



## **Diagnosis Of The Socioeconomic Situation Of The Recycling Population On The Colombian-Venezuelan Frontier**

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### **Abstract**

This research focused on diagnosing the socioeconomic situation of the suppliers of the companies dedicated to recycling in a frontier environment, precisely in one of the most dynamic borders of recent times, which is the Colombian border with Venezuela, this research is raised by the quantitative - descriptive arc since within the research the diagnosis of the socioeconomic situation of the recyclers under study is described quantitatively, the total population was 94 recyclers. It became evident that the population studied is a vulnerable population, a population that performs this type of activities given their own and socioeconomic conditions of their families, most of them do not have a decent roof, showing that more than half (61%) of the population studied does not have their own house so they must pay a rent or live with relatives, on the other hand the population studied mostly comprises Venezuelans that due to the situation of the neighboring country are performing these activities on the border.

**Keywords:** Diagnosis, vulnerable population, recyclers, waste pickers

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### **1. Introduction**

The circular economy provides multiple value creation mechanisms not linked to the consumption of finite resources. In a circular economy, resources are regenerated within the biological cycle or recovered and restored thanks to the technical cycle. Within the biological cycle, different processes (composting, anaerobic digestion, biogas) make it possible to regenerate discarded materials, despite or without human intervention. In the technical cycle, with sufficient energy available, human intervention recovers the various resources (reuse, utilization, treatment, among others) and recreates the order within the proposed time scale (Stahel & MacArthur, 2019).

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In a circular economy, unlike a linear model, the production of a good considers the environmental impacts throughout its life cycle and integrates them from its conception (eco-design); it seeks to optimize the use of raw materials and energy by adapting production processes (industrial ecology); it favors the sale of a service over the sale of a product, thus ensuring that the product has a long life and is functional for as long as possible (economy of functionality); it encourages products to have a second use, either by reusing them totally or partially in new products or by repairing them to extend their use. Finally, waste should be used to its full potential or treated, recovering the energy value of the waste in cases where it cannot be reincorporated into the production cycle.

Integrated waste management includes waste generation, separation at source, collection, transfer and transportation, recovery, treatment and final disposal. From this perspective, it is relevant to indicate an order of preference of measures to reduce and manage waste, which is known as the waste management hierarchy. From a conceptual point of view and for the purposes of this policy, the hierarchy is presented as an inverted pyramid, in which measures to prevent waste generation are established first. This becomes the primary purpose of a policy that seeks to move towards a circular economy. The next measure in order of priority is to reduce solid waste, for example, through reuse, and then to make use of it, understood as recycling. This measure is followed by actions to treat non-usable waste for: (i) reincorporation of materials into productive processes (e.g. composting or anaerobic digestion); (ii) valorization through energy generation before disposal; or (iii) volume or size reduction before final disposal. The last measure in terms of priority is final disposal, either in landfills or by incineration without energy recovery. This measure is the last resort for solid waste that could not be avoided, diverted or recovered in the previous steps.

A complementary approach to sustainable and integrated solid waste management is presented through the (Illustration 2) developed by UN-Habitat (2010). This framework distinguishes three physical components (left triangle) of solid waste management systems: waste collection services (focused on public health concerns of the public sanitation service), ecological disposal (focused on environmental concerns) and the 3Rs (reduce, reuse, recycle [take advantage], focused on economic value and resource depletion, as premises for moving towards a circular economy). In addition, the framework recognizes that waste management problems cannot be solved by addressing only the physical components, dealing with the technical aspects or providing infrastructure. Therefore, the framework also focuses on three governance aspects (right triangle): inclusiveness, financial sustainability, and the existence of strong institutions and proactive policies (CONPES, 2016). Inclusiveness in this case is adapted to formalization, support for the social mobility of waste pickers and their inclusion as providers of the waste collection activity in the public sanitation service. This aspect considers the relevance of their work by diverting waste that would potentially go to landfills and their contribution to climate change mitigation by reducing the use of virgin raw materials through the use of materials. In this sense, it is committed to competitiveness Prevention Reuse Reuse Treatment Final Disposal Recycling o Composting (biological treatment) o Co-processing (volume reduction) o Valorization (energy generation) of the guild and compliance with quality and efficiency standards in the provision of the service.



