

Identity of recyclable material collectors associated with Chapecó (SC), Brazil

A identidade dos catadores de materiais recicláveis associados de Chapecó (SC), Brasil

Rosane Villanova Borges¹ , Mirian Carbonera¹ , Larissa de Lima Trindade² 

ABSTRACT

The aim of the present study was to identify whether recyclable material collectors in Chapecó Associations, Santa Catarina State, are aware of their rights and role in helping to protect the environment. This study combined qualitative and quantitative methodologies and used semi-structured questionnaires that were applied to 120 collectors from 12 associations. Content analysis was the tool adopted for data collection, and data analysis was performed using Statistical Package for Social Sciences (SPSS) software, version 28.0. According to the study results, many collectors were unaware of their rights, but they do not identify themselves as workers in the recycling sector. In total, 100% of collectors recognize waste collection relevance for both the environment and the community; however, they still face the stigma of handling “trash.” Thus, 55.9% of the assessed group stated that they do not want their children to pursue their profession. Accordingly, collectors have a paradoxical position in the recycling chain. In fact, despite providing economic inclusion, this activity lacks social recognition, and these professionals’ work is still carried out under precarious conditions.

Keywords: collectors; selective collection; waste.

RESUMO

Este artigo teve como objetivo identificar se o catador de material reciclável inserido em associações em Chapecó/SC tem conhecimento de seus direitos e do papel que desenvolve em prol do meio ambiente. A metodologia segue a orientação qualiquantitativa, sendo aplicados questionários semiestruturados aos 120 catadores pertencentes às 12 associações. Utilizou-se o *software* Statistical Package for Social Sciences (SPSS) versão 28.0, além da análise de conteúdo dos dados levantados. O estudo demonstrou que parte significativa dos catadores não conhece seus direitos e não se identifica como trabalhador do setor da reciclagem. Constatou-se que 100% dos catadores reconhecem a importância da atividade da catção para o meio ambiente e a comunidade, porém sofrem o estigma por trabalharem com o lixo. Nesse sentido, 55,9% do grupo afirmou que não queriam que os filhos seguissem a profissão. Perante os resultados se conclui que o trabalho desenvolvido pelo catador ocupa um espaço de contradição na cadeia da reciclagem, pois, apesar da inclusão econômica por meio do trabalho, ele é produzido em condições precárias e sem reconhecimento social.

Palavras-chave: catadores; coleta seletiva; resíduos.

¹Community University of the Chapecó Region – Chapecó (SC), Brazil.

²Southern Border Federal University – Chapecó (SC), Brazil.

Corresponding author: Rosane Villanova Borges – Postgraduate Program in Environmental Sciences, Community University of the Chapecó Region – Servidão Anjo da Guarda, nº 295-D, Efapi – CEP: 89809-900 – Chapecó (SC), Brazil. E-mail: rosanevb@gmail.com

Conflicts of interest: the authors declare no conflicts of interest.

Funding: Community University of the Chapecó Region.

Received on: 11/10/2024. Accepted on: 07/22/2025.

<https://doi.org/10.5327/Z2176-94782351>



This is an open access article distributed under the terms of the Creative Commons license.

Introduction

For over 50 years, many workers in Brazil have found a unique income source in scavenging materials discarded by the population (Borges et al., 2023). Recyclable material collectors' (RMCs) ties to the community are rooted in the spaces they work in, namely, on the streets or in landfills. These professionals face prejudice for working with society's discarded waste¹; in other words, their craft is seen as polluted, just as the solid waste² (RS) they work with (Colombijn, 2020). However, their activity has significant socioenvironmental relevance for cities (Parra, 2020; Borges et al., 2023). Furthermore, their work is carried out based on informal relationships, and it impairs the recognition of their work by both public administration bodies and civil society (Silva, 2017; Parra, 2020).

Although the RMC profession is recognized by the Brazilian Classification of Occupations (BCO) (Borges et al., 2023), informality still crosses these individuals' work trajectory, besides the fact that this activity lacks access to a whole range of labor rights or social security that would help protect these professionals in case of labor accidents. Although collectors remain as the weakest link in the recycling chain, they are key players in the entire collecting process since they account for approximately 90% of recyclable materials (RMs) that reach the industry (Silva, 2017; Gutberlet and Carenzo, 2020). These professionals face hard street working, lack of society recognition, and city halls' hygienist vision (Medina, 2017; Parra, 2020; Borges et al., 2023; Chikarmane and Narayanan, 2024), besides suffering from a lack of population support in making the proper separation of RMs from non-recyclable waste (Ruiz et al., 2022; Borges et al., 2023).

In the late 1990s, RMCs started their collective mobilization trajectory, which allowed their identification as a labor category with some social organization degree (Silva, 2017). The creation of the National Movement of Recyclable Materials Collectors, also known as MNCR, was crucial to strengthening and recognizing their work and collective identity. These professionals now call themselves "recyclable material collectors" rather than embodying derogatory and commonsense terms such as "garbage collectors" or "scrap dealers" (Silva, 2017; Bouvier and Dias, 2021). According to Cardoso³ (2021, p. 172):

The category has a strong identity, it identifies itself as recyclable material collectors rather than as recyclers.

