

**ORIGINAL**  
**Research article**

## **Informal Workers: A socioeconomic and demographic study\***

**Trabajadores informales: un estudio socioeconómico y demográfico**

Received: November 18, 2023 - Evaluated: February 19, 2024 - Accepted: May 23, 2024

Anderson Ferney Archila-Calixto\*\*  
ORCID: <https://orcid.org/0000-0002-5619-134X>  
Gerardo Antonio Márquez-Rondón\*\*\*  
ORCID: <https://orcid.org/0000-0002-6584-6408>  
Elviz Daniel Núñez-Barrios\*\*\*\*  
ORCID: <https://orcid.org/0009-0006-3034-8421>  
Karina Hildemar Caballero-de-Martínez\*\*\*\*\*  
ORCID: <https://orcid.org/0000-0002-8857-9285>  
María Carreño-Ríos\*\*\*\*\*  
ORCID: <https://orcid.org/0009-0004-0099-7944>

### **To cite this Article**

Archila-Calixto, A. F., Márquez-Rondón, G. A., Núñez-Barrios, E. D., Caballero-de-Martínez, K. H., & Carreño-Ríos, M. (2024). Informal Worker Population: a socioeconomic and demographic study. *Revista Gestión y Desarrollo Libre*, 9(18), 1-18. <https://doi.org/10.18041/2539-3669/gestionlibre.18.2024.12140>

**Editor:** PhD. Rolando Eslava-Zapata

### **Abstract**

Informality is a phenomenon that has been spreading throughout Colombia due to the lack of adsorption of labor by the formal sector, directing the workforce to other labor activities, specifically to itinerant, stationary or semi-stationary sales, where they sell toiletries, perishable and non-perishable food, beverages, clothing, among others, who in the absence of a place or workplace, resort to invading public space. The objective of this study is to characterize the

\* Original article. Research and innovation article. Research article. Article linked to Fundación de Estudios Superiores Comfanorte, Universidad Católica de Temuco, Chile, Universidad de Los Andes, Venezuela, Universidad Autónoma de Chile, Chile and Centro Universitário Una, Brazil.

\*\* Magister in administration, mentioned in management by the Universidad de Los Andes, Venezuela. Professor at the Fundación de Estudios Superiores Comfanorte, Colombia. Email: [doc\\_af\\_archila@fesc.edu.co](mailto:doc_af_archila@fesc.edu.co)

\*\*\* Ph.D. in the "New Trends in Organizational Management" Program by the Universidad Complutense de Madrid, Spain. Professor at the Universidad Católica de Temuco, Chile. Email: [gmarquez@uct.cl](mailto:gmarquez@uct.cl)

\*\*\*\* Ph.D. in the "New Trends in Organizational Management" Program by the Universidad Complutense de Madrid, Spain. Professor at the Universidad de Los Andes, Venezuela. Email: [eldani65@gmail.com](mailto:eldani65@gmail.com)

\*\*\*\*\* Ph.D. in Education by the Universidad Pedagógica Experimental Libertador, Venezuela. Professor at the Universidad Autónoma de Chile, Chile. Email: [karina.caballero@uautonoma.cl](mailto:karina.caballero@uautonoma.cl)

\*\*\*\*\* Bachelor in Administration and Bachelor in Public Accounting by the Universidad de Los Andes, Venezuela. Professor at the Universidad de Los Andes, Venezuela. Email: [mariacarrenorios@gmail.com](mailto:mariacarrenorios@gmail.com)

population of informal sector workers in the downtown area of the city of San José de Cúcuta, Norte de Santander, Colombia, for the year 2013. The study is quantitative with a cross-sectional design. A survey was formulated and applied to seventy-three informal vendors in the downtown area of the city of San José de Cúcuta. Regarding the profile of the informal worker, for the education dimension, it is evident that the worker has an incomplete primary education level, that he abandoned his education at the age of 15 due to lack of income, that his work duties do not allow him to study at the same time. However, he has no intention of resuming his academic activity. For the sociodemographic dimension, it is found that there are no significant differences in terms of sex. However, there are more men than women; the average working age is between 40 and 44 years, and most of them are net residents by birth; they live in the peripheral neighborhoods of the city. Therefore, it is necessary to implement a permanent occupational health program for the informal sector in the downtown area of the city of Cúcuta, including an epidemiological surveillance system for occupational accidents and work-related diseases. In addition, it is important to carry out studies in the municipal planning secretariat on sectors that are favorable and available for the implementation of relocation projects for vendors so that the local administration manages a favorable environment.

**Keywords:** Informal Workers, Socioeconomic Characteristics, Demographic Characteristics

### **Resumen**

La informalidad es un fenómeno que se ha venido extendiendo por toda Colombia, debido a la falta de adsorción de la mano de obra por parte del sector formal, dirigiendo la fuerza de trabajo a otras actividades laborales específicamente a las ventas ambulantes, estacionarias o semiestacionarias, donde comercializan artículos de aseo, alimentos perecederos y no perecederos, bebidas, prendas de vestir, entre otras, que ante la falta de un lugar o sitio de trabajo, recurren a invadir el espacio público. El trabajo tiene por objetivo caracterizar la población de trabajadores del sector informal del área céntrica de la ciudad de San José de Cúcuta, Norte de Santander, Colombia, para el año 2013. El estudio es de tipo cuantitativo con un diseño transeccional. Se formula una encuesta aplicada a setenta y tres vendedores informales del área céntrica de la Ciudad de San José de Cúcuta. En cuanto al perfil del trabajador informal, para la dimensión de educación, se evidencia que el trabajador tiene un nivel educativo de primaria incompleta; que abandono su formación educativa a la edad de 15 años por falta de ingresos; que sus funciones laborales no le permiten estudiar al mismo tiempo, sin embargo, no tiene intención de retomar la actividad académica. Para la dimensión sociodemográfica, se encuentra que no hay diferencias significativas referente al sexo, sin embargo, hay más presencia de hombres que de mujeres; la edad promedio trabajador está entre 40 a 44 años, en su mayoría son residentes netos de nacimiento; habitan en los barrios periféricos de la ciudad. Por lo expuesto, es necesario implementar un programa de salud ocupacional permanente para el sector informal del área céntrica de la ciudad de Cúcuta, que contenga sistema de vigilancia epidemiológica para los accidentes de trabajo y las enfermedades relacionadas con el trabajo. Además, es importante adelantar en la Secretaría de planeación municipal, estudios de sectores propicios y disponibles para la implementación de proyectos de reubicación de los vendedores, de modo que se maneje un ambiente propicio entre la administración local.

