valuation of human well-being is expressed through spatial indices of well-being that are useful for suggesting income distribution options among the population.

In 2010, Soja proposed the construction of a theory of spatial justice, where he explained that contemporary urban dynamics are linked to global economic restructuring and characterised by increasing urban poverty and socio-spatial inequality. The production of spatial injustice occurs at local, regional and national levels, and is related to endogenous development and geographical discrimination (Soja, 2010). Spatial justice is the pursuit of economic, social and cultural rights, and environmental justice is a more spatial and restricted notion that is embedded in social justice theory.

Methodology

The methodological development has two implicit phases: the first, through desk research, involved the reading and analysis of the published literature, as well as the following activities: 1) Consultation of literature that is specialised in topics such as social geography indicators (Olivera, 1997), justice in contemporary human geography (Santana, 2012) and sustainability (Niño-Gutiérrez, 2021); 2) Material complemented by promotional literature and research; 3) Search in different electronic libraries and statistical databases of the National Population Council (CONAPO) and the National Institute of Geographic Statistics and Informatics (INEGI) and 4) Drafting of the text. Meanwhile, the second phase comprised fieldwork that was carried out in September 2017, August 2018 and September 2019, where we had the opportunity to take photographs and observe in situ.

The test was carried out from a mixed geographical approach as it included the use of qualitative and quantitative techniques in an analytical and cross-sectional manner with emphasis on Guadalajara, Jalisco. The socio-spatial segregation method was applied to carry out the corresponding territorial mapping and analysis, using the five classification ranges established by CONAPO to determine the degree of marginalisation: very high, high, medium, low and very low, according to the group where the value of the principal component is located. It should be clarified that this is an inversely proportional indicator, thus Very High means the most difficult socio-economic condition, while Very Low will have the best socio-economic, social and service accessibility conditions where even insecurity is low (Figure 1).

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Figure 1 Site with very low marginalization index
Source: Macías, 2019.

Figure 2 Site with medium marginalization index
Source: Macías, 2019

Theoretical framework, the theory on which the research work is based is the complexity of Morín, where he states that in order to find a solution to the problem it is through the analysis of various social, economic and environmental factors (Morín, 1991). The method of the work was based on the approach of social geography, through which it is possible to carry out an integral analysis of local socio-economic indicators (Niño-Gutiérrez, 2021).

Conceptual framework, the study of marginalisation, is a key concept of marginality, as outlined by Camberos and Bracamontes in 2012. This concept is the direct conceptual antecedent of marginalisation, which was defined in the 1950s as a small segment of the population living on the margins of the fruits of economic development compared to the benefits received by the majority of the population.

For the United Nations Development Programme (UNDP) and the World Bank, marginalisation is defined as a situation in which a set of individuals and families living within a locality or municipality, whether urban (Figure 2) or rural, do not satisfy what are considered basic needs. This situation of marginalisation is also characterised by exclusion from access to consumption of goods and services, as well as from participation in political affairs.

From an economic perspective, marginalisation refers to the population that has been left out of the benefits of development and the wealth generated, but has not necessarily been left out of the generation of that wealth, nor of the conditions that make it possible. As Ortega (2003) explains, marginalisation is a structural phenomenon that arises from a historical pattern and manifests itself as persistent inequality in the participation of citizens and social groups in the development process and the enjoyment of its benefits (Figure 3).

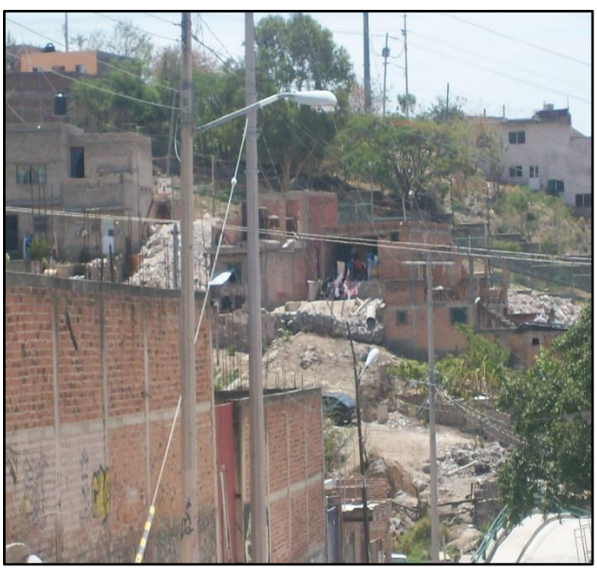

Figure 3 Site with very high marginalization index
Source: Macías, 2019

Geography, for its part, defines marginalisation as a differentiated condition that makes it impossible to access and enjoy, on equal terms, the benefits and achievements attained by the country or entity, which generates forms and intensities of exclusion associated with class, territory and ethnic condition.

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In short, marginalisation is characterised by deprivation or difficulty in satisfying all the basic and secondary needs of a social group. It is a structural phenomenon that arises from a historical pattern and manifests itself as persistent inequality in the participation of citizens and social groups in the development process and the enjoyment of its benefits.

This article addresses the issue of marginalisation in the metropolitan area of Guadalajara (ZMG), in the state of Jalisco, Mexico. Marginalisation is defined as the situation of those individuals and families within a locality or municipality that do not satisfy a set of needs considered essential or basic. This concept is translated into nine specific deprivations that are measured in percentages.

Results

Camberos and Bracamontes (2007) define these deprivations as the illiterate population aged 15 years and over (ANALF); population aged 15 years and over without completed primary education (SINPRI); dwellings without availability of drainage or toilet (SINEXDR); dwellings without availability of electricity (SINELEC); dwellings without piped water (SINAG); dwellings with one and two rooms (HACIN); percentage of dwellings with dirt floors (PISOTI); population in localities of less than 5,000 and population earning up to two minimum wages in 1970.

The state of Jalisco had a total population of 8,110,943 inhabitants on 1 July 2017, according to projections by the National Population Council (CONAPO) and the Institute of Information, Statistics and Geography (IIEG, 2108). The ZMG is located in the central part of the state and is formed by the conurbation of six municipalities: Guadalajara, El Salto, Tlajomulco de Zúñiga, Tlaquepaque, Tonalá and Zapopan (Figure 4), the most populated being Guadalajara with about 1.49 million inhabitants.

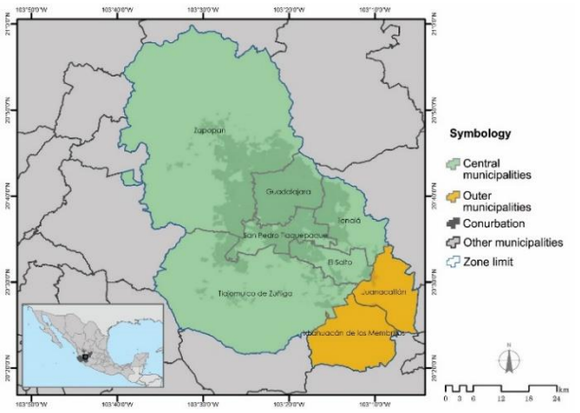

Figure 4 Guadalajara Metropolitan Area and its conurbation
Source: National Institute of Statistics Geography and Informatics, 2015 and Open Data of the State of Jalisco, 2019

In 2010, the total population of the ZMG was 4 380 600 inhabitants spread over six municipalities and a total area of 2 149.95 km², giving an average density of 2.1 inhabitants per m2 . The population of the ZMG in 2015 was 4 865 122 and in 2017 4 980 756 people (IIEG, 2018). In terms of population density, Guadalajara is the municipality with the highest number of inhabitants per square metre, reaching 7.9 inhabitants per square metre due to its single locality. In contrast, the municipality of Tlajomulco de Zúñiga, the most recent municipality to join the ZMG, has a population density of 0.6 inhabitants per square kilometre, which is explained by its territorial extension and the presence of a large rural area where several unprocessed agricultural products are grown and consumed by the inhabitants of the area under study (Contreras & Medina, 2021). Similarly, the municipality of Zapopan, with a population of more than 1.2 million inhabitants, has a density of 1.4 inhab/km2+5 due to its rural area and territorial extension (Table 1)

Municipality	Population	Area (km²)	Population density (pop/m²)
Guadalajara	1 495 189	187.91	7.9
Zapopan	1 243 756	893.15	1.4
Tlaquepaque	608 114	270.88	2.2
Tonalá	478 689	119.58	4.0
Tlajomulco de Zúñiga	416 626	636.93	0.6
El Salto	138 226	41.5	3.3
Total Guadalajara Metropolitan Area	4 380 600	2 149.95	2.1

Table 1 Breakdown of data for the Metropolitan Area of Guadalajara, 2010
Source: own elaboration with data from Census Information Consultation System (SCINCE), 2010

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In recent years, the concentration of migrant populations from the countryside to the city has led to an increase in marginalisation figures in various areas of Mexico. This phenomenon has generated a situation in which basic municipal services are hardly sufficient for all inhabitants, which translates into an increase in marginalisation and insecurity.

To assess the degree of marginalisation in different areas, various dimensions have been used, such as education, housing conditions and access to health services. In this sense, areas of the city of Guadalajara and its surroundings have been identified with different degrees of marginalisation, according to the territorial distribution of the population (Martínez Lazcano, 2023).