This identity is precisely designed to separate workers from employers. Calling them recyclers is like calling a banker, banker; a landless worker, landowner; or a worker, boss.

The National Solid Waste Policy (NSWP) was launched in 2010. It identifies RMCs as priority partners in selective waste collection and as key actors in addressing social inequalities (Brasil, 2010). RMCs' recognition as a work category by the BCO and the legislation was the result of years of this category's mobilization (Severo and Guimarães, 2020a; Gutberlet and Carenzo, 2020; Bouvier and Dias, 2021; Borges et al., 2024). However, Baptista (2015) stated that the acquired advancements are not perceived by the involved stakeholders; consequently, the benefits induced by this policy are not fully enforced.

Therefore, the present article introduces an investigation aimed at the following questions: Are RMCs involved in associations in Chapecó municipality, Santa Catarina State, aware of their rights and of the role they play in protecting the environment? How do scavengers identify themselves, and what is their perception about how they are recognized by the community? The hypotheses sought to be investigated were: (H1) RMCs are aware of their rights and they recognize themselves as workers of the recycling sector; (H2) RMCs are aware of the role they play in protecting the environment. All hypotheses were tested based on gender issues.

The goal was to analyze discourses crossing these professionals' activities by addressing their work in environmental protection, their achievements, challenges, and the limitations contributing to their invisibility, and social exclusion. It is worth noting that the study aims encompass introducing new perspectives on these workers' identity, including their knowledge of policies and movements supporting their work, in order to highlight the demands and gaps linked to these recycling professionals' emancipation.

This research is justified by the relevance of waste collection activities, mainly in the NSWP context, given these professionals' work relevance for the recycling industry (Borges et al., 2023), their contribution to the preservation of natural resources by reducing the amount of landfilled solid waste, and their role in creating new job positions and income (Parra, 2020; Ruiz et al., 2022).

¹ Garbage: waste from human activities considered useless, undesirable, or disposable by its generators (Borges et al., 2023). The scavengers' category will be herein adopted based on two theoretical approaches: the first one focuses on having scavengers transforming garbage into a commodity as highlighted in studies by Appadurai (1991); the second one introduces garbage as an identity issue, according to Douglas (2001). These professionals carry the stigma of dirt in their identity because they are always in contact with "garbage."

² Solid waste: "discarded material, substance, object, or good resulting from human activities in society whose final destination is carried out, proposed to be carried out, or obliged to be carried out in solid or semi-solid state, as well as gases contained in containers and liquids whose particularities make their release into the public sewage system or into waterbodies unfeasible, or that require technically or economically unfeasible solutions in view of the best technologies available" (Brasil, 2010, p. 11).

³ Custódio interviewed Alexandre Cardoso, a scavenger, the son of scavenger parents, who was raised, from the earliest months of his life, among scavengers in Porto Alegre, Rio Grande do Sul. Cardoso has become the voice of this profession in Brazil (Custódio, 2021).

Garbage as an identity issue

Garbage collection activities involves gathering discarded materials from the community, followed by separating, pressing, baling, and selling them for their further processing by the industry, which transforms them into raw materials or products for consumption. This activity is a new source of work and income for waste collectors (Ruíz et al., 2022). After the collected material is subjected to the recycling process, it becomes a new product; thus, “trash” goes from being a despised to a desired good, to something with added value. Therefore, in order to achieve such a goal, the “object/garbage” takes a consumption, disposal, and resignification path within a social, economic, cultural, political, and environmental context. Moreover, the actions of waste collectors move from one extreme position (from being disposable) to the other (to become a desirable good) (Baptista, 2015).

According to Appadurai (1991), this “object/garbage” path helps in better understanding how the RMC work can (re)signify “trash” and these workers’ life itself. Baptista (2015), Moura et al. (2020), and Silva et al. (2020) stated that “trash” is (re)signified by collectors due to the relevance of their work, which allows their survival. Douglas (2001) introduced the idea that impurity and contamination represent everything that needs to be separated, ruled out from society, in order for it to reaffirm its own order.

“Trash” is something out of place that refers to the sense of a set of ordered connections and, on the other hand, to the disruption of the same order. Waste represents “danger” and banishing it is not a negative act, but a way to organize the environment. Anything out of place is a threat, and dangers are identifiable in this cleansing process (Douglas, 2001).

From this perspective, dirt, impurity, and danger are linked to professionals who work with this material. Just as individuals seek to remove and treat waste by disposing of it in landfills, they also seek to remove and exclude workers from “trash.” Although solid waste is closely linked to the planetary crises triad, namely, climate change, pollution, and biodiversity loss, RMCs’ work remains undervalued, besides lacking social recognition (Borges et al., 2023).