**Palabras clave:** Trabajadores Informales, Características Socioeconómicas, Características Demográficas

## SUMMARY

INTRODUCTION. - RESOLUTION SCHEME. - I. Research problem. - II. Methodology. - III. Research results. - 1. Profile of the informal worker. - 2. Working conditions. - 3. Economic activity. - 4. Financial and commercial aspects. - 5. Political and social aspects. - CONCLUSIONS. - REFERENCES.

## Introduction

In Latin American economies, informality is increasingly becoming a persistent phenomenon, where informal activities are important for the different economic sectors as they are an alternative source of employment in the region (Archila-Calixto, 2018); this may be a reflection of the precarious conditions provided by the economic system and the poor management of public administrations, also added to the high rates of illiteracy, poverty, inequality and the significant economic gaps present in the Countries (Oteng et al., 2024). Colombia is one of the countries that has not been immune to this situation; in addition to the factors above, the armed conflict is one more of the problems that have been prolonged in the nation, becoming the cause of another important factor, such as displacement that leads to affect labor stability in the cities (Valero-Valencia & Jiménez-Ramírez, 2023).

San José de Cúcuta is the capital of the department of Norte de Santander; it is a border city located in the northeast of the country; the core of its metropolitan area is made up of the municipalities of Zulia, Los Patios, Villa del Rosario, San Cayetano, and Puerto Santander, on the binational borders with San Antonio, Ureña and San Cristóbal. Due to its historical significance, Cúcuta and its Metropolitan Area have become a scenario for exchanges and social and economic relations due to its proximity to the Venezuelan border. The process of economic opening has generated comparative advantages in terms of location, where the potential of its geographical position makes it one of the most dynamic borders in Latin America (Thi-Thu & Thanh-Long, 2023).

The economic system of the city is complex and presents certain particularities; its position as a border city and the lack of industrialization in the region allows accentuating activities around informality; that is, it does not present alternatives for the adsorption of labor and high-quality jobs that meet the needs of the population (Torm, 2024). Informality has become a phenomenon that includes a large part of the region's productive activities as a way to improve the quality of life, meet unsatisfied basic needs, and achieve economic stability (Cioce et al., 2024). The development of the informal activity as an alternative or temporary work solution becomes a phenomenon of study and research; in order to identify the determinants and causes of its spread, this work has as its main objective: Characterize the population of workers in the informal sector of the downtown area of the City of San José de Cúcuta, from a socioeconomic and demographic analysis that allows a clearer view of the real situation of this population group (Gutura & Chisasa, 2024). Finally, the feasibility of relocating the invasive population from public spaces should be evaluated (Phakayawong & Kittipichai, 2023).

Informality is a phenomenon that has been spreading throughout Colombia due to the lack of adsorption of labor by the formal sector, directing the workforce to other labor activities, specifically to itinerant, stationary or semi-stationary sales, where they sell toiletries, perishable and non-perishable food, beverages, clothing, among others, which in the absence of a place or workplace, resort to invading the public space (Pilatti et al., 2023). All this is a reflection of the socioeconomic situation in the country, the increase in the labor force due to demographic factors, the modernization of industry, labor reforms, and other worrisome situations, such as

the armed conflict that has contributed to forced displacement, causing an imbalance in the supply and demand for labor in the cities (Shafi et al., 2024).

Major features that affect informal workers occupying public spaces can be observed (Bobrikova et al., 2023). First, they are people with low levels of schooling, low resources, and a lack of comprehensive social security (Trisnasari et al., 2023). Secondly, inadequate and unplanned workplaces leave them exposed to the elements and to a series of other events that make them more vulnerable to the spread of diseases, thus contributing to the deterioration of health and quality of life (Umar-Abidin et al., 2024). Moreover, thirdly, the financing mechanisms for these activities are the so-called indiscreet moneylenders or “gota a gota” loans (loan modality that charges interest above what is legally established and its payment is established by the interested party either daily or monthly); this modality has a place in the informal sector since daily activities require little capital and to this is added the difficulty of access to bank credit due to the guarantees required for the loan (Chowdhury et al., 2024).

Within this panorama, the Department of Norte de Santander is no stranger to the national problem since informality is a phenomenon that covers mostly all economic sectors; commerce is one of the strongest activities in the Department, especially in its capital city. San José de Cúcuta is the capital city. Its geographical position makes it a city that has the privilege of being located in one of the most dynamic borders of Latin America due to its great flow and exchange of goods that led the city to become a great showcase for citizens and foreigners; trade has become the predominant factor in the region (Oladosu & Chanimbe, 2024).

In addition to this, other factors such as displacement, high unemployment rates, and the backwardness of the industry, among others, lead to the displacement of labor from the formal sector to the informal sector since the former cannot absorb the labor supply and informality becomes the only employment alternative. The panorama of the City and its Metropolitan Area shows indicators that are not at all comforting for the strengthening of its economy, as far as labor linkage is concerned, only exposing the difficult situation faced by Cúcuta. Therefore, the objective of this study was to characterize the population of workers in the informal sector in the downtown area of the city of San José de Cúcuta for the year 2013.

## **Resolution scheme**

### **1. Research problem**

What socioeconomic and demographic factors are directly related to informal workers in the Central area of the city of San José de Cúcuta, Norte de Santander, Colombia, for the year 2013?

### **2. Methodology**

The study was quantitative with a cross-sectional design. Descriptive and interpretative statistics were used for its analysis. A survey was formulated and applied to informal vendors in the downtown area of San José de Cúcuta. We worked specifically in the quadrant determined by Ninth and Fourth Avenues, with Sixth and Eleventh Streets, in the downtown neighborhood. This area was selected because it was the point of concentration of the different informal vendors. The study sample consisted of seventy-three informal vendors.