In 2000, marginalisation presented a diverse territorial distribution in the Guadalajara Metropolitan Zone (ZMG), although the central and western part, which corresponded to the municipalities of Guadalajara and Zapopan, had a very low marginalisation rank. In the periphery, and mainly in the southeast zone (Tonalá, Tlaquepaque and El Salto), there were Basic Geo-Statistical Areas (AGEBs) with a Low and Medium marginalisation rank. In these areas there were mainly irregular settlements that had been established next to already settled localities (Table 2).

Ranges	Interval *Lower*	Limits *Upper*
Very low	-1.5678	-0.22079
Low	-0.2208	1.12621
Half	1.1262	2.47322
High	2.4732	3.82020
Very High	3.8202	5.16723

Table 2 Ranges of the marginalization index
Source: own elaboration with Census Information Consultation System (SCINCE), 2000 and 2010

In the municipality of Guadalajara, most of the AGEBs had a Very Low degree of marginalisation, as did Zapopan. However, in the southwestern part of Zapopan and in the area bordering the Barranca del Río Santiago (Comisión Nacional del Agua (CONAGUA), 2023 and de la Torre, Bartorila & Alayón, 2022), once crystal clear waters where jackal shrimp were found (Peña et al., 2022), there were areas with Medium rank. Tlaquepaque presented areas within the Low range in its oldest part, while in the periphery it presented medium ranges.

The most marginalised municipalities were Tonalá, Tlajomulco and El Salto. Tonalá had medium to high levels of marginalisation, mainly towards the southeast, while El Salto had a low to medium range. As for Tlajomulco, its areas were in the Low to Medium range, although some of them were still considered rural at that time.

In 2010, the situation changed in a negative direction, as, although a high percentage above the average remained, the indicator of very low level of marginalisation decreased drastically. This was partly due to an increase in the middle class population, indicating that there was no increase in poverty. However, the socio-economic capacity of the majority of the population decreased, as the median index increased from 9.8% to 73.2%.

The present study shows the situation of marginalisation and insecurity in the Guadalajara Metropolitan Area (ZMG). According to Figure 5, the low marginalisation index is found in the west of the ZMG, in the municipalities of Guadalajara and Zapopan, while the medium level is found in the central, northern, southern and eastern portions of the territory. The high level is found in the municipalities of Tlaquepaque and Tlajomulco, and the very high level is found in Tlaquepaque, Tonalá and Tlajomulco, in small areas separated from each other.

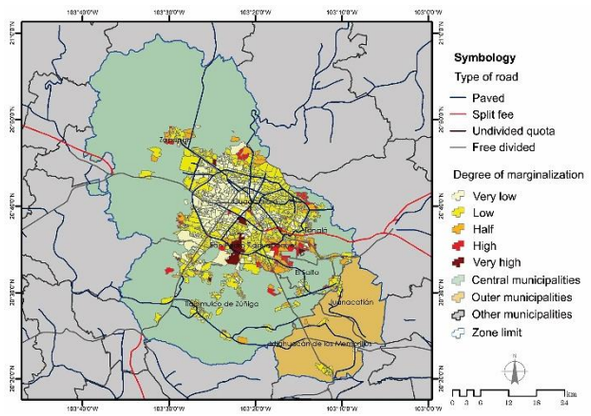

Figure 5 Roads and marginalization in the Guadalajara Metropolitan Area
Source: National Institute of Statistics, Geography and Informatics, 2015 and Open Data of the State of Jalisco, 2019

In Guadalajara, there is a clear trend of low marginalisation in the west and medium marginalisation to the east and south, which represents the general trend of the ZMG. Zapopan, which is located to the west of Guadalajara, also has an area in the low marginalisation range, but towards the periphery it decreases to medium level. Tonalá and Tlaquepaque are located in the east and west, with medium levels in the area adjacent to Guadalajara, and high levels on the borders with El Salto and Tlajomulco (México en cifras, 2023).

In El Salto, thanks to the presence of industries that provide employment, a medium level appears in general, but in Tlajomulco, an eminently rural territory, there are localities recently incorporated into the ZMG, with high and very high levels of marginalisation. This shows areas with rural characteristics and a lack of infrastructure, as well as irregular settlements or low-cost subdivisions, with a migrant population in some cases.

It is important to mention that marginalization and insecurity affect the resident population, entrepreneurs and visitors at infra-local, local, regional, national and global levels. The indicators analysed in this study are quantitative, objective and of an economic and social nature, such as social spending on education, health or pensions, and poverty, including crime. These indicators are interrelated with environmental indicators, such as population with access to clean water, sanitation, deforestation, use of natural resources, percentage of waste recycling, among others.

Marginalisation and insecurity are dynamic phenomena that require indicators on residential satisfaction, health, economic situation, social status (crime, abuse, accessibility and job security), and sustainability, which implies preserving human capital by maintaining public health, air, water and soil quality at a level sufficient to preserve life and human well-being and with social justice.

In 2018, there was an increase in insecurity in the ZMG, and young people have modified their daily habits and are more aware of taking security and protection measures to avoid being victims of crime (Torres, 2018).

The population living in the areas furthest from the centre had the highest levels of marginalisation and insecurity. This fact coincides with the situation in the Guadalajara Metropolitan Area (ZMG), where some neighbourhoods, such as Tlaquepaque, had high and very high levels of marginalisation, where in March 2018, the Navy intervened with the Tlaquepaque municipal police after a list with the names of some Tlaquepaque police officers was found next to the bodies of eight people (Guerrero, 2018:2).

In the ZMG, on 7 November 2017, the 5 000 000th inhabitant was born, according to the Instituto de Información Estadística y Geográfica (IIEG) in 2018. In the last seven years, the total population of the ZMG increased by more than 482,000 people, representing 61.4% of the state population. This means that six out of every 10 Jalisco residents live in one of the six municipalities of the ZMG. In 2017, Guadalajara had 1 521 741 inhabitants, Zapopan 1 371 300, Tlaquepaque 667 257, Tlajomulco 568 683, Tonalá 547 146 and El Salto 162 270. The ZMG municipality with the highest proportion of women is Guadalajara, with 791 732 (52.0%) of its population, while Zapopan has 51.2% (702 405), according to IIEG data in 2018 (Figure 6).

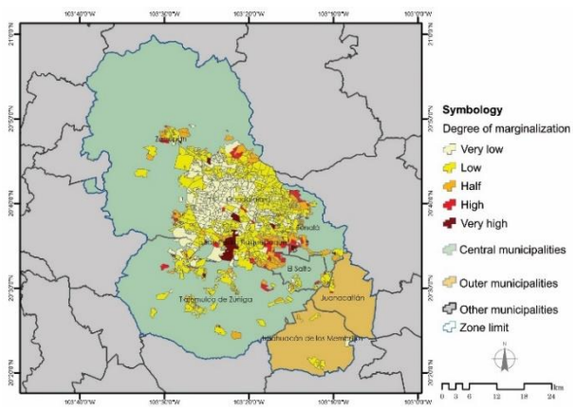

Figure 6 Marginalization in the central and outer municipalities of the Guadalajara Metropolitan Area
Source: National Institute of Statistics, Geography and Informatics, 2015 and Open Data of the State of Jalisco, 2019

In sum, the ZMG is shaped as a vibrant and growing city in Mexico, but it faces various socio-spatial challenges that affect the quality of life of its inhabitants and the sustainable development of the region.

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In this context, the central thesis is that urban inequality and segregation is reflected in the unequal distribution of economic resources and basic municipal services. Thus, there are places within the ZMG with high levels of marginalisation and poverty, while other areas enjoy quality infrastructure and access to all public services. Socio-spatial segregation affects social cohesion and limits development opportunities for certain population groups, generating significant economic and educational gaps.

The situation in Guadalajara is an urgent call to implement comprehensive strategies that address both the underlying causes of marginalisation and insecurity in order to improve the quality of life of all citizens and establish peace and harmony in the community.

Conclusions

Following the study of marginalisation indices in the ZMG, there is a relationship between marginalisation and the peripheral location of the colonias in the municipality of Tlaquepaque with a High and Very High marginalisation index.

In the last ten years, the general population has decreased its standard of living in the ZMG, as the marginalisation index has gone from being mostly low to medium. Although the middle class is increasing, the upper middle class has decreased, showing a growing socio-economic inequality. Public policies implemented so far have failed to break the backwardness and insecurity among the ZMG's resident population, a trend that has recently been accentuated at the national level.

This situation reflects the socio-economic crisis in the region and shows a tendency towards a decrease not only in living conditions, but also in the population's purchasing power, which can lead to problems with bank loans, mortgages and bank cards, among others. Therefore, both micro and macro public policies must take into account this social situation in order to develop objectives based on reality, looking for the factors that affect each place in order to make them effective and with a real socio-economic and territorial impact.

In this sense, it is essential to design comprehensive and sustainable strategies that consider education, health, housing, transport and employment, among other aspects. The implementation of public policies that promote investment and local economic development, social inclusion and the protection of vulnerable groups are necessary actions to overcome the socio-economic crisis in the ZMG and to build a more prosperous and just future for all its inhabitants.