Illustration 2 Analytical framework of the two triangles **SOURCE:** <https://www.cra.gov.co/documents/CONPES-3874-1.pdf>

## 2. Method

Descriptive research has as its objective the precise description of the event under study, this type of research is associated with diagnosis; the purpose is to expose the event under study, making a detailed enumeration of its characteristics, so that in the results two levels of analysis can be obtained depending on the phenomenon or the purpose of the researcher, this research works with one or several elements of study in a given context, but its intention is not to establish causal relationships between them for this reason they do not merit the formulation of hypothesis. (Hurtado de Barrera, 2002a)..

It is descriptive because the research was based on the socioeconomic situations of the people dedicated to recycling. The previous process was evaluated through the application of the survey where patterns were established that indicated a social characterization in aspects of education, housing, health, income, which allowed us to diagnose the current situation of the quality of life of the population under study.

### 2.1. Technique

The first level of scientific knowledge about a research problem is achieved through exploratory studies; their objective is the formulation of a problem to enable a more precise investigation or the development of a hypothesis. "Their essential purpose is to familiarize us with an unknown, novel or scarcely studied topic. They are the starting point for subsequent studies of greater depth". (Behar Rivero, 2008a)

Descriptive studies: They are used to analyze how a phenomenon and its components are and how they manifest themselves.(Arias, 2006). They make it possible to detail the phenomenon studied basically through the measurement of one or more of its attributes. "These studies describe the frequency and the most important characteristics of a problem. In order to carry out descriptive studies, two fundamental elements must be taken into account: Sample and Instrument". (Behar Rivero, 2008b; Hurtado de Barrera, 2002b).

The type of study to be carried out was exploratory and descriptive, since we traveled to the study area where recycling activities are carried out, in order to know the social responsibility of the recyclers who make their living formally and informally in this activity; this study was supported by a survey to the target population.(Balestrini, 2002).

## 2.2. Population

The population that was taken into account for the development of this research and that will be the object of study is made up of recycling suppliers in the border context, which is made up of 27 formal workers and some 67 informal suppliers.

## 2.3. Sample

The total size of the population is 94 suppliers within which 27 are formal employees and 67 are informal, the type of sampling is intentional or convenience because the researcher will voluntarily choose elements that will make up the sample, assuming that this will be representative of the reference population. In which the population under study will be the total of formal and informal workers 94 suppliers.

### 2.3.1. Convenience sampling:

Purposive sampling: also known as biased sampling. The researcher selects the elements that in his opinion are representative, which requires prior knowledge of the population under investigation (Rivero, 2008).

The researcher chooses members only because of their proximity and does not consider whether they really represent a representative sample of the entire population or not. When this technique is used, habits, opinions, and points of view can be observed more easily.

Researchers use sampling techniques in situations where there are large populations to be evaluated, since, in most cases, it is almost impossible to test an entire population.

## 2.4. Instrument design

The next instrument for data collection is a questionnaire to evaluate the different socioeconomic factors of the company's supplier population, the instrument is composed of a total of 25 questions of which several of them are multiple choice. The research approach was quantitative, since the analysis was based on quantities and statistical tools that allowed establishing a numerical process to weight the different variables. The instrument was created to know the socioeconomic conditions of the recyclers and finally allowed analyzing impacts with a descriptive method, at the same time allowing the socioeconomic situations of the population under study dedicated to recycling to be known. The survey established patterns that indicated a social characterization in aspects of education, housing, health, income, which allowed us to diagnose the current situation of the quality of life, income and risk factors to which they are exposed performing these activities, as well as to know the social responsibility that the association of recyclers has towards the recyclers who get their livelihood formally and informally within this activity.

We sought to stratify the study population, as well as to know the characteristics and individual and collective circumstances that allow us to identify risks, prioritize activities and obtain data. In relation to the above, we sought to respond and categorize the amount in alphanumeric value of the study population that is the focus of support for the family nucleus, to describe the conditions to which they are exposed as immigrants.