For the design of the survey, reference was made to the surveys applied; first, by the Chamber of Commerce of Bogotá in the work “Effect of street sales on commercial

establishments in four zones of the city of Bogotá” in 2005; the Regional Socioeconomic Observatory of the Border in the work “Socioeconomic Characterization of Norte de Santander 2000-2009. The survey consisted of eighty-seven items, mostly closed questions. The aspects considered for the characterization were the following:

- Profile of the informal worker. It describes the traits that determine the informal worker; in this aspect, six dimensions are related: the first is Education, which is related to the educational level, reasons for abandoning training, current studies, and intention to resume educational activity. The second is Sociodemographic Characteristics, which relates the indicators of classification by sex, classification by age, classification by marital status, resident or displaced status, area where they live and stratification, number of people in the household, and means of transportation used to get to work. The third refers to health; you relate the indicators of the social security system, such as enjoying good health, eating the main meals, and having a type of physical disability. The fourth is Work Characteristics, where you relate how many people you have in your charge, family members who work with you, and the type of salesperson. The fifth is Work experience; it lists the activity that you developed previously, the development of another activity or trade, the experience in another activity, the time dedicated to the activity, and the reason why you are dedicated to this activity. The second is Housing; it takes into account the characteristics of the place where the worker lives and takes into account the type of Housing, the characteristics of the Housing, the housing conditions, and the access to public services.
- Working conditions: This identifies occupational hazards, hygiene in their work, health risks, and working hours. Three dimensions were identified for this aspect: in the first place, labor safety relates to the location of the vendor, free spaces in the workplace, the presence of dangerous vehicles, social security in the workplace (robberies), and the type of facility where the business operates. In second place is healthiness; here, we observed the degree of knowledge, use, and risk that the person has in the workplace, whether he/she knows the rules of hygiene and cleanliness, whether he/she uses elements of protection against accidents and diseases, the ease of access to the toilet, the presence of stagnant water in the workplace, accumulation of large amounts of garbage, whether he/she perceives bad odors, the presence of domestic animals, rodents, insects. Third, environmental contamination: the risk of contamination to which workers are exposed was identified, taking into account the degree to which they are exposed to solar radiation, rain, air pollution, forced postures or movements, poor lighting, and high noise levels.
- Economic activity. In this aspect, the characteristics of the products sold and the level of sales are related; for the first, the type of articles or merchandise sold, the frequency of purchase of merchandise, the quantity of merchandise purchased, whether the articles change throughout the year, where the merchandise is acquired, the reason for selling this type of merchandise, and the main competitors for the business were observed. For the second one, which refers to sales, the level of sales was asked as a question about how much money is circulating in this activity; the other dimension is the perception they have of the decrease in sales in recent years and the expectations they have for sales for the rest of the year.
- Financial and commercial aspects. This aspect is divided into three dimensions, which take into account the income, the perception of the business, and whether it has legal

obligations. The first dimension refers to income, what are its sources, whether it has access to credit, its level of income, and other extra income. The second dimension is the perception of the activity; the reason for working in this business or activity, job expectations in the short and medium term, and the willingness to convert their business into a formal microenterprise were taken into account. Moreover, the third is the legal obligation; it refers to the knowledge of plans of institutions that project improvements for their business and if they have a permit from any territorial entity.

- Social and political aspects. This last aspect made it possible to observe the degree of participation and the seller's perception of local institutions. First, the participation of the worker in social, political, or private organizations was observed, as well as whether he/she is affiliated with unions, associations, or syndicates. In the second, it was observed to what extent local institutions are affected by corruption, whether they feel represented by the political leadership of the region, whether they would like to aspire to some position of political representation, and, finally, how they rate the management of the mayor's office in the face of the problems of street vendors.

### **3. Research results**

#### **3.1. Profile of the informal worker**

##### **Education**

Education is understood as an open and constant process that involves all people and institutions. Also, as a right and duty of all to grow as a person and serve as a citizen, education is one of the aspects that will allow observing the level of opportunities that informal workers have according to their educational achievements (Eckhardt & Kaifie, 2024).

When analyzing the percentage distribution of informal workers by their educational level, a high percentage of people who reached an incomplete primary education level 30.00% and incomplete secondary education with a percentage of 23.00% is shown, which places this population in a middle education level, another relevant aspect is the high level of primary and secondary education with 21.00% each, which allows observing that 42.00% of the population has the opportunity to grow in the labor market, economically and professionally. Finally, 4.00% of the population does not have any educational achievement, and the most worrying thing is that they are at the illiteracy level; the remaining 1.00% is part of the population that reached a technical level.

It is evident that 58.00% of the population stopped studying due to lack of income and that the average age of educational abandonment was 15 years; 23.00% of the population abandoned education at the age of 16 years. It was by their own decision; another aspect to highlight is the people who stopped studying due to lack of time and that their average age of 37 years corresponds to the people who resumed education again after some years and completed a primary or secondary education cycle; 10.00% of the population has not received any educational achievement and is currently studying; another of the reasons that gave way to the disengagement of educational training is the condition of maternity or paternity that corresponds to 7.00% of the population and that in average age left the studies at 21 years old; finally, the remaining 1.00% stopped studying for other reasons at the age of 16 years on average.

On the other hand, it was found in percentage terms that some of the informal workers are currently studying and what type of training they are pursuing. 95.00% of the population of

workers are not currently studying, and only 5.00% of the population is studying; workers who are being trained as professionals correspond to 3.00% of the total population; 1.00% of the population is being trained at the technical level, and the remaining 1.00% is finishing high school.

In view of the facts of improvement and the search for better opportunities through the improvement of educational training, the population was asked about their intention to resume their educational activity. It was observed that 66.00% of the population has no intention of continuing their educational training, and 34.00% would be willing to do so under certain conditions that facilitate the linkage to training; 18.00% of the total population would be willing to resume education given the availability of economic resources; 15.00% would agree to resume education under the availability of time, and the remaining 1.00% would return to training if they were offered a subsidy or scholarship.

### **Socio-demographic characteristics**

In order to identify the demographic aspects and current characteristics of the population in the group of informal workers, variables related to sex, age, marital status, resident or displaced status, and means of transportation to get to work were taken into account (Sverdlik et al., 2024). It was observed that in informal activities, 52.00% of the population is male and 48.00% female and that the degree of participation between both sexes is not so different; this allows us to determine that informal activities do not exclude sex at the time of labor insertion.

For the percentage distribution by age, five-year ranges were projected. According to the results, two predominant ranges of informal workers were observed: the first is the range of 40 to 44 years of age, with 25.00% of the total population, and the second is the range of 45 to 49 years of age, with 21.00%. For the other ranges that go from 15 to 39 years of age, it was observed that although they do not have representative participation, it is ascending; the opposite is the case for those who are 65 years of age and older, whose participation is lower.