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ISSN: 2414-4835

Article **Journal of Social Researches**
June 2023, Vol.9 No.23 10-18

Automatic identification of misogynistic sentiments on social networks

Identificación automática de sentimientos misóginos en redes sociales

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DOI: 10.35429/JSR.2023.23.9.10.18 Received January 15, 2023; Accepted June 30, 2023

Abstract

The number of social media users is constantly growing. Automatic sentiment analysis in unstructured text using artificial intelligence is a tool that allows organizations to identify areas for improvement based on users' opinions. Natural language processing enables computational treatment of these opinions through emotion analysis and polarity identification in texts. This work focuses on the automatic identification of misogyny in unstructured texts using different classification scenarios and machine learning methods, as well as the use of meta classifiers, with the aim of identifying the pre-processing and processing techniques that lead to the best performance in this task. The results obtained show the effectiveness of automatic sentiment analysis tools on Twitter and its importance in better understanding complex social phenomena.

Sentiment analysis, Misogyny, Machine learning

Resumen

El número de usuarios en redes sociales crece día a día. El análisis automático de sentimientos en textos no estructurados utilizando inteligencia artificial es una herramienta ya que permite identificar áreas de mejora en organizaciones a partir de las opiniones de los usuarios. El procesamiento del lenguaje natural permite el tratamiento computacional de estas opiniones a través del análisis de emociones y la identificación de polaridad en textos. Este trabajo se enfoca en la identificación automática de misoginia en textos no estructurados utilizando diferentes escenarios de clasificación y métodos de aprendizaje automático, así como del uso de meta clasificadores, con la finalidad de identificar las técnicas de preprocesamiento y procesamiento que permiten obtener el mejor desempeño en esta tarea. Los resultados obtenidos muestran la eficacia de las herramientas automáticas para el análisis de sentimientos en Twitter y su importancia para comprender mejor los fenómenos sociales complejos.

Análisis de sentimientos, Misoginia, Aprendizaje automático

Citation: MORALES-CASTRO, José Carmen, HERNÁNDEZ-RAYAS, Angelica, RUÍZ-PINALES, José and GUZMÁN-CABRERA, Rafael. Automatic identification of misogynistic sentiments on social networks. Journal of Social Researches. 2023. 9-23:10-18.

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Introduction

The mistreatment that women suffer on social networks has serious consequences for their identity, sexuality and social relations. Misogyny is a growing issue on social networks, and in Mexico, there is a high rate of femicides and even 22,482 murders of women have been registered between 2009 and 2019 (Cerva Cerna, 2020). Following this type of online content is important to prevent sexual crimes, as a relationship has been shown between the rate of rape and the amount of messages with misogynistic language.

In (Vaquero & Luna, 2023) they explore how freedom of expression affects democracy and other human rights and how different cultures and societies interpret and apply it. New technologies have significantly changed the way we interact and social networks are an important part of young people's lives. The emotions expressed in tweets are related to different types of feelings and their polarity, which can be used to measure emotions in a sentence.

Nowadays, social networks such as Twitter are considered as spaces where users voluntarily and spontaneously post information, which represents an emerging sector in the context of big data. An example of this is represented by (Aravena Guerrero, 2023) where the authors focus on rigorously examining the role played by social networks, in particular Twitter, in the development of Chile's constituent process. Their analysis concentrates on the various feminist campaigns that took advantage of the use of hashtags to make visible their demands and struggles within the framework of this undertaking, as well as their relevance in the process of inclusion and representation of women in the country's new Constitution. Sentiment analysis on Twitter is a valuable tool for companies as it allows them to identify areas for improvement in their organisation based on the opinions of users where manually classifying all comments can be an exhaustive task, so it is essential to have automatic tools to perform sentiment analysis (Isasi & Juanatey, 2016).

The main objective of this analysis is to create tools that can extract subjective information from natural language texts and create actionable knowledge that can be used by decision-making systems to process in real time the large amount of texts that are generated in social networks, which is a fundamental part of making informed decisions and improving the performance of an organisation.

In this context, Natural Language Processing is responsible for the computational processing of these opinions through Emotion Analysis and Polarity Classification in texts; moreover, feelings can be identified in short sentences such as sadness, happiness, love or fear. This work focuses on the automatic identification of misogyny in unstructured texts using different classification scenarios and machine learning methods in order to identify the preprocessing and processing techniques that allow obtaining the best performance in this task.

The results obtained show the effectiveness of automatic tools for sentiment analysis on Twitter and their importance to better understand complex social phenomena.

Related work

The work by (Pamungkas, Cignarella, Basile, & Patti, 2018) proposes a strategy based on a multilingual hate lexicon and natural language processing techniques to automatically identify misogyny in English and Italian tweets using the Evalita 2018 database. The lexicon was constructed from offensive and sexist words and expressions in several languages, and was used to detect tweets containing misogyny in both languages. The Evalita 2018 dataset presented various types of misogyny and non-offensive texts, which presented a challenge for the authors. Overall, the results obtained in terms of precision, recall and F-score were good. In particular, a precision of 0.766, a recall of 0.666 and an F1-score of 0.713 were achieved. These results suggest that the multilingual hate lexicon approach is a promising tool for identifying misogyny in tweets.

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In (Manuela et al., 2020), the authors formed the HaSpeeDe 2 group, which participated in the task of detecting hate speech in Italian texts. To do so, they employed a neural network-based technique that included a pre-trained BERT language model and a convolutional neural network-based classification model. They also used pre-processing techniques to improve model performance. Evalita 2020 provided a challenging dataset, containing various types of hate speech and non-offensive texts. Despite this, HaSpeeDe 2 achieved remarkable results in terms of accuracy, recall and F-score, outperforming several other participants in the task. Specifically, they obtained an accuracy of 0.873, a recall of 0.848 and an F1-score of 0.860. These results suggest that the approach used by HaSpeeDe 2 is effective and accurate for the detection of hate speech in texts The authors employed a deep learning-oriented strategy using a convolutional neural network (CNN) and a pre-trained language model called GloVe.

They also used pre-processing techniques to improve the model's performance. The results obtained by the authors were outstanding in terms of accuracy, recall and F1-score, reaching an accuracy of 0.803, a recall of 0.773 and an F1-score of 0.787. Thus, the effectiveness of deep learning for the detection of offensive tweets in English was demonstrated. In this work, the authors focused on detecting offensive tweets directed at women and immigrants in English. To do so, they used a technique based on convolutional neural networks (CNNs) and a pre-trained language model called Word2Vec. In addition, they applied preprocessing techniques to improve the model's performance. The results obtained were an accuracy of 0.786, a recall of 0.773 and an F-score of 0.780. Overall, the CNN-based approach proved to be an effective tool for the detection of offensive tweets targeting women and immigrants in English (Apidianaki et al., 2018). Moreover, the authors used an approach based on deep learning methods, using a convolutional neural network (CNN) architecture and a pre-trained language model called GloVe. In addition, they used character n-gram features and preprocessing techniques to improve the model's performance, achieving an accuracy of 0.767, a recall of 0.712 and an F1-score of 0.738.

In (HaCohen-Kerner et al., 2019), a deep learning strategy for detecting hateful emotionally charged tweets, also called haters, is presented in the framework of SemEval-2019Task 5. The proposed approach is based on the use of bidirectional convolutional neural networks and several preprocessing and post-processing techniques to improve model performance. Experimental results indicate that the proposed approach outperforms other state-of-the-art approaches, achieving an F1 score of 0.743 on subtask A and 0.618 on subtask B on the test data set.

Another approach used for sentiment analysis review is Semantic Orientation, which is concerned with extracting opinions. In a study conducted by the authors in (Chaovalit & Zhou, 2005), it is noted that the semantic orientation of a word can be positive when used in praise, or negative when used in criticism. This learning technique does not necessarily require labelled instances of training, which means that it is not supervised to carry out the learning process. Authors such as those mentioned in (Brooke, Tofiloski, & Taboada, 2009) have addressed the adaptation of the semantic targeting system to perform sentiment analysis in a new language. For this purpose, they have built classifiers based on Support Vector Machines (SVM), taking into account the approach used by machine learning of this text classifier. It has been shown that the classifiers can be trained on any language, and for this, tests have been carried out with cross-validation using a classifier based on the SVM learning method, built using sequential minimum optimisation algorithms. It is worth noting that this type of unsupervised learning uses various lexical rules in sentiment classification.

In (Go, Bhayani, & Huang, 2009), machine learning algorithms, such as Naive Bayes, maximum entropy and SVM, are employed, which have been shown to have higher accuracy when trained on data containing emoticons. To train these algorithms, emoticons were taken as noisy labels, for example, a tweet that includes:)" indicates a positive sentiment, while":("indicates a negative sentiment. Subsequently, emoticons are removed from the training data, as their inclusion can have a negative effect on the accuracies/results of the maximum entropy and SVM classifiers, although this effect is smaller in the case of the Naive Bayes classifier.

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This is due to the inequality in the arithmetic models and the aspect weight selection of such machine learning methods. As for the feature space, unigrams are used.

However, the use of automatic processing techniques in unstructured text is not limited exclusively to polarity identification. In a recent study (Benítez Andrades, 2021), various data mining techniques were applied to detect possible eating disorders in users of the social network Twitter, through the use of a tool called T-Hoarder. This tool allows the selection of tweets related to specific keywords or a specific user, using Twitter's streaming API. Text mining and natural language processing techniques were then employed to generate predictive models, using different supervised machine learning techniques such as random forests, neural networks and the Bidirectional Long Short-Term Memory model. These models were able to classify tweets into various categories, such as those belonging to people with eating disorders, informative or opinion tweets, and tweets with scientific or non-scientific content. The BERT model achieved an accuracy of 87.5%.