The pilot test (PP) is part of the Methodological Framework of Research Projects, according to (Navarrete, 2006). Until proven otherwise, direct measurement is the one that guarantees the most

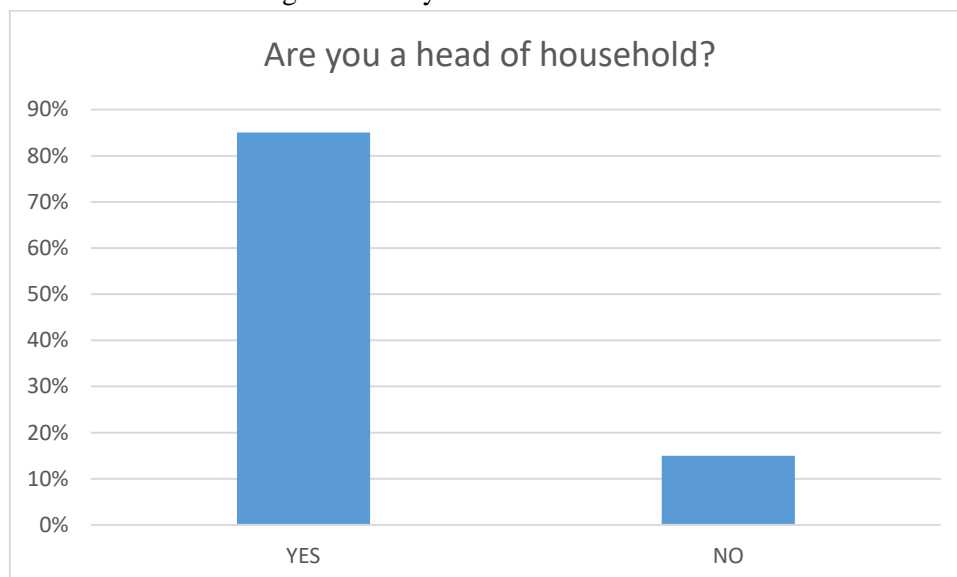
accurate values of the dimensions considered. Neither the instrument nor the technique used requires a special validation of results, it is advisable to ensure the goodness of the measurement procedure, including the instrumentation, through a PP The anthropometric data to be valid must be obtained with methodology defined by experts in that field, which guarantees: respectability (r), reproducibility (R), linearity, reliability (R), and is maintained in the ranges that minimize measurement errors. The general objective is to perform a PP to validate the results of the measurements obtained with the method and physical instruments for anthropometric data collection.

### 3. Results

Table 1. Are you a head of household?

RANGE	QUANTITIES	PERCENTAGE
YES		85%
NO		

Figure 1. Are you a head of household?



In relation to the question "head of household", 85% of those surveyed responded that they are the only ones responsible for the support of their families. It should be noted that these families are large, which implies greater expenses to meet their basic needs, thus being one of the main factors that hinder the development of their economy, since they do not have economic support, unlike the 15% that have the monetary support of a member of their family nucleus.

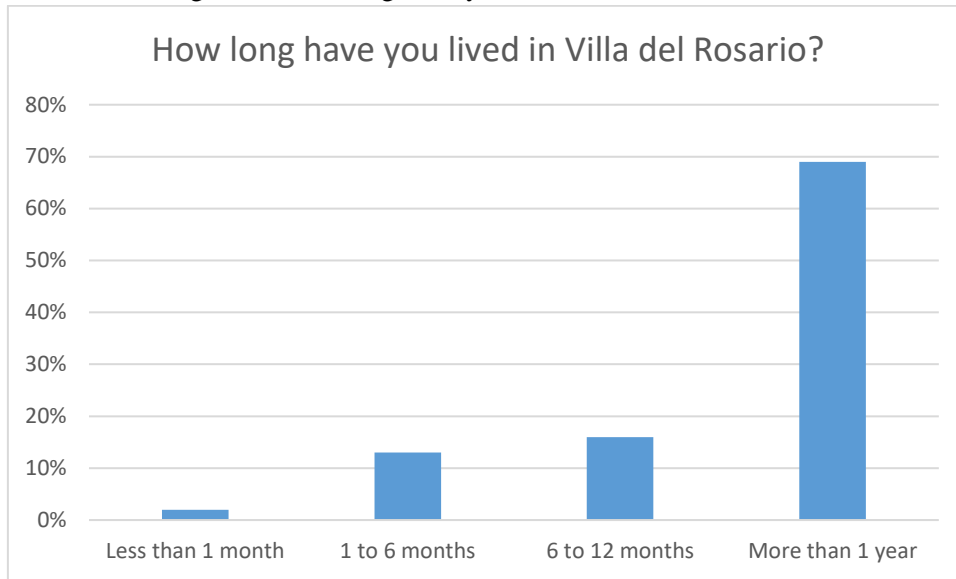
Table 2. How long have you lived in Villa del Rosario?