In order to determine what proportion of the population by sex is located in the different age ranges, a demographic pyramid was drawn up highlighting the extent to which informality absorbs certain population groups by age and sex. In this regard, it was observed that there is a large participation of men between the age range of 40 to 44 years, corresponding to 14.00% of the total population and 10.00% in the range of 45 to 49 years of age; another representative range is from 60 to 64 years with 8.00% of the total population which is male, and in the female sex the age range with more participation is from 45 to 49 years with 12.00% of the total population; Finally, there was little participation in the 15-34 age range for both men and women, but the trend is upward.

Regarding marital status, 38.00% of the informal worker population is single, 22.00% of the population lives in a free union, 12.00% are separated, 3.00% are widowed, and 25.00% are married; taking into account that in marital status, there is greater responsibility for the support of the family. It was also found that only 4.00% of the total population of informal workers have been victims of displacement as a result of violence and have been working informally for 6 to 8 years due to the lack of opportunities; of the remaining 96.00%, it can be said that they are residents of the city or neighboring localities.

Of the remaining, 96.00% can be said to be residents of the city or neighboring localities. 70.00% of the workers use a bus or other public service as a means of transportation to get to work, 12.00% use a motorcycle, 8.00% walk or walk, 4.00% arrive at work by bicycle, 1.00% use a private vehicle or their own, and 4.00% use other means of transportation or cabs.

## **Health**

It is understood as a state of complete physical, mental, and social well-being, and not only the absence of illness or disease. Aspects that represent the health conditions of the informal worker or that are related are included. For this dimension, the link of the workers to the social security system, health condition, whether they eat the main meals, and whether they have any physical disability were taken into account. 50.00% of the respondents are linked to the social security system and belong to the subsidized regime, 29.00% of the population has no link or, in the least cases, only has Sisbén, 7.00% belong to the contributory regime as a contributor, and 14% belong to the contributory regime as a beneficiary.

To find out the health conditions of informal workers, they were asked if they were in good health, and 82.00% of the informal population responded that they were in good health, while 18.00% did not enjoy good health. In order to know if informal workers eat the three main meals as a source of energy and nutrients for the body, it is important to know if they lead to healthy stability. It was observed that a large part of people eat the three main meals during the day: 87.60% eat breakfast, 94.50% lunch, and 91.70% dinner, the differences corresponding to those who do not eat food do so for health reasons and some others for medical recommendations. On the other hand, it was found that 3.00% of the population suffers from some physical disability and, despite the condition, works in the informal sector due to the lack of opportunities, and 97.00% do not suffer from any disability.

## **Characteristics of the work**

It allows us to observe if the person works alone or accompanied, in this case by a family member or by an individual, and also to indicate what type of informal worker the person is (Sorzano-Rodríguez & Botero-Urquijo, 2022). It was found that 90.40% of the population works alone or does not have anyone in their charge in the business, 8.20% has two people in their charge and is made up of their own family and 1.40% of the population has two people in their charge, and they are family members. On the other hand, 78.00% of the population of informal workers located in the center of the city of Cúcuta are stationary, 12.33% correspond to street workers, and 9.59% are semi-stationary.

## **Work experience**

In order to know the accumulation of knowledge of informal workers, variables related to experience were taken into account, such as the work they did before engaging in informality, whether they have experience in another activity or trade, the time dedicated to the activity and the reason why they are dedicated to this activity (Eslava-Zapata et al., 2024a). 39.73% of the population was doing another job, 31.51% worked in the formal sector as an employee, 16.44% were unemployed, and 12.33% were studying. Regarding how many people have experience in another activity or trade, only 21.92% of the total population had experience. For people who carry out another activity parallel to the corresponding activity, 2.74% stated that they carried out another activity.

Regarding the time that the worker has been dedicated to this activity, 60.27% had more than ten years, 21.92% had between 1 and 5 years, 13.70% had between 6 and 10 years, and 4.11% had less than a year. When asked why they dedicate themselves to this work, 26.03% indicated that it was because they were unemployed for a long time, 23.29% it was what knew how to do, 16.44% do not like being an employee, 10.96% it is the same thing their parents did, 9.59% earn more than if they were employed, 8.22% for other reasons and 5.48% because their studies did not allow them to do anything else.



## **Housing**

Throughout history, human beings have always needed to seek shelter to mitigate the hostile conditions of living outdoors. Given this, it is necessary to obtain a home, which is considered a building whose main function is to offer shelter and a home to people, protecting them from weather conditions and other threats. In this aspect, the type of housing, the characteristics of the housing, the condition of the housing, and access to public services in the home will be taken into account.

The aspect of the type of housing refers to the structure and space that the house presents in order to observe free recreation. 75.30% of informal workers lived in a house, followed by 9.60% living in a room, 8.20% living in an apartment, and 6.80% living in a house on a lot. Regarding the characteristics of informal workers' housing, the predominant materials are: 87.70% have brick or block walls, 64.40% have cement floors, and 61.60% have zinc roofs. Secondly, the predominant characteristics of the houses are: 9.60% have wooden partitions, 20.50% have tile floors, and 31.50% have Eternit roofs. Other characteristics to highlight are the houses that are still made of particular materials, such as 4.10% having dirt floors and 2.70% still living in baroque structures.

On the other hand, it was found that 48.00% of the population lived in their own home, 34.00% rented homes, and 18.00% family homes. In relation to which of the public services the home had, 100.00% of the population indicated that they had water and electricity services, 2.70% did not have sewage, 79.50% did not have a landline telephone, and 98.60% did have gas service (pipette gas and home gas).

## **3.2. Working conditions**

### **Occupational safety**

This dimension will identify the occupational risk to which the informal worker is exposed, first indicating the workplace where the person works, followed by the risk of being exposed to dangerous vehicular presence, the social security degree that refers to theft at the workplace, and finally identifying the type of facility where the business operates or where he or she works (Segbenya et al., 2024). In this sense, 63.00% of the population was located on the platform, 13.70% for both vehicular and other work sites, 6.85% was located in the park, and 1.37% was located in plazas or road separators.

It was shown that 94.50% of the informal working population enjoys free spaces at the workplace, and 73.90% of the population considers themselves exposed to dangerous vehicular presence. On the other hand, 25.00% of the informal working population was the victim of robbery in the last six months, and 42.00% has witnessed robberies in the sector in which they work. Regarding the characteristics of the facilities used for the business, it was observed that 26.00% of the population used a table to offer their products, 12.00% used a cart or wheelbarrow, 8.00% used wooden stands, 1.00% used display cases, booths or worked in kiosks, and finally, 47.00% used other implements such as artisanal carts.