Finally, in a recent study carried out by (Vera Lagos, 2021), several preprocessing techniques were implemented in a corpus of misogynistic opinions in Spanish using tools and libraries such as Freeling, NLTK and Spaceling, in order to train a classifier to determine whether or not a tweet had misogynistic content. To do so, the author trained four models with 21 different corpus sets generated using various preprocessing techniques. Of the 20 ensembles that showed an accuracy of over 75%, the best result was obtained using artificial neural networks with bigrams, with an accuracy of 82.59% for the detection of misogyny.

Methodology

In the proposed methodology, we started by reviewing related work to identify the different types of classifiers, methodologies and evaluation metrics used in the task. This allowed a comparison to be made and a competitive and efficient proposal to be developed. We then proceeded to select a database and perform a pre-processing of the data, for which some of the strategies found in the state of the art were implemented. Figure 1 shows the methodology proposed for the elaboration of the research work.

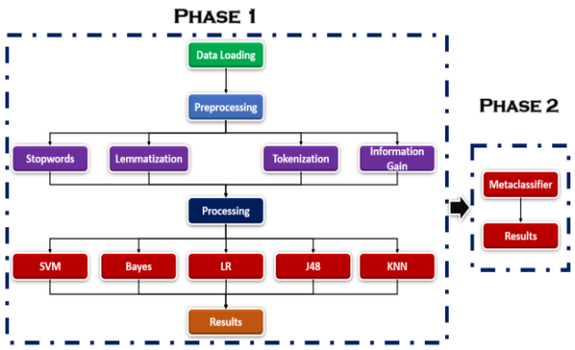

Figure 1 Methodology implemented in the present work

In the methodology used, the first step was the acquisition of the databases for the experiments. In this work, the dataset known as Evalita was used, which consists of tweets from accounts previously identified as misogynistic. The authors collected a total of 10,000 tweets in English, from which 4,000 were selected for the final training dataset and 1,000 for the test datasets. The authors of the database relied on two main features for its construction: first, they downloaded messages containing relevant offensive language in English, using insults as keywords. Secondly, they monitored the profiles of potential victims of misogyny.

Once the corpus is available, the next step is preprocessing. In this stage, a series of steps are carried out to ensure that all tweets have a uniform structure and can be processed efficiently. Five steps are used for this purpose:

1. Elimination of stopwords or empty words. These words have no meaning on their own and are usually articles, prepositions, conjunctions, pronouns, emoticons, among others (Castro, Cabrera, Pinales, Carrillo, & Priego, 2022).

2. Conversion from uppercase to lowercase, in order to homogenise the corpus.

3. Tweet tokenisation, which consists of the segmentation of the text into sentences or words. The separation is done by tokens, which can be unigrams, bigrams, trigrams or n-grams, depending on the need of the system. In this work, unigrams were used (Sánchez, Cabrera, Carrillo, Castro, & Systems, 2022).

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4. The lemmatisation of the tweet is carried out. This process consists of finding the lemma corresponding to an inflected form of the word (i.e., plural, feminine, conjugated, etc.). The lemma of a word is the entry that would be found in a traditional dictionary.

Information gain (Lei, 2012), which measures how well a particular attribute can separate training examples according to their classification goals. This can be understood as the measure of relevance an attribute has within a dataset. It is important to note that an attribute with a high information gain (greater than zero) will be highly relevant in the dataset. In other words, the information gain indicates how much information a specific characteristic or variable can provide on the final results. It can be calculated using the following expression:

$$IG\ (A,S) = H(S) - \sum_{j=1}^{v} \frac{|S_j|}{|S|} . H(S_j) = H(S) - H(A,S) \qquad (1)$$

Where H(S) is the entropy of the set S, $|S_j|$ is the instance number of an attribute, |S| is the total number of instances of a set S, v is the set of distinct values of an attribute A, H(Sj) is the entropy of the subset of instances for attribute A and H (A, S) is the entropy of an attribute A.

Two classification scenarios were used: Cross-validation, with 10 Folds, and Training and Test Sets. Learning methods were used in both classification scenarios to classify comments according to their corresponding label. The learning methods used were:

- SVM, which are based on theoretical learning theory with roots in statistical learning theory. This method maps documents into a high-dimensional attribute space and attempts to learn the hyperplanes of a maximum margin between the two categories of documents. It is used in both classification and regression, and consists of a training phase and a problem-solving phase. This method can be compared to a "black box" that provides an answer (output) to a set problem (input) (Cherkassky & Ma, 2004).
- Naive Bayes (NB) is used to calculate the probability of an event based on available information, based on additional theorems and assumptions. This approach focuses on likelihood probabilities, which represent the probability of observing value X, given class Y (Cámara, Valdivia, Ortega, & López, 2011).
- Logistic Regression (LR) is a machine learning classification algorithm that is used to predict probability and data across lines, and requires the dependent variable to be binary, as defined in (Wright, 1995); LR is important because it allows predicting the value of the dummy variable as a function of the input characteristics, by using the sigmoid function.
- Decision Trees (DT), as discussed in (Albancando Robles), aims to construct a tree diagram that allows each of the data in the training set to be tracked. To use this algorithm, one starts by choosing an input value and then evaluates a feature. Depending on its value, one of its child nodes is chosen and another feature is evaluated. This process continues until it reaches the "leaves", which are the classification labels that send the classification of the selected input sample together with the chosen path. This algorithm is commonly used in problems where the objective function has discrete values and when the training data has separate expressions that can lead to errors. In addition, it is used when descriptions need to be created.

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- K-nearest neighbours (KNN), is a non-parametric classification method of supervised machine learning type, which estimates the value of the probability density function or directly the probability that an element belongs to a class, from the information provided by the set of prototypes, as described in (Barve, Rahate, Gaikwad, Patil, & Technology, 2018). This method is used to classify values by finding the most similar data points learned in the training stage and making guesses of new points based on that classification. In K-Nearest Neighbor, the "k" stands for the number of neighbouring points that are taken into account in the vicinity to classify the already known clusters.

In the next stage, a meta classifier is implemented and applied, after obtaining the necessary metrics. A comparison of results is carried out using three classifiers that obtained the best results in the previous evaluations. These classifiers will be used in a stacking meta classifier, in which Logistic Regression has been selected as the basis due to its high performance in the previous phase. Once the meta classifier has been created, the same corpus that was previously processed is used and the data obtained are entered. An evaluation of the meta classifier is carried out using the evaluation metrics in order to improve the results and increase its accuracy compared to the previous phase.

As evaluation metrics we use precision, which is a performance metric applied on data retrieved from a collection, corpus or sample space; it is also known as positive predictive value which is a fraction of relevant instances among the retrieved instances as shown in Eq. 2.

$$\text{Precision} = \frac{tp}{tp+fp} \quad (2)$$

Where tp is a true-positive value and fp is a false-positive value.

Results

The results obtained in the experimentation carried out by applying the described methodology and using the Evalita database are shown below.

Table 1 and figure 2 show the results obtained with the first experiment using the cross-validation classification scenario, the data were used in a raw way, i.e. not preprocessed and unbalanced, these results are known as baseline. Results obtained using the five machine learning methods described are presented.

As the best learning method we have SVM with an accuracy of 72.10%, the following graphs show the results of the same baseline, but with a processing which is generated by the elimination of stopwords, applying lemmatisation, and information gain, selecting the best attributes without sacrificing accuracy, reducing the dimensionality of the confusion matrix making the classification process faster, all this in order to improve accuracy.

The same graph shows the results of applying the preprocessing on the dataset resulting in an accuracy of 79.60% for the RL learning method which has 177 attributes, and finally it is also observed in a linear way, the results obtained with the meta classifier which obtained an accuracy of 81.80% for the RL method.

Model	*Baseline*	*177 IG*	*Metaclassifier*
SVM	72.10%	77.90%	0.00%
BAYES	69.60%	73.50%	0.00%
J48	71.90%	79.00%	80.60%
KNN	65.20%	78.30%	76.10%
RL	?	79.60%	81.80%

Table 1 Results obtained for cross-validation

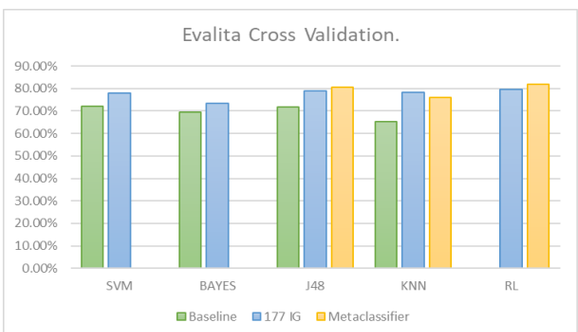

Figure 2 Graph of Results using Cross Validation and the EVALITA database

ISSN: 2414-4835

Table 2 and Figure 3 show the results obtained in the experimentation of the same dataset, carried out with the scenario of classification of training and test sets, giving an accuracy in Baseline of 74.00% for SVM and J48; while for the set with the preprocessing with 177 attributes and information gain, 79.30% accuracy was obtained for J48, likewise linearly shows the results obtained for the meta classifier, obtaining the best result for the RL classification method with an accuracy of 81.40%.