RANGE	QUANTITIES	PERCENTAGE
Less than 1 month		
1 to 6 months		13%
6 to 12 months		16%

More than 1 year 69%

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Figure 2. How long have you lived in villa del rosario?

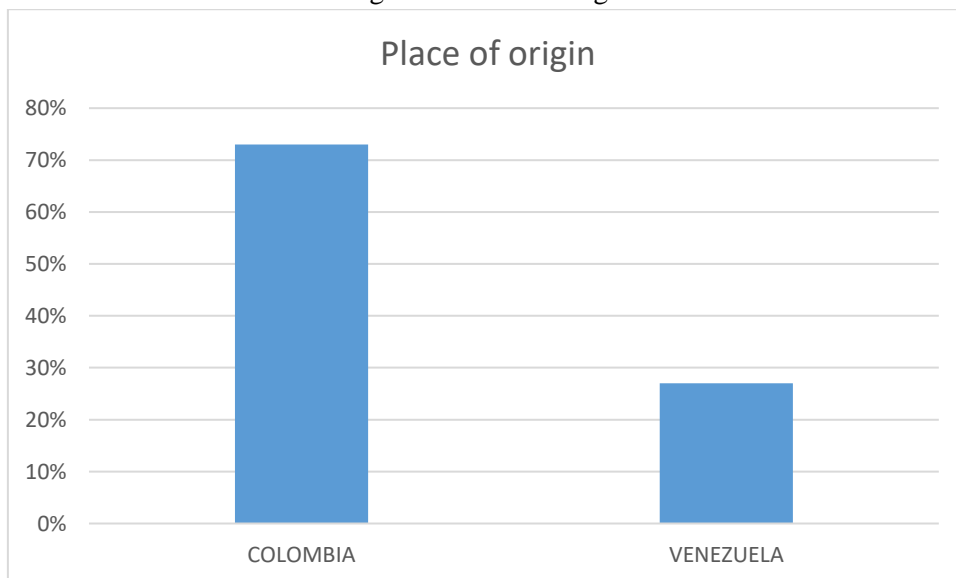


When asked how long they have lived in Villa del Rosario, 69% of the surveyed population answered that they have lived there for more than a year, 16% have lived there for 6 to 12 months, 13% have lived there for 1 to 6 months, which shows that the people who have lived there for more than a year are from the municipality or those who have settled there due to emigration.

Table 3. Place of origin

RANGE	QUANTITIES	PERCENTAGE
COLOMBIA		73%
VENEZUELA		27%

Figure 3. Place of origin

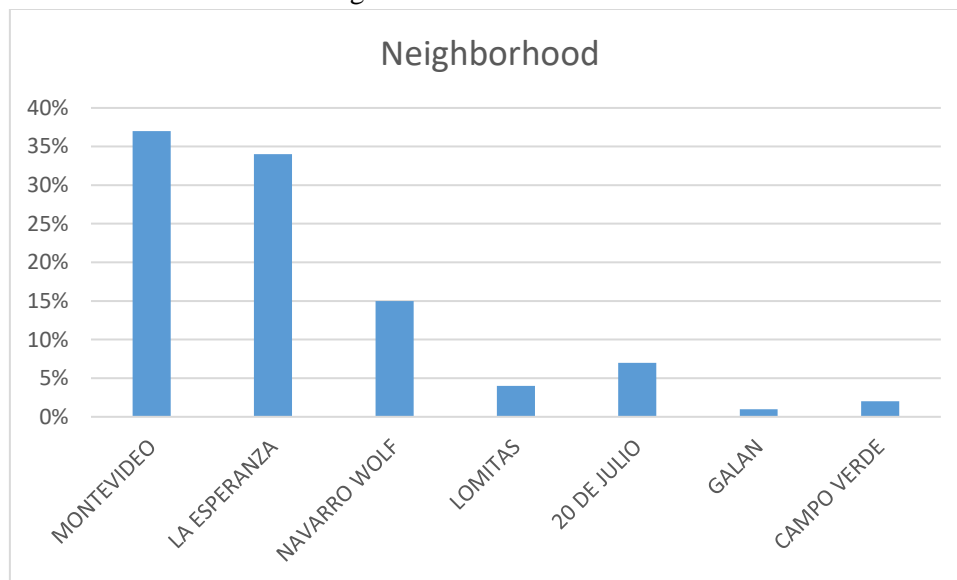


In the questionnaire, the highest prevalence was 73%, equivalent to 69 people of the population, who answered that they come from Venezuela, while 27%, 25 people mentioned that they come from Colombia. With the previous result it can be observed that the great part of the population is from the neighboring country, where massive migration is the result of the lack of opportunities and insecurity, for this reason they move to Colombia in search of dreams of a better future, in most cases they have to look for an immediate alternative and opt for an informal job such as waste recycling. All this due to lack of documentation and lack of opportunities.