### **Health**

The working conditions that informal vendors perform on a daily basis leave them exposed to different factors that exert or may exert harmful effects on their health. Among the factors or indicators that determine this dimension are the hygiene conditions and health risks to which the vendor is exposed and other risks that compromise the environment in which he or she works (Eslava-Zapata et al., 2024b). It was found that 79.00% of the population was aware of

the hygiene and cleaning rules according to their work, and 21.00% needed to learn the rules. On the other hand, 79.00% of the population did not use professional protection elements to avoid accidents, and 21.00% did use the elements corresponding to their work; likewise, it was found that the majority of people know the risks to which they are exposed, do not give great importance to the corresponding measures to avoid accidents or illnesses.

All informal workers are provided with access to health services. 67.00% of workers indicated that sanitary services (bathrooms) are provided by shopping centers, 14.00% by stores near the business, 12.00% by other sites, and 7.00% by restaurants. Regarding the question to what extent informal workers are exposed to health risks at the workplace, it was observed that 74.00% of workers did not present accumulation of large amounts of garbage, 44.00% of people indicated that they perceive bad odors, and 29% of people indicated that water stagnates at the workplace when it rains. 71.20% of the population indicated that they were not affected by any domestic animals, rodents, or insects; the presence of domestic animals is 26.00%, and 2.74% perceive the presence of insects. On the other hand, 95.40% of the population indicated that they were exposed to pollution from vehicular smoke, 98.60% were exposed to solar radiation, and all were exposed to rain and loud noises. Other risks to which informal workers are exposed are forced movements or postures (47.90%) and good lighting in the workplace (98.60%). On the other hand, only 12.00% of the population perceives a cool work environment, regardless of the temperature of the city; this percentage corresponds to people who located their workplace under trees.

### **Working day**

The time that a person has to carry out his/her work, from the moment he/she starts his/her work until he/she finishes, in order to have the remaining time to rest or to do household chores. When a person exceeds the limits of work, it can be harmful to his/her health. In addition to physical exhaustion, he/she is exposed to other risk factors. According to a study by the University College of London, working too much would increase the risk of heart attack by 67.00%. Another factor that involves the informal worker is that it leads the person to have less time to spend with the family.

On the other hand, it was shown that 26.00% of the informal working population worked 12 hours a day, 19.20% 10 hours, 20.50% nine hours, 16.40% eight hours, 6.80% eleven hours, and that the people who work the least time per day are six hours and represent 2.70%. The total number of workers worked every month of the year. As for the number of days they worked per week, 68.50% of informal workers worked every day, 27.40% worked only six days, and 4.10% worked only five days a week. At the same time, the opposite was observed for people who rested one, two, or none at all.

### **3.3. Economic activity**

#### **Product characteristics**

It allows one to describe the type of articles or merchandise that the informal worker offers, where and how often he buys the merchandise, the quantity of merchandise and if he changes items during the year, the reason why he sells this type of merchandise, his main competitors and what expenses he incurs for his activity. The products offered by informal workers are very varied. In response to the question of what articles or merchandise they sell, it was observed that 26.00% of the informal working population sold underwear, 14.00% sold clothing for men, women, and children, and 11.00% sold coffee, drinks, or sweets. It was observed that those

who sold cooked food, groceries, sweets, and other items had a share of 8.00% each, and those who sold electrical items and other items corresponded to 7.00% each. Finally, 4.00% of the workers indicated that they sold shoes or sandals, 1.00% sold belts, and those who sold slippers, jewelry, or watches were 3% each.

On the other hand, 44.00% of the working population indicated that they bought merchandise as they sold it. The same proportion did so for people who bought daily, only 8.00% weekly and 4.00% monthly. How many sellers bought their products? It was observed that 36.00% were bought by half a dozen, 29.00% were bought by the dozen or by units, only 3.00% were bought by boxes, and 4.00% bought quantities in another way. In order to find out if the different festivities celebrated during the year affect the decision to buy items or merchandise, informal workers were asked if they changed items during the year. The results showed that 82.00% of the population did not change items during the year. Then, reference was made to the classification of the product and not to the innovation of the models since most sellers change the model or characteristics of the products but handle the same line of products at the time of purchase.

It was found that 52.00% of the informal working population acquired the merchandise in Alexandria, 26.00% obtained it in wholesale warehouses, 6.80% bought it directly from the company, 5.50% produced the merchandise they sell, 4.10% acquired it in retail warehouses, 2.70% in supermarket chains and 2.70% with other sellers. On the other hand, it was found that 49.3% of the informal working population sold this type of merchandise because they are the ones that sell the easiest, 23.30% because they can buy them, 13.70% said that they are the ones that have an outlet, 6.80% produce the merchandise, 2.70% give them credit and 4.10% for other reasons.

In order to know who the main competitors of informal workers are, they were asked to mention the three main competitors for their business in order of importance. It was observed that 81.00% said that the main competitor is the sellers of the same sector, and 10.00% considered other reasons. As a second competitor, 36.00% considered sellers from another sector as competitors, 34.00% considered not having competition, and 21.00% said: "in the Alejandría Shopping Center." Finally, 79.00% of the population said they did not have a third competitor for their business.

## **Sales**

From an accounting and financial point of view, sales are the total amount charged for products or services provided. The objective of this dimension is to average the sales level of the last two years and thus observe the flow or circulation of money in the informal sector, to know the sales expectations during the year, and finally to know the reasons why sales decreased. Sales on a bad day for 2012 were, on average, 27,110 pesos, and for 2013 they were 20,836 pesos. A good day in 2012 was 99,781 pesos, and for 2013 it was 85,041 pesos. On average, daily sales in 2012 were 59,562 pesos, and for 2013, the average sales were 50,192 pesos. Based on this, it can be said that informal activities play an important role in the revitalization of the economy.

On the other hand, it was evident that 50.68% of the population considered that sales decreased due to the lower purchasing power of customers, 26.03% did not consider that sales decreased, 9.59% because the cost of living increased, 5.48% because of competition from other sellers, 4.11% because of increased police control, 1.37% because of the increase in the price of goods and 2.47% for other reasons. In order to find out how dynamic the informal economy has been, people were asked to what extent they consider the evolution of sales in the

last three years, comparing sales in December 2012 with those in 2011, sales in 2013 with those in 2012, and what their expectations were for the second half of 2013 in relation to sales in 2012. According to the data provided by the survey, sales have decreased during the last few years. For 2012, compared to 2011, 67.00% said they decreased, 30.00% said they were the same, and 3.00% said they increased. When comparing sales so far this year with those in 2012, it was observed that 73.00% said they decreased, 25.00% said they remained the same, and 3.00% said they increased. When asked about their expectations for sales in the second half of 2013 compared to 2012, 47.00% said they would decrease, 29.00% said they would remain the same, and 25.00% said they would increase.