Model	*Baseline*	*177 IG*	*Metaclassifier*
SVM	74.00%	77.00%	0.00%
BAYES	70.00%	73.40%	0.00%
J48	74.00%	79.30%	80.40%
KNN	67.00%	78.20%	75.00%
RL	65.60%	77.80%	81.40%

Table 2 Results obtained for Training and test sets

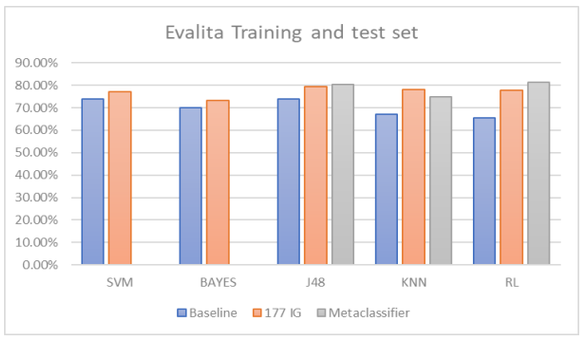

Figure 3 Baseline results using Training and Test Set and EVALITA database

The following tables present comparisons between the results obtained and the improvement achieved by using the meta-classifier compared to the baseline dataset. The first table shows the comparison of the results obtained in the cross-validation classification scenario, where a difference of 9.7 percentage points is observed between the value obtained with the meta-classifier and the best result obtained with SVM on the baseline dataset.

	Baseline (SVM)	Processing with 177 attributes (RL)	metaclassifier. (RL)
Results	72.10%	79.60%	81.80%

Table 3 Comparison of best results obtained for cross-validation

Table 2 shows the comparison between the results obtained in the training and test set classification scenario. It shows a difference of 7.4 percentage points between the value obtained with the meta-classifier and the best results obtained with SVM and J48 on the reference dataset.

	Baseline (SVM-J48)	Processing with 177 attributes (J48)	metaclassifier. (RL)
Results	74.00%	79.30%	81.40%

Table 4 Comparison of best results obtained for training and test sets

Conclusions

The identification of sentiment in unstructured texts, such as those found in social networking platforms like twitter, is a task that is increasingly used by companies and social or governmental institutions.

By using the methodology proposed in the EVALITA database, using cross-validation as a classification scenario, a significant improvement in accuracy is achieved. An increase of 9.7 is achieved, increasing from 72.1 % to 81.8 %, well above chance and competing with the values obtained by human annotators. For the case of the classification scenario based on training and test sets, an increase of 7.4 percentage points is observed between the value obtained with the meta classifier and the best results obtained with SVM and J48 on the reference dataset, achieving 81.4 % accuracy.

Based on the results obtained, it can be seen that the best result in the identification of misogyny is obtained by using a meta classifier which carries a preprocessing with the gain of information, thus facilitating the processing of large volumes of information and also allowing the identification of areas of opportunity for improvement using a very small vector of features, which impacts on processing time by reducing the dimensionality of the matrix generated.

ISSN: 2414-4835

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ISSN: 2414-4835

Article **Journal of Social Researches**
June 2023, Vol.9 No.23 19-28

Statistical analysis of psychological and physiological stress in public transport drivers

Análisis estadístico sobre el estrés psicológico y fisiológico en conductores del transporte público

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DOI: 10.35429/JSR.2023.23.9.19.28 Received January 25, 2023; Accepted June 30, 2023

Abstract

Public transport drivers face various factors that put their health at risk, not only in traffic matters, such as psychological stress, physiological stress, and working conditions. This paper aims to study said variables in public transport (bus) drivers in southern Tamaulipas, through a statistical study that can show the risk conditions for the study participants. To achieve this, a quantitative and descriptive research was carried out, with a convenient voluntary sampling of 77 surveys. Firstly, an exploratory factorial study was conducted on variables mentioned above, where the most reliable items were identified. Subsequently, a mediation analysis was carried through, resulting in the finding that the effect of psychological stress on physiological stress is less when mediated by

Public transportation drivers, Work conditions, Psychological and physiological stress, Mediation analysis

Resumen

Los conductores del transpore público se exponen a diversos factores que ponen en riesgo su salud, no solo en cuestiones de tráfico, también están expuestos al estrés Psicológico, al estrés Fisiológico y a las condiciones laborales. El objetivo del presente trabajo es estudiar dichas variables en los conductores del transporte público (autobuses) del sur de Tamaulipas, por medio de un estudio estadístico que pueda mostrar las condiciones de riesgo en los sujetos de estudio. Para llevar a cabo este objetivo se realizó una investigación de corte cuantitativo y descriptivo, con un muestreo voluntario a conveniencia de 77 encuestas. En primer lugar, se realizó un estudio factorial exploratorio a las tres variables en mención donde se identificaron los ítems más confiables. Posteriormente, se llevó a cabo un estudio de mediación, dando como resultado que el efecto del estrés psicológico en el estrés fisiológico es menor cuando es mediado por las condiciones de trabajo.

Conductores de transporte púnblicos, Condiciones laborales, Estrés fisiológico y psicológico

Citation: HERNÁNDEZ-ANGEL, Francisca, MEDINA-ALVAREZ, Juana Elizabeth and MENDEZ-PEDRAZA, Francisco Javier. Statistical analysis of psychological and physiological stress in public transport drivers. Journal of Social Researches. 2023. 9-23:19-28.

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Introduction

The public transportation system is a crucial component in the functioning of modern cities, as it provides essential services to the population, enabling them to commute to various locations for their daily activities and influencing the social and economic dynamics (Narváez et al., 2022). However, the increase in the number of users, traffic congestion, air and noise pollution, rising temperatures, vibrations, inadequate lighting, and a changing and demanding schedule contribute to an elevated stress level in drivers, impacting their health. Despite the aforementioned, workers must meet long working hours, which are often not regulated by a labor contract or may not include social security benefits. During these extended hours, there is not always time allotted for meals or other needs, and drivers may be exposed to various risks (Arias-Meléndez et al., 2022).

Stress has been the object of study for years, within the transactional theory of stress, where it is considered that subjective experiences, negative emotions, are stimulants for their generation, such as fear, anxiety, tension, frustration, anger, among other aspects (Lim et al. 2023).

The study of stress in drivers is considered of interest because it is a factor that contributes to driver performance and safety. Prolonged stress can cause headaches, fatigue, lack of sleep and other health risks that can cause traffic accidents. It is important to detect these symptoms in order to avoid major long-term health problems (Liu et al. 2023). On the other hand, the psychosomatic aspects refer to a somatic condition with a psychological aspect that, as a consequence, can generate diseases or physical pain, they can also be generated by factors such as genetics, family, cognitive or emotional, including cancer, psychosomatic aspects can be generated. (González and Hernández, (2006).

One of the health risk factors for the participants in the study is stress, both psychological and physical. This factor represents the most significant risk among workers in this field and is manifested in psychological aspects such as intolerance, recklessness, hostility, impatience, and reduced concentration, as well as physical factors such as lack of sleep, weight gain, and intestinal problems.

It also increases their consumption of tobacco and alcohol, behaviors that damage their health. These factors contribute to increased fatigue and the risk of accidents. Another factor that contributing to increased stress is the noise generated by horns and engines, as well as environmental factors such as heat and lighting (Navarrete et al, 2017). When describing these working conditions, we must mention the schedules, as some drivers work up to 12 hours.

The previously stated factors represent a health risk for the drivers, as they have inappropriate eating habits, which can lead to chronic diseases such as hypertension and diabetes mellitus. These conditions can lead to cardiovascular diseases (Veloza, et al. 2019) that put their lives and those of public transport users at risk. Therefore, it is vital to identify the factors that contribute to psychological and physiological stress in public transport drivers, and evaluate their working conditions and how these factors can mediate the stressors mentioned above. Participants in this study will help shed light on these important issues.

Work-related stress

There are various concepts about stress. On the one hand, it can be said that stress is a reaction that the human body has to adversity or demands from the environment and the attempt to find a solution. On the other hand, it is also considered a negative emotional state that, in turn, harms the physiological system and generates changes in perception in individuals that can cause harm to their well-being. (Sandín, 2003).

Stress has several branches, one of them being work-related, linked to individuals' work environments. This type of stress is associated with psychological aspects such as lack of concentration, bad mood, and distractibility, among others, and physiological stress, which leads to headaches, muscle pain, uncontrolled blood pressure, lack of sleep, and other health issues (García-Rubiano y Forero-Aponte, 2018). These factors cause problems not only in the work environment but also in social and family settings, to name a few.

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Furthermore, Narváez et al. (2022) suggest that stress can also impact physical well-being by causing gastrointestinal, dermatological, and muscular disorders. Excessive worry, inability to concentrate, difficulty making decisions, confusion, disorientation, and irritability are all signs of an individual experiencing psychological and physiological stress.

In the case of stress caused by traffic situations, it is frequently observed among the study population. However, it is worth noting that individuals experience stress differently and at different times. For example, while one driver may perceive certain situations as a regular part of their daily work, another may find their environment to be frequently stressful and react negatively, even aggressively (González y Hernández, 2013).