Table 4. Residence address

neighborhood	QUANTITIES	PERCENTAGE
MONTEVIDEO		37%
HOPE		34%
NAVARRO WOLF		
LOMITAS		4%
JULY 20		7%
GALAN	1	
GREEN FIELD		0,02

Figure 4. Residence address

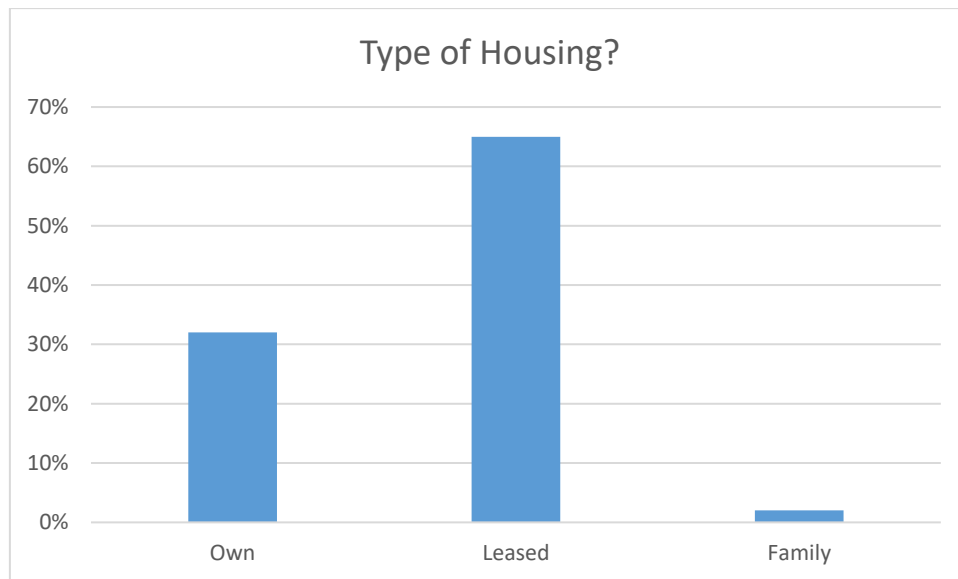


In the questionnaire, 37% of the population responded that they live in the Montevideo neighborhood, 34% live in the La Esperanza neighborhood, 15% in Navarro Wolf, 4% in Lomitas, 7% in 20 de Julio, 1% in Galán, and 2% in Campo Verde. With the above, it could be observed that the surveyed populations live near the areas where they make their rounds and near the warehouse where they deliver the collected material.

Table 5. Type of Housing?

RANGE	QUANTITIES	PERCENTAGE
Own		32%
Leased		65%
Family		

Figure 5. Type of housing?