### **3.4. Financial and commercial aspects**

#### **Income**

It seeks to identify the proportion of informal workers who have access to credit, which entity provides them with the loan, which people receive other income different from the activity, and finally, to know their income level in relation to a Current Legal Monthly Minimum Wage (SMMLV). In order to know how easy it is for informal workers to acquire a loan or credit, it was asked if they have ever obtained a loan; 74.00% of the population has obtained a loan, 26.00% say they have not requested any loan, this decision is the result of not wanting to get into debt. On the other hand, it was observed that 29.00% of the informal working population that has obtained a loan turns to lenders, 5.00% to relatives, 1.00% to others, and 38.00% have requested it from banks. Of the people who have requested loans from banking entities, it was observed that 62.20% requested loans from Banco Fundación de la Mujer, 21.60% from Banco Bancamía, 13.50% from other entities or banks, and 2.70% from Banco Bogotá.

On the other hand, 73.00% of informal workers had an average income of less than one SMMLV (589,500) and 27.00% between one and two SMMLV (589,500 to 1,179,000). Likewise, 73.00% of the informal working population did not receive income (extras) other than their activity, and 19.00% received income from the State and used it for family expenses (children). This percentage corresponded to workers enrolled in the Families in Action Program, and 8.00% had another source of income. People who received income from another entity or job were also asked what they spent the money on; in this regard, 68.00% of people used the money for family expenses (children), 16.00% of people on personal expenses, and the remaining 16.00% on other expenses.

#### **Perception of the activity**

In this dimension, we want to know the reasons why people engage in informal work or activities, their short- and medium-term job expectations, and finally, their willingness to propose converting their business into a microenterprise or, at the very least, formalizing their activity. From this segment, we can study the possibility of organizing and relocating informal workers who occupy public spaces according to the degree of availability and expectations of informal workers. It was found that 42% of informal workers engaged in this work because they were unable to find a formal and stable job, 33.00% did it out of independence, 12.00% out of family tradition, 7.00% to supplement income, and 5.00% because they received best income.

Regarding the short and medium-term employment expectations of informal workers, it was observed that 38.40% would like to get a formal and stable job, 26.00% wanted to continue

with their current activity in the same place, 13.70% would like to change their workplace but continue with the same activity, 12.30% had no expectations and 9.60% would like to change their workplace and activity. On the other hand, it was found that 86.00% of the informal working population was willing to convert their business into a microenterprise or, at the very least, legalize their activity, and 14.00% were not willing to do so; the reasons for which they were not willing were independence, lack of confidence and debt capacity.

### **Legal obligation**

In this dimension, we want to know if informal workers have any permit issued by a territorial entity and what their knowledge is about institutions that are developing plans or projects to improve business conditions (Paliwal et al., 2024). On the other hand, it was found that 85.00% of the informal working population does not know institutions that project improvements for the development of their activity or business, the 15.00% who say they know of any institution refer to academic institutions such as local universities and the National Learning Service (SENA). In order to know if informal workers have any permit from a territorial entity that allows them to carry out the activity in public spaces, it was found that 100.00% of workers claim not to have any permit. In relation to the previous question, up to half of the workers mentioned having had a permit from the previous municipal administration.

## **3.5. Political and social aspects**

### **Institutions**

Institutions are understood as social mechanisms that aim to order and normalize the behavior of a group of individuals. Generally, these are applied or intervene in the rules of conduct and customs of a society. For this dimension, we seek to know the perception that informal workers have of the different regional institutions, to what extent they believe they are affected by corruption, if the political leadership of the region represents them, how it rates the management of the mayor's office regarding the problems of informal workers and if they want to aspire to a position of political representation (Khan & MacEachen, 2024). To find out the perception that informal workers had of regional institutions and to what extent they are affected by corruption, they were asked to respond on a scale of 1 to 5, where one means that the institution is not at all corrupt and five means that it is extremely corrupt. In this regard, it was observed that the perception of informal workers regarding the local institution is not encouraging (Liu et al., 2024). The institutions that are most affected by corruption are extremely corrupt institutions, with 49.00% political parties, 45.00% the Mayor's Office, 33.00% the Governor's Office, 32.00% the National Police, 27.00% the Departmental Assembly, Municipal Council, and Public Officials in general. Among the less corrupt institutions, there are 27.00% of Public Officials, 26.00% of the Governor's Office, 25.00% of the National Police, 22.00% of political parties, and 21.00% of the Judicial System, among the not at all corrupt institutions, with 27.00% the Educational System and with 23.00% the media. Finally, it was observed that the people who did not know or did not respond did so because they did not know the functions of the institutions; 34.00% did not know what the Departmental Assembly was, 27.00% the Judicial System, and 23.00% did not know the functions of the Municipal Council.

On the other hand, 90.00% of the informal working population did not feel represented by the country's political leadership; the remaining 10.00% thought they were represented of the 10.00% who said yes, 28.00% felt represented by the Mayor's Office, 42.00% by the Governor's

Office, 14.00% by the Council and the other 14.00% by all of them. Informal workers were also asked to rate the way in which the Mayor's Office was handling the problem of informal sales in the city. 49.30% rated the way it was handled as very bad, 27.40% as bad, 17.80% as average, 4.10% as good, and 1.40% did not know. 4.10% of the population who rated the way in which the municipal administration was handling it as good stated that they were linked to projects to relocate informal vendors. In order to find out what proportion of informal workers are interested in the political decisions and processes that are handled in the region, they were asked if they would like to aspire to have a position of political representation. 95.89% said no, and only 4.11% said they would like to have a representation.

### **Participation**

For this dimension, the capacity or initiative that informal workers had when participating in political decisions that involve the well-being or future of the country or region was observed (Prieto-Bustos et al., 2024). For this section, the participation of workers in political, social, or private organizations was taken into account, as well as affiliation to vendor guilds, associations, or unions. Finally, the number of times they exercised the right to vote. It was evident that 96.00% of informal workers were not affiliated with any social, political, or private organization, and only 400% participated or had any representation in community action boards.