As previously mentioned, there are both psychological and physical risk factors for public transport drivers. Physical and mental overwork can increase if working conditions are unfavorable (Sepúlveda et al., 2020). Exposure to noise, vibrations, repetitive tasks, high temperatures, uncomfortable seating, and other factors can result in back, neck, shoulder, leg, or headache discomfort, which can be bothersome and interfere with work (Arias-Meléndez et al., 2022)

Based on what was mentioned earlier, the health of public transport workers is considered fundamental for their personal development. A worker who maintains an optimal state of health and a harmonious environment tends to be more productive, motivated, and satisfied with their work. It is believed that working conditions can have a positive influence in reducing psychological and physiological stress. Therefore, it is relevant to study the mental and physical health, and the working conditions of this group of workers to evaluate and propose solutions that help improve their quality of life. The methodology used to carry out this study is presented below.

Methodology

Population

The population consisted of 996 public transport drivers operating on 46 routes in the metropolitan area of southern Tamaulipas, comprising the municipalities of Altamira, Tampico, and Ciudad Madero, where a convenience sampling of 77 volunteer drivers was conducted. The criteria for participating in the study were: having worked for at least one year on the same transport unit and complying with a workday of at least 8 hours.

Research instrument

The survey used in this study consists of 32 items (Appendix 1), distributed into three categories: 10 items to measure psychological stress, 12 items for physiological stress, and 10 items for the variable of working conditions. This survey is based Melgosa (2006) study, which evaluated lifestyle, environment, symptoms, employment/occupation, and personality. The questions are measured on a Likert scale with four options: never, sometimes, often, and always, which were coded with values from 1 to 4 for statistical analysis.

Type of research

A causal cross-sectional study with quantitative analysis was conducted to determine the effect of variables. The regression model with mediation was used, in which the independent variable (x: psychological stress) positively and significantly explains the dependent variable (y: physiological stress), both directly and indirectly, through the mediator variable (m: working conditions). This analysis was carried out using the statistical software SPSS (Figure 1).

Under this framework, it is proposed that psychological stress directly affects physiological stress. Additionally, it is expected that psychological stress will affect work conditions, which will, in turn, have a positive and significant effect on physiological stress. Nevertheless, the impact of psychological stress on physiological stress, mediated by the work conditions variable, must have a considerable impact.

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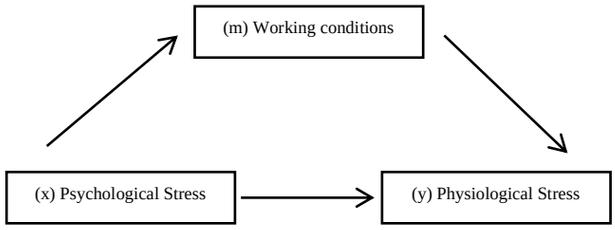

Figure 1 Mediation Model
Source: Own Elaboration

Results

An exploratory factor analysis was conducted to validate the survey items and identify questions that do not contribute to the research. The investigation was conducted independently for each variable and consisted of three phases. In the first phase, items with a value less than 0.5 were identified and removed. In the second phase, a test of data adequacy was conducted to determine the impact of the items on the model. Finally, regression models were performed to determine the statistical model that best explains the relationship between study variables.

Psychological stress

This variable consists of 10 items coded with the initials PS and the number corresponding to the question. There is a good fit in terms of KMO and Bartlett (1.63) with a significance level of 0.000 and a Cronbach's alpha of 0.661. The 10 items explain only 41%, which is low. A factorial analysis will be carried out with the most representative items, and these results can be observed in Table 1.

Variable (ítems)	Reliability	Cronbach's alpha	Explained variance (%)
Psychological Stress		0.661	41.2
PS1	**0.589**		
PS2	0.478		
PS3	**0.520**		
PS4	**0.748**		
PS5	**0.864**		
PS6	**0.763**		
PS7	0.257		
PS8	**0.653**		
PS9	**0.705**		
PS10	0.456		

Table 1 Factor analysis matrix on psychological stress.
Source: Own elaboration

Items PS2, PS7, and PS10 scored below 0.5 and were removed. A sample adequacy test was conducted, and the results are presented in Table 2. The significance level was 0.000, and the explained variance increased to 55% with five items. All coefficients were strengthened, and Cronbach's alpha of 0.456 was acceptable. The reliability levels were adjusted, and Cronbach's alpha and explained variance improved. The decision to remove items scoring below 0.5 was considered a good choice.

Variable (ítems) Reliability	Cronbach's alpha	Explained variance (%)
Psychological Stress	0.692	45.6
PS1	**0.577**	
PS3	**0.527**	
PS4	**0.719**	
PS5	**0.873**	
PS6	**0.802**	
PS8	**0.585**	
PS9	**0.699**	

Table 2 Factor analysis matrix on psychological stress applying adequacy test
Source: Own elaboration

Physiological stress

Table 3 shows the items corresponding to the physiological stress variable. It consists of 12 items identified by the letters FS followed by a number representing each question. The significance level is 0.000, Cronbach's Alpha is 0.59, and the explained variance is 33%. Three items, FS3, FS7, and FS8, were removed due to having values below 0.5.

Variable (ítems)	Reliability	Cronbach's alpha	Explained variance (%)
Physiological Stress		0.59	33.37
FS1	**0.658**		
FS2	**0.662**		
FS3	0.372		
FS4	**0.506**		
FS5	**0.540**		
FS6	**0.725**		
FS7	0.415		
FS8	0.443		
FS9	**0.752**		
FS10	**0.541**		
FS11	**0.584**		
FS12	**0.596**		

Table 3 Factor analysis matrix on physiological stress
Source: Own elaboration

ISSN: 2414-4835

After removing the prior mentioned items, a new analysis was conducted by performing an adequacy test on the data. All coefficients were intensified, and the Cronbach's Alpha increased to 0.68, which is considered acceptable. The results are shown in Table 4, where it can be observed that the level of significance is 0.000, and the variance explained increased to 43.89% with 7 remaining items.

Variable (ítems)	Reliability	Cronbach's alpha	Explained variance (%)
Physiological Stress		0.68	43.89
FS1	0.662		
FS2	0.629		
FS4	0.515		
FS5	0.525		
FS6	0.722		
FS9	0.746		
FS10	0.638		
FS11	0.686		
FS12	0.709		

Table 4 Factor analysis matrix on physiological stress applying adequacy test
Source: Own elaboration

Working conditions

Finally, the items corresponding to the variable work conditions were analyzed, and the results are presented in Table 5. The variable consists of 10 items encoded with the letters WC followed by a number indicating the corresponding question. The significance level is 0.000, Cronbach's Alpha is 0.661, and the explained variance is 27%. The items WC4, WC5, and WC7 were removed from the analysis because they had values lower than 0.5.

Variable (items)	Reliability	Cronbach's alpha	Explained variance (%)
Working Conditions		0.661	27%
WC1	**0.611**		
WC 2	**0.570**		
WC 3	**0.684**		
WC 4	0.235		
WC 5	0.357		
WC 6	**0.658**		
WC 7	0.412		
WC 8	**0.589**		
WC 9	**0.658**		
WC10	**0.548**		

Table 5 Factor analysis matrix on working conditions
Source: Own elaboration

After estimating the items with values greater than 0.5, an adequacy test was performed on the data, and the results are presented in Table 6. It can be observed that the level of significance is 0.000, and the variance explained increased to 27% with 7 remaining items. All coefficients were intensified, and Cronbach's Alpha increased to 0.611, which is considered acceptable.

Variable (ítems)	Reliability	Cronbach's alpha	Explained variance (%)
Working Conditions		0.611	27%
WS1	0.624		
WS2	0.518		
WS3	0.635		
WS6	0.678		
WS8	0.525		
WS9	0.611		
WS10	0.533		

Table 6. Factor analysis matrix on working conditions applying adequacy test. *Source: Own elaboration*

Once the items with higher reliability are identified, all variables are entered into the statistical software SPSS to generate the following mediation regression models. These models are proposed based on Figure 1.

Regression models with mediation.

Model 1

In this model, the following outcomes were obtained by analyzing the physiological stress as an observable variable and the psychological stress as a predictor:

y: Physiological stress

x: Psychological stress

Results: R	R^2	MSE	F	dfl	df2	P
0.2267	0 .1194	0 .5936	10.211	1.00	69.00	0 .002

The results of the relationship between physiological stress and psychological stress were explanatory and significant. The variable of psychological stress predicts 12% (R^2 = 0.1194) of physiological stress. This indicates that feeling tense, sad, and experiencing mood swings can affect physiological stress, manifesting as headaches, gastrointestinal discomfort, and lack of sleep, ultimately leading to diseases such as diabetes.

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These results suggest that drivers lack the ability to cope with their psychological stress (Narváez et al. 2022), resulting in collateral damage to their psychosocial well-being and health.

Model 2

The working conditions are analyzed as a dependent variable and psychological stress as an independent variable, and the obtained results are presented below:

y: Working conditions

x: Psychological stress

Results:						
R	**R^2**	**MSE**	**F**	**dfl**	**df2**	**P**
0.3395	0 .1247	0 .6936	11.876	10.00	75.00	0 .002

The analysis maintains positive and significant explanatory effects with the "working conditions" variable. According to the results, psychological stress explains 12.5% of working conditions. These findings are consistent with previous studies that established how psychological problems caused by stress negatively affect the worker's environment, causing them to lose control over their job tasks (Rueda y Rojas, 2017). The effects of stress damage the work environment and atmosphere, creating an unsatisfied work environment (Narváez et al, 2022) and making it more complicated and hostile for the worker.