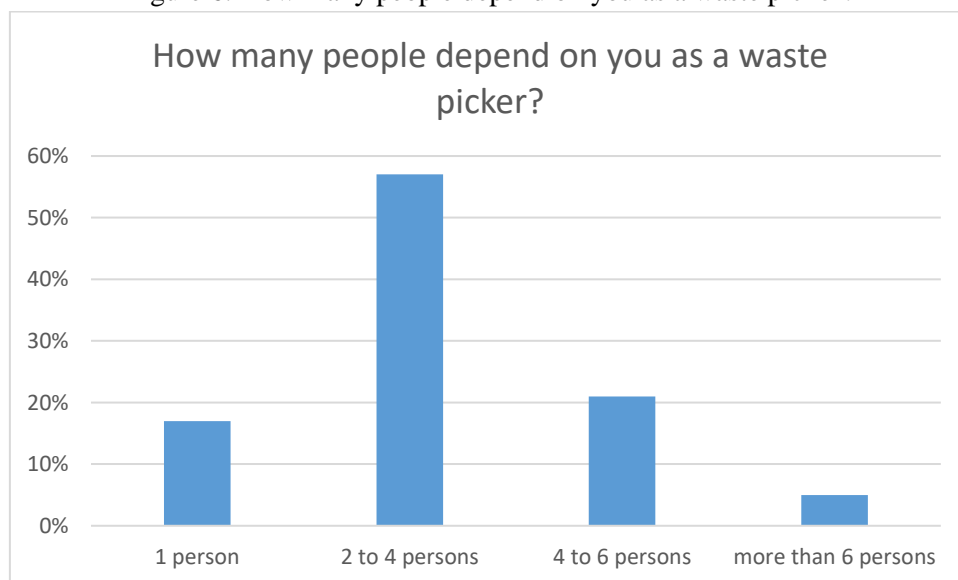


The result of the question shows that 65% of the population studied rents their homes because they do not have the possibility of acquiring a housing subsidy or sufficient income to help improve the quality of life of their families, since if they had their own home their income would be used for other important needs such as education for their children and social welfare, 3% live in family homes where the expenses are shared among the entire family, and 32% own their own home but it has been more due to land invasion.

Table 6. How many people depend on you as a waste picker?

RANGE	QUANTITIES	PERCENTAGE
1 person		17%
2 to 4 persons		57%
4 to 6 persons		21%
more than 6 persons	5	5%

Figure 6. How many people depend on you as a waste picker?

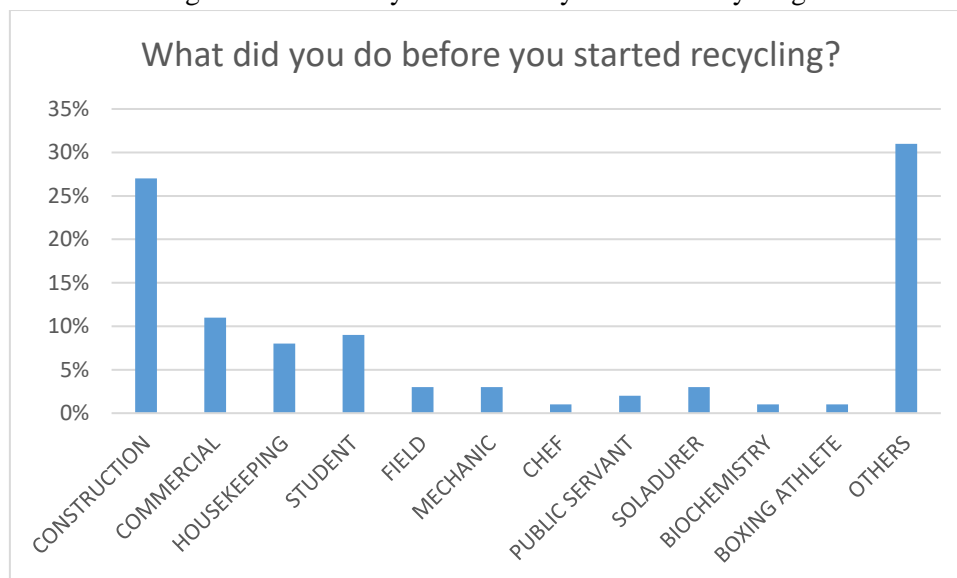




The most representative family nucleus, according to the results of the survey, is between 2 to 4 people, which translates to 57% of the surveyed sample, we see that in the recycling activity it is common to see entire families doing the daily work, among this group of people are composed of parents and minor children who often are not studying or doing any activity that has to do with their childhood, 21% are family groups of between 4 to 6 people, large family groups where there are elderly people who are economically dependent on their children who carry out the recycling activity, and only 5% represent family groups of more than 6 people, and 16% are family groups of one individual.

What did you do before you started recycling?		
RANGE	QUANTITIES	PERCENTAGE
CONSTRUCTION		27%
COMMERCIAL		11%
HOUSEKEEPING		8%
STUDENT		9%
FIELD		3%
MECHANIC		3%
CHEF	1	
PUBLIC SERVANT		
SOLADURER		3%
BIOCHEMISTRY	1	
BOXING ATHLETE	1	
OTHERS		31%

Figure 7. What did you do before you started recycling?