It was found that 38.36% of the informal working population was not affiliated with any vendors' guild or union, 61.64% was affiliated with unions, of which 64.40% of the population that affiliated to unions belonged to the Informal Vendors Association of Cúcuta (ASOVICUT), 64.40% belonged to the Vendors Association of Parque Mercedes (ASOVEPARME) and 2.20% was affiliated to another union. It was also observed that 69.90% of the informal working population had exercised their right to vote more than four times, which allowed us to infer that this population group shows relatively high participation when deciding on the direction of their region. 8.20% voted once and twice, 6.80% voted four times, 1.40% voted three times, and 5.50% have not exercised their right to vote.

### **Conclusions**

Regarding the profile of the informal worker, for the education dimension, it was found that the worker has an incomplete primary education level, that he abandoned his educational training at the age of 15 due to lack of income, that his work functions do not allow him to study at the same time. However, he has no intention of resuming academic activity. For the sociodemographic dimension, it was found that there are no significant differences regarding sex. However, there is more presence of men than women; the average age of the worker is between 40 and 44 years, most are net residents from birth; they live in the peripheral neighborhoods of the city, they use the bus as a means of transportation to get to work, the average time they spend on the means of transportation is 28 minutes on average; their marital status is single, and their family group is made up of 3 or 4 members. For the health dimension, half of the population is affiliated with the subsidized security system and claims to be in good health; they consume the three main meals and do not suffer from any disability. As regards the characteristics of the work, it was observed that the people work alone; they are stationary workers who were previously working in another activity; they have more than ten years of experience in this activity. However, they also have experience in another type of trade, and the reason why they dedicated themselves to this activity was because they were unemployed

for a long time. For the housing dimension, it was found that the informal worker lives in a house with brick or block walls, a cement floor, and a zinc roof; that the house is their own and has public services such as electricity, water, sewage, and gas.

The working conditions in which this type of worker works are characterized, according to the perception of the workers themselves, by having free spaces in the workplace, working on the street on the sidewalk or wax, being exposed to dangerous vehicular presence, of witnessing relatively high thefts; of the type of installation they use in their workplace. Regarding the health dimension, it was observed that they do not implement protection elements for accidents or illnesses and they do not know the rules of hygiene and cleanliness according to their work; it is easy for them to access the sanitary service in shopping centers; in the workplace, there is no accumulation of large amounts of garbage, stagnant water and moderate presence of bad odors; in what involves the environment, it was observed that the contaminating factors to which the worker is constantly exposed are the emission of vehicular smoke, solar radiation, rain and loud noises generated by cars, music, and colleagues themselves; the activity that he performs forces him to exercise forced postures or movements, the workplace perceives good lighting and finally, regardless of the temperature of the city, it is located in a hot place.

The work day of the informal worker consists of 6 to 7 days a week, working 10 to 12 hours a day, resting during the year only during holiday periods (some holidays). Regarding economic activity, it was observed that the predominant items for informal workers are underwear, clothing for women, men, and children, electrical items, wine, drinks, and various items; the workers buy the merchandise as it is sold and daily, the purchase quantities are half a dozen, they acquire the merchandise at the Alejandría Shopping Center, they do not change items during the year and sell this type of merchandise because the ones that sell the easiest, they consider their main competitors to be sellers from the same workplace.

In sales, it was observed that on average, a worker on a bad day sells 21,000 pesos, and on a good day, he sells 85,000 pesos; the comparison with the sales of previous years these have decreased, and the reasons for this decrease are considered to be due to the lower purchasing power of the clients. Regarding the financial and commercial aspect, informal workers have easy access to credits, and lenders are the main source of financing (drop by drop), followed by banks; the banks that informal workers most prefer are Banco Fundación de la Mujer and Bancamía; the average income levels of sellers tend to be less than a SMMLV, 27.00% of workers receive another income and 29.00% of those who do receive another income receive it from the State (they are in Families in Action). According to the perception of workers, their expectations for the short and medium term are, first, to get a formal and stable job; second, to continue with the current activity in the same place; they have the availability to convert their business into a microenterprise or to a lesser extent to formalize their work; they do not know institutions that project improvements for their work, and they do not have any permission from any territorial entity. Regarding the political and social aspect, the perception that workers have when indicating to what extent the institutions of the region are affected, it is observed that among the institutions that they consider extremely corrupt are the political parties and the Municipal Government, as little corrupt are the public officials, the Government and the National Police; as not corrupt at all are the educational system and the media; they rate the handling of the mayor's office with informal workers as very bad, they do not feel represented by any political leadership in the region, nor do they aspire to political representation, they do not participate in any organization, they are affiliated with workers' unions and have exercised the right to vote more than four times.

For the above reasons, it is necessary to implement a permanent occupational health program for the informal sector of the central area of the city of Cúcuta, which contains an epidemiological surveillance system for work accidents and work-related diseases. In addition, it is important to advance in the Municipal Planning Secretariat studies of suitable and available sectors for the implementation of vendor relocation projects so that the local administration manages a favorable environment.

It should be noted that continuing education programs on occupational health and self-care in general health issues should be implemented, resorting to all educational entities and strategies of the municipality so that through this, the largest number of informal workers are linked. These programs must go hand in hand with the implementation of educational activities in promotion and prevention with the informal sector to identify and reduce occupational risks and thus protect the health and well-being of their family by promoting a healthy lifestyle and work. Finally, it is important to design ongoing training programs for public servants involved in the process of recovering public space to guide proposals and solutions to informal activity since the need for knowledge of these officials regarding this issue was evident.

## References

- Archila-Calixto, A. F. (2018). Evaluación de política pública de vivienda “un norte productivo para todos”, una perspectiva social desde un marco de condiciones habitables dignas. *Revista Gestión y Desarrollo Libre*, 3(6), 134-147. <https://doi.org/10.18041/2539-3669/gestionlibre.6.2018.8147>
- Bobrikova, Y., Boiko, A., Karpenko, O., Chepil, M., & Taranenko, H. (2023). Informal Online Education: Teacher-worker in Modern Conditions. *Journal of Higher Education Theory and Practice*, 23(15). <https://doi.org/10.33423/jhetp.v23i15.6404>
- Chowdhury, P., & Singh, A. (2024). Are Informal Older Workers Utilizing Less Healthcare Services? Evidence from the Longitudinal Ageing Study in India, Wave-1. *Population Ageing*. <https://doi.org/10.1007/s12062-024-09458-5>
- Cioce, G., Però, D., & Korczynski, M. (2024). Informal Cultures of Resistance and Worker Mobilization: The Case of Migrant Workers in the Italian Logistics Sector. *Work, Employment and Society*, 0(0). <https://doi.org/10.1177/09500170241268365>
- Eckhardt, B., & Kaifie, A. (2024). Bridging the knowledge gap! Health outcomes in informal e-waste workers. *Journal of Occupational Medicine and Toxicology*, 19(11). <https://doi.org/10.1186/s12995-024-00410-z>
- Eslava-Zapata, R., Alvarado-Moreno, Y. B., & Mora-Abril, S. M. (2024a). Lavado de activos. Un estudio en estaciones de servicio en Colombia. *Universidad Y Sociedad*, 16(4), 427–433. <https://rus.ucf.edu.cu/index.php/rus/article/view/4568>
- Eslava-Zapata, R., Sánchez-Castillo, V., & Chacón-Guerrero, E. (2024b). Interaction between neuroscience and happiness: assessment from Artificial Intelligence advances. *EAI Endorsed Trans Perv Health Tech*, 10, 1-12. <https://doi.org/10.4108/eetpht.10.5456>