Model 3

The physiological stress was studied as the observable variable and the working conditions as the explanatory variable, resulting in the following model:

y: Physiological Stress

x: Working Conditions

Results:						
R	**R^2**	**MSE**	**F**	**dfl**	**df2**	**P**
0.3395	0 .0984	0 .5412	10.587	10.00	63.00	0 .001

The study found that working conditions have a positive and significant effect on physiological stress, although this relationship is less explanatory than the previous models, with a relationship of only 10%. However, previous literature indicates that factors such as work hours, duration of commutes, and perceived conflict related to handling cash can impact physiological stress (Bravo y Nazar, 2015). Therefore, it is important to maintain a safe work environment to reduce and prevent stress-related illnesses.

Model 4

y: Physiological stress
m: Working conditions
x: Psychological stress

Results:						
R	**R^2**	**MSE**	**F**	**dfl**	**df2**	**P**
0.5205	0.2709	0.7488	13.7491	20.00	84.00	0.000

Finally, physiological stress is studied as the observable variable, psychological stress as the explanatory variable, and working conditions as the mediator variable, with a predictive effect of 27%, higher than the previous models. Working conditions act as a catalyst for both psychological and physiological stress, and its significance is intensified with the inclusion of this variable. This indicates that the drivers' perception of their stress level is influenced by their work environment and conditions.

The literature indicates that working conditions have a direct impact on both physical and mental health. For example, working more than 10-hour shifts and having to comply with this schedule leads to less rest, less sleep, and not being able to have adequate meal breaks, resulting in emotional and health imbalances. These effects are not only harmful to the driver but also pose a risk to the safety of the transportation system (Ledesma et al., 2017).

It is deemed significant to uphold better labor conditions to safeguard physical and mental health. The summarized results of moderated regressions are illustrated in Figure 2 below.

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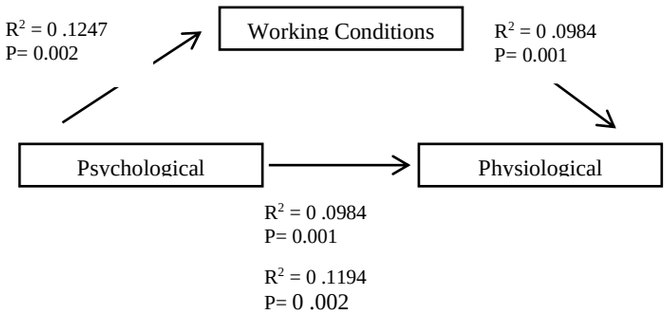

Figure 2 Results of the statistical mediation models
Source: Own elaboration

Conclusions

As mentioned in the literature, there is evidence that public transport drivers have unfavorable conditions in their work environment and surroundings, which represent a physical and psychological risk due to stress. The perceptions gathered in this study reveal that they feel exhausted, overwhelmed, and tired, suffer from nutritional imbalances, and experience headaches, as well as leg and back pain. These ailments can increase if working conditions are inadequate, such as being exposed to high temperatures for hours, noise exposure, or uncomfortable seating, for example.

The presented statistical results lead to the conclusion that the work environment has a significant mediating effect, which means that if the environment is not adequate, psychological and physiological stress may increase or, conversely, decrease, affecting the health of the workers. For instance, if the driver feels overwhelmed, worried, with gastrointestinal discomfort, and is working in a high-temperature environment and sitting for at least eight hours in a non-ergonomic seat, causing back pain, their health will deteriorate. On the other hand, if the work conditions are optimal, both psychological and physiological discomfort may decrease.

In contrast, it should be noted that the results of this study cannot be generalized to other geographic areas based on the sample of public drivers studied. This study is considered to be primarily caused by the working conditions in which the study participants labor. A particular condition of this geographic area is the extreme heat to which the subjects are exposed, especially during July and August.

Finally, it is vital to take corrective and preventive measures to protect both the physical and mental health of the public transport operators, as well as to improve their working conditions. It is significant to establish policies, training programs, and awareness-raising campaigns to educate about the negative effects of an unhealthy diet, smoking, and alcohol consumption, as well as the identification of psychosocial risks that may be prioritized, such as family relationships.

In future research, it would be possible to analyze the illnesses they suffer from, their diet, and the physical conditions in which they work and establish a link between the level of stress and working conditions.

Apendix 1

Survey

Dear driver:

The purpose of this instrument is to collect direct and valuable information regarding your working conditions and work environment. The information gathered will be used for a scientific study, and the results will serve as a basis for future research to benefit your health. Thus, you must answer all questions with complete freedom and honesty.

The information you provide will be kept entirely CONFIDENTIAL, so please do not write your name or any other information that may reveal your identity.

Please mark with an "X" the answers that you consider appropriate, and respond accordingly

THANK YOU FOR YOUR COOPERATION

GENERAL INFORMATION

1. Education level
Elementary…… Middle school…… High school…… Professional……. Other. Which one……

2. Age …….

3. How long have you worked as a public transport bus operator?
1 to 3 years… 4 to 6 years. .. 7 to 9 years. .
More than 10 years. ……..

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4. Work Schedule: …….
– Shifts: Daytime… Nighttime…. Overtime……

5. Time you have been driving this vehicle
Less than a year……. 1 to 2 years ……..
2 to 4 years …….. More than 4 years …….

Psychological stress

The following questions aim to understand how you have felt during the last month at work. Please answer all the questions by marking the response that best corresponds to your current work state.

	Never	Sometimes	Often	Always
1.- Have you had trouble sleeping due to worries?	1	2	3	4
2.- Have you constantly felt tense?	1	2	3	4
3.- Have you been able to concentrate effectively on your work?	1	2	3	4
4.- Have you felt that you are capable of handling daily life matters?	1	2	3	4
5.- Have you been able to face your problems?	1	2	3	4
6.- Have you felt capable of making decisions?	1	2	3	4
7.- Have you felt that you cannot solve your difficulties?	1	2	3	4
8.- Have you been reasonably happy, considering all the circumstances?	1	2	3	4
9.- Have you been able to enjoy your daily life activities?	1	2	3	4
10.- Have you felt sad and depressed?	1	2	3	4

Physiological stress

Next, you are asked to indicate how often you have experienced the following symptoms or discomfort in the last month. Please mark the column that best indicates how you felt.

Please answer the questions.

	Never	Sometimes	Often	Always
1.-Difficulty falling asleep.	1	2	3	4
2.-Difficulty staying asleep.	1	2	3	4
3.-Headaches.	1	2	3	4
4.-Loss of appetite.	1	2	3	4
5.-Increased appetite.	1	2	3	4
6.-You get tired easily.	1	2	3	4
7.-Stomach or digestive discomfort.	1	2	3	4
8.-It is hard for you to get up in the morning.	1	2	3	4
9.-Less capacity for work.	1	2	3	4
10.-You feel like you are choking or shortness of breath.	1	2	3	4
11.-Pain in the region of the neck, shoulders, or arms.	1	2	3	4
12.-Back or waist pain.	1	2	3	4

Working conditions

Indicate how often the following aspects of your work cause you discomfort or stress. Please mark the column that best describes your situation.

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	Never	Sometimes	Often	Always
1.-Having to satisfy or answer to many people.	1	2	3	4
2.-Noise levels allow you to achieve the concentration required for your work	1	2	3	4
3.-The temperature of your workplace is comfortable	1	2	3	4
4.- Work clothing allows you to feel comfortable	1	2	3	4
5.-You consider your working hours adequate.	1	2	3	4
6.-You are comfortable with handling cash.	1	2	3	4
7.-Work is rushed by time and deadlines.	1	2	3	4
8.- The seat you use is considered comfortable by you	1	2	3	4
9.-Conflicts with coworkers.	1	2	3	4
10.- Conflicts with direct bosses or supervisors.	1	2	3	4

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ISSN: 2414-4835

Article **Journal of Social Researches**
June 2023, Vol.9 No.23 29-32

Perception of academic training and job placement of graduates of the nursing degree UAM-X

Percepción sobre la formación académica e inserción laboral de los egresados de la licenciatura en enfermería UAM-X

CONTRERAS-GARFIAS, María Elena†*, GARCÍA-JIMÉNEZ, María Alberta, RIVERO-RODRÍGUEZ Luis Fernando and VERDE-FLOTA, Elsy Elizabeth

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DOI: 10.35429/JSR.2023.23.9.29.32 Received January 30, 2023; Accepted June 30, 2023

Abstract

Currently, the training of professionals focuses on a one-dimensional and pragmatic perspective, with attitudes such as constructive criticism of what happens in reality, committed to improving processes and practices in an aspect that begins mainly focused on scientific development. and technological, becoming more and more a value and a necessity for the progress and improvement of individuals and societies, for which there is a broad consensus that the main function of universities is the production, dissemination and preservation of knowledge systematically. Objective: To analyze the perception of the graduates of the nursing degree from the Universidad Autónoma Metropolitana - Xochimilco, their academic training and job placement. Methodology: Descriptive-analytical study, with a representative sample of nursing graduates. The instrument used was designed The keywords are required in Spanish and English., based on the investigations of Pérez CV: "Follow-up of graduates of the nursing degree (2008)" and Gómez, et al. "Satisfaction model of university graduates (2019)". Contribution: Knowing the academic training and how graduates enter the labor market allows universities to assess whether their teaching processes contribute satisfactorily so that graduating students, not only in nursing but also in any career, They provide the attitudes, aptitudes and strengths

Nursing, graduates, job placement

Resumen

En la actualidad la formación de los profesionales se enfoca en una perspectiva multidimensional y pragmática, con actitudes como la crítica constructiva en lo que acontece en la realidad, comprometida con la mejora de los procesos y prácticas en un aspecto que comienza principalmente enfocadas al desarrollo científico y tecnológico, convirtiéndose cada vez más en un valor y una necesidad para el progreso y la mejora de los individuos y las sociedades, por lo que existe un amplio consenso en que la principal función de las universidades es la producción, difusión y preservación del conocimiento de forma sistemática. Objetivo: Analizar la percepción de los egresados de la licenciatura de enfermería de la Universidad Autónoma Metropolitana - Xochimilco, su formación académica y la inserción laboral. Metodología: Estudio descriptivo-analítico, con una muestra representativa de egresados de enfermería. Para el análisis de datos se utilizó el paquete estadístico SPSS 21. Contribución: Conocer la formación académica y como los egresados se insertan en el mercado laboral, permite a las universidades evaluar si sus procesos de enseñanza, son eficaces para contribuir de manera satisfactoria otorgando las actitudes, aptitudes y fortalezas, para enfrentar la realidad de la población mexicana a los egresados.