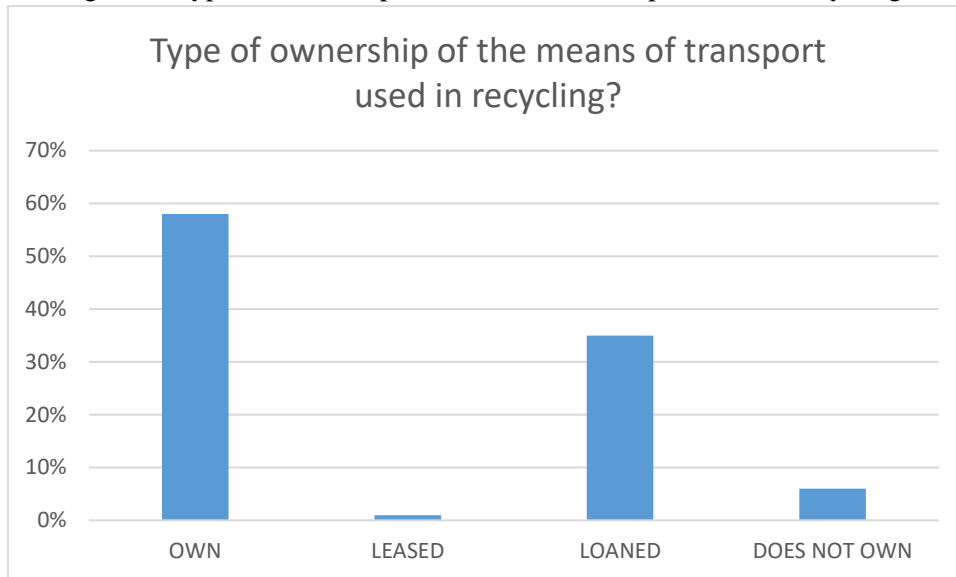


This response is open-ended and results in the following table, which shows the diversity of trades and occupations in which the recyclers worked. Among the activities with the greatest weight are construction workers, salespersons and domestic staff. These people are between 18 and 23 years of age. It can be said that due to emigration from the neighboring country, young people are leaving their studies and goals to emigrate to other countries in order to find a way to meet their needs.

Table 7. Type of ownership of the means of transport used in recycling?

RANGE	QUANTITIES	PERCENTAGE
OWN		58%
LEASED	1	
LOANED		35%
DOES NOT OWN		

Figure 8. Type of ownership of the means of transport used in recycling?



It was observed that the people who have carts on loan are because the association has assigned them to the recyclers, and that the motorcycles are owned by the association, according to the recyclers who responded, it is worth noting that most of them make reference to the sack. This creates a problem because not having an appropriate vehicle to transport recyclable material restricts them to transport larger quantities, limiting their income.

Table 9. Do you belong to any trade association or guild of waste pickers?

RANGE	QUANTITIES	PERCENTAGE
Yes		29%
No		71%



71% of the surveyed population responded that they do not belong to any type of association or recycler's guild, due to different factors such as lack of documentation, this trade is done sporadically and for the association this is not convenient.

#### 4. Discussion and conclusion

Due to the border crisis, hundreds of Venezuelan migrants remain in Colombia without any kind of documentation and therefore become a floating population that lacks formal access to basic rights and services. This makes them vulnerable to labor exploitation, to being discriminated against, families arrive with increasingly scarce resources and have an immediate need for documentation, housing, food, due to this most of them opt for informal work which in most cases is waste recycling.

In the question type of living, 61% of the population responded that they do not have their own housing, this being a factor that harms the socioeconomic level because it is an additional expense that they have to cover, where most of the time they cannot guarantee a decent housing where the lack of economic resources, not having a decent job, poor labor remuneration, at the same time their family group on average is composed of 2 to 4 people which implies that they must guarantee the basic food basket, health expenses. It is difficult to meet their needs considering that most of the population are heads of households.

The vast majority of the surveyed population is located near the area where the waste is collected, highlighting the Montevideo neighborhood, which is the closest area to the place where the collected waste is sold, and allowing for a shorter commute when making their morning trips.

The most commonly used vehicle is human-powered (the cart). This means that transportation is a labor-intensive activity with great physical wear and tear; recyclers depend on their labor force to transport the material. The vehicle/recycler ratio is one to one, which affects the average productivity per worker and is a limitation for generating savings, in addition to long working hours, inadequate intake, and work stress due to not meeting self-proposed resource goals. Most recyclers do not have their own carts; the association provides them with this means of transportation.

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