- Gutura, R., & Chisasa, J. (2024). The Relationship between Financial Literacy and Retirement Planning among Informal Sector Workers in Randburg, South Africa. *Folia Oeconomica Stetinensia*, 24(1), 56-74. <https://doi.org/10.2478/fofi-2024-0004>
- Khan, T. H., & MacEachen, E. (2024). The role of informal support systems during illness: A qualitative study of solo self-employed workers in Ontario, Canada. *PLoS ONE*, 19(3), e0297770. <https://doi.org/10.1371/journal.pone.0297770>
- Liu, T., Li, M., Yang, Z., & Xue, D. (2024). Internet Usage, Government Trust, and Participation of Informal Workers in Employee Public Pension Scheme. *Sage Open*, 14(2). <https://doi.org/10.1177/21582440241258294>
- Oladosu, A.O., & Chanimbe, T. (2024). A two-pronged approach to understanding reciprocity and mental health relationship in developing countries: evidence from young informal construction workers in Nigeria. *BMC Public Health*, 24, 1851. <https://doi.org/10.1186/s12889-024-19315-x>
- Oteng, S. A., Manful, E., & Akuoko, K.O. (2024). From Social Protection to Personal Protection: Implications for an Integrated Framework of Retirement Planning for Informal Workers in Ghana. *Global Social Welfare*, 11, 37-44. <https://doi.org/10.1007/s40609-022-00235-w>
- Paliwal, M., Rohitb, R., Vimal, K., Sumanjeet, S., Nagendra-Kumard, S., Alkae, S., & Manishaf, K. (2024). Informal Workers in India as an Economic Shock Absorber in the Era of COVID-19: A Study on Policies and Practices. *Human Systems Management*, 43(1), 17-36. <https://doi.org/10.3233/HSM-220155>
- Pilatti, G., Candia, C., Montini, A., & Pinheiro, F. L. (2023). From co-location patterns to an informal social network of gig economy workers. *Applied Network Science*, 8(77). <https://doi.org/10.1007/s41109-023-00603-1>
- Phakayawong N., & Kittipichai, W. (2023). Oral hygiene behaviors and oral health literacy among informal Thai workers in rural areas. *Journal of Education and Community Health*, 10(4), 185-190. <https://doi.org/10.34172/jech.2366>
- Prieto-Bustos, W., Castillo Robayo, C. D., Campo-Robledo, J., & Molina-Dominguez, J. (2024). Impact of Venezuelan Migration on the Informal Workforce of Native Workers in Colombia. *Economies*, 12(2), 38. <https://doi.org/10.3390/economies12020038>
- Segbenya, M., Onomah, J., Kangmennaang, R., & Grantson, E. (2024). Exploring the awareness, preparedness and the state of pension among informal workers in Ghana. *Social Sciences & Humanities Open*, 9, 100776. <https://doi.org/10.1016/j.ssaho.2023.100776>
- Shafi, E., Devadason, E. S., & Govindaraju, V. G. R. C. (2024). Exploring 'Employee Voice' of Informal Female Workers of the Textiles Industry in Pakistan: A Grounded Theory Approach. *Institutions and Economies*, 16(2), 83-106. <https://doi.org/10.22452/IJIE.vol16no2.4>

- Sorzano-Rodríguez, D. M., & Botero-Urquijo, D. A. (2022). Economía social para la transición a la vida civil de la población excombatiente FARC-EP: el caso ECOMÚN. *Revista Gestión y Desarrollo Libre*, 7(14), 1-20. <https://doi.org/10.18041/2539-3669/gestionlibre.14.2022.9376>
- Sverdlik, A., Kothiwal, K., Kadungure, A., Agarwal, S., Machededze, R., Verma, S., & Loewenson, R. (2024). Understanding the interplay of occupational, public health, and climate-related risks for informal workers: A new framework with findings from Zimbabwe and India. *Social Science & Medicine*, 348, 116750. <https://doi.org/10.1016/j.socscimed.2024.116750>
- Torm, N. (2024). Training Returns Among Informal Workers: Evidence from Urban Sites in Kenya and Tanzania. *The European Journal of Development Research*. <https://doi.org/10.1057/s41287-024-00652-x>
- Thi-Thu D. & Thanh-Long, G. (2023). Factors Associated with Participation of Vietnamese Informal Workers in Voluntary Social Insurance Scheme. *Malaysian Journal of Economic Studies*, 60(2), 237–254. <https://doi.org/10.22452/MJES.vol60no2.5>
- Trisnasari, Laosee, O., Rattanapan, C., & Janmaimool, P. (2023). Assessing the Determinants of Compliance with Contribution Payments to the National Health Insurance Scheme among Informal Workers in Indonesia. *International Journal of Environmental Research and Public Health*, 20(23), 7130. <https://doi.org/10.3390/ijerph20237130>
- Umar-Abidin, A., Binazir-Maziya, F., Hadi-Susetyo, S., Yoneda, M., & Matsui, Y. (2024). Heavy metal air pollution in an Indonesian landfill site: Characterization, sources, and health risk assessment for informal workers. *Environmental Advances*, 15, 100512. <https://doi.org/10.1016/j.envadv.2024.100512>
- Valero-Valencia, G. A., & Jiménez-Ramírez, S. A. (2023). Mercado laboral y crecimiento económico en Colombia, 2009-2018: un análisis Shift-Share. *Revista Gestión y Desarrollo Libre*, 8(15),1-17. <https://doi.org/10.18041/2539-3669/gestionlibre.15.2023.10101>