Enfermería, Egresados, Inserción laboral

Citation: CONTRERAS-GARFIAS, María Elena, GARCÍA-JIMÉNEZ, María Alberta, RIVERO-RODRÍGUEZ Luis Fernando and VERDE-FLOTA, Elsy Elizabeth. Perception of academic training and job placement of graduates of the nursing degree UAM-X. Journal of Social Researches. 2023. 9-23:29-32.

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Introduction

The growth of students in Universities has been extraordinary, increasing competitiveness to access jobs, giving rise to these institutions, considering the need to carry out studies about the real situation faced by their students, when joining the university. labor market such as: the search for employment, the satisfaction of university graduates with the training received or its adequacy, evaluating the educational congruence according to labor demands.

Currently, the training of professionals focuses on a one-dimensional and pragmatic perspective, with attitudes such as constructive criticism of what happens in reality, committed to improving processes and practices in an aspect that begins mainly focused on scientific development. and technological. Training is increasingly becoming a value and a necessity for the progress and improvement of individuals and societies, which is why there is a broad consensus that the main function of universities is the production, dissemination and preservation of knowledge. systematically. This implies, therefore, referring to key functions such as teaching, learning, research and knowledge transfer. But the social transformations of the last decades, and above all those related to what has come to be called the information society. Nursing as a profession, has care as its central axis, which is a fundamental part of being and is the most primitive act of the human being that it performs to protect, improve and preserve humanity. This is a liberal profession and a discipline of a social nature, whose subjects of attention are the person, the family and the community, with their sociocultural characteristics, their needs and rights, as well as the physical and social environment that influences health and welfare. The training of the nursing professional requires solid knowledge in the scientific and humanistic area that supports their professional work and prepares them to face their daily contact with the user as a human being in all its dimensions, contributing to the humanization and personalization of the care that provided to the person through care management.

Currently, higher education institutions have faced the challenge of meeting social demands, working in labor market-education interaction, in order to meet the expectations and needs of the community to offer everything that contributes to satisfying these demands. . In such a way that it has started with research studies, oriented to the search for the professional who will respond to these requirements, for example the perception of the employer, the user and the graduate himself.

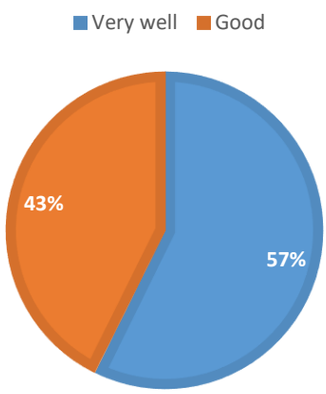
Methodology

Descriptive-analytical study, with a representative sample of nursing graduates. The instrument used was designed, based on the investigations of Pérez CV: "Follow-up of graduates of the nursing degree (2008)" and Gómez, et al. "Satisfaction model of university graduates (2019)".

Results

Regarding sex, 81% were female and 19% male.

To assess whether the study plan is effective and meets the necessary requirements for the training of nursing professionals, the following questions were raised:



Graphic 1

You were allowed to apply said knowledge: 59% mentioned that it is very good and 37% good.

The Study Plan provided you with the theoretical knowledge of the discipline, in 53% it was observed to be good, 35% very good and 9% regular.

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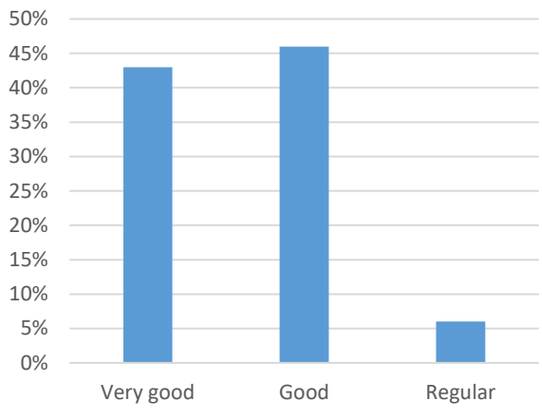
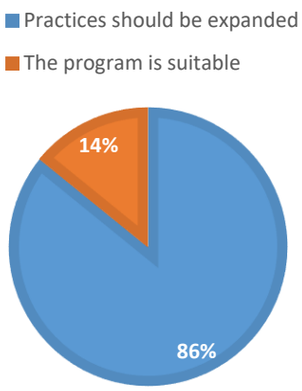
The Study Plan provided you with technical knowledge of the discipline: 48% considered it good, 42% very good.



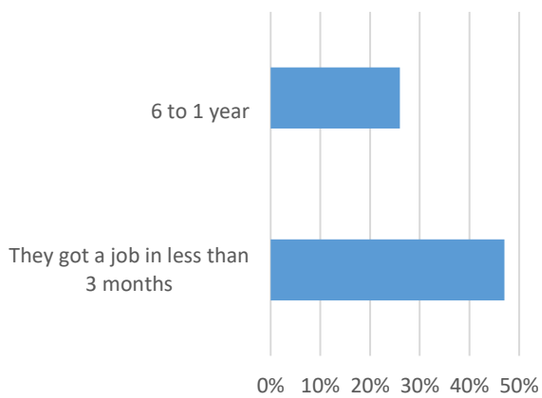
Graphic 2

Do you consider that professional practices are appropriate:



Graphic 3

Regarding the satisfaction with the University and the career, 94% answered affirmatively, feeling that their expectations were met both when they were studying the degree and when they graduated.

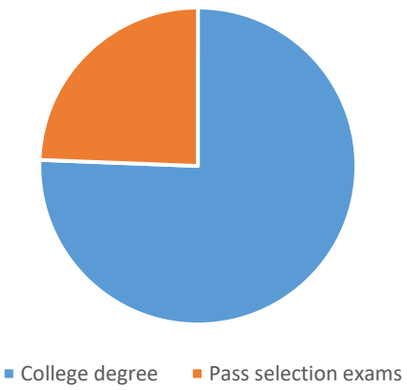


Graphic 4

Regarding labor insertion, it was found that.

Regarding difficulties in finding a job: 29% mentioned little work experience, 21% external reasons, 12% too much competition for jobs, 6% did not have a university degree.

The main requirement to obtain such employment:



Graphic 5

Conclusions

It is important to highlight that the graduates understand the success of their labor insertion based on what they have learned and the demands of the labor market, so the study of the graduates allows evaluating whether the plans and programs implemented by the University fulfill the academic functions, that allow them to enter the labor market quickly and with appropriate remuneration. The follow-up studies of the nursing degree graduate from the Autonomous Metropolitan University are necessary for the constant evaluation of the contents of the plans and programs, which guarantee the training of competent professionals and in accordance with the health needs of the populations. This research allowed to know the perception of the graduates, finding that the graduates are satisfied considering the skills, attitudes and knowledge acquired during academic training. They suggested increasing the clinical practice time that allows them to obtain the necessary technical skills during their training.

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What is your added value with respect to other techniques?

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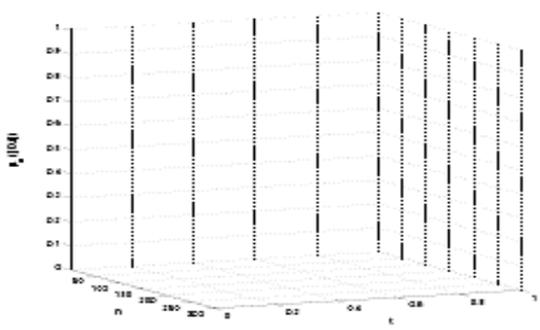

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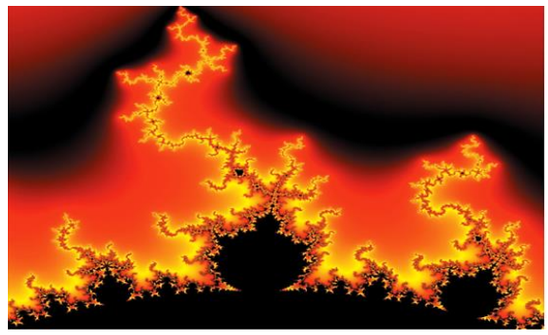

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