According to Moura et al. (2020, p. 250), being a waste collector means being “excluded from inclusion”; in other words, it means being an individual “included by its work, but excluded by the activity it performs.” This is so because they work with what is discarded by society and because of their dirty and poorly dressed appearance; therefore, these professionals live under the stigma of dirt and impurity (Medina, 2017; Ruíz et al., 2022; Borges et al., 2023). Although these professionals are excluded from the recycling chain, selective waste collection in Brazil is only possible because of RMCs, who form a cheap and exploited labor force (Severo and Guimarães, 2020b).

The recycling sector growth in Brazil and Latin America is based on informal operations and driven by the economic crisis due to the high unemployment rates caused by it. However, the continent is a pioneer in launching RMC organizations (Ruíz et al., 2022). RMCs

are historically linked to marginalized people who are stigmatized for working with “trash.” This finding is observed in research on RMC carried out in Latin American countries such as Colombia, Peru, Chile, Mexico, Nicaragua, Argentina, and Paraguay (Hartmann, 2012; Favela Ávila et al., 2013; Rateau and Tovar, 2019; Crocco et al., 2020; Parra, 2020; Dimarco, 2021; Ruíz et al., 2022; Tucker, 2024).

The scavenging topic is often associated with male workers. However, data have shown that this social category mostly comprises female workers (Niño and Hernández, 2012; Parra, 2020; Borges et al., 2023). Research has also shown that approximately 50% of this sector is composed of female scavengers (Borges et al., 2023). According to the MNCR (2014), this number could reach 70% of this sector’s workforce. Accordingly, the recycling sector is featured as a workplace, despite the female prevalence in it (Niño and Hernández, 2012; Gutberlet and Carenzo, 2020; Rodero et al., 2021; Borges et al., 2023). The feminine presence in cooperative activities and in waste-picking associations is remarkable because such an activity does not influence the time needed for them to take care of the family (Niño and Hernández, 2012; Borges et al., 2023).

Scavengers are actors in the capitalist and patriarchal system that mixes gender, race, and social class. Scavenging is a means of survival for many women, mainly among the poorest classes, due to their difficulty in entering the formal labor market. It is worth highlighting that many of these women are fully in charge of affording their families (Borges et al., 2023; Ferreira et al., 2023). However, over the years, these women have organized themselves by working in associations/cooperatives; they now occupy leadership positions and fight for their rights, for strengthening their category’s political organization in order to redefine their lives (Ferreira et al., 2023).

Finally, besides suffering from the stigma of working with “trash,” scavengers are still seen as “impure” and “contaminated” for being engaged in a low-status activity that, actually, requires hours of hard work in both collecting and separating/sorting garbage in order to add value to this “object/garbage.” Although collectors are not the only link in the recycling chain, they are the ones who enable turning trash into RMs; however, in return, they are excluded from the profit and status emerging from the system as a whole.

Methodology

The study was carried out in the Chapecó municipality, Western Santa Catarina State, Southern Brazil. This municipality was created on August 25, 1917, and its economic and population growth got more intense from 1950 onward. Chapecó houses 254,785,000 inhabitants (IBGE, 2023), and 91.6% of them live in urban areas (Borges et al., 2024). Its economic growth was influenced by the agro-industrial sector.

The Chapecó government provides selective waste collection services to RMC associations in order to meet the goals set by the National Reform Program (NSWP). This service is carried out in compactor

and box trucks. However, the material coming from compactor trucks presents poor quality, and its rejection rate is close to 80%. The rejection rate recorded for materials in box trucks is close to 30% (Borges et al., 2024).

The present study followed a qualitative and quantitative approach. A semi-structured questionnaire with open- and closed-ended questions was used to quantitatively and qualitatively organize the collected information. The study was conducted in two stages.

All 15 associations were visited at the first study stage. Subsequently, the research project was registered on *Plataforma Brasil* and approved by the Research Ethics Committee (CEP) of the Community University of Chapecó Region (Unochapecó) under Opinion no. 121,967/2021, in compliance with Resolution no. 466/2012 by the National Health Council. Three of the 15 RMC associations registered in the Chapecó municipality, Santa Catarina State, did not participate in the study: two of them just declined to participate and one association became a cooperative. Therefore, 12 RMC associations joined the study.

Semi-structured questionnaires were applied to the 12 participating associations at the second study stage; data were collected from February to June 2022. It should be noted that 120 members responded to the survey instrument. The following criteria were set to delimit respondents' participation: being in the association for 6 months or more and being over 18 years old. Table 1 presents the associations' name, foundation year, and number of members who met the survey requirements.

The questionnaire was divided into three parts: the first one regarded respondents' knowledge of the NSWP, MNCR, and labor rights, their time performing this activity, and their time working in the association; the second part addressed issues such as discrimination at work, discrimination in collectors' neighborhood, and waste collection relevance for the environment; and the third part of the questionnaire concerned these workers' importance and satisfaction with the RMC profession. Answers followed a Likert-type scale, which ranged from "very important" to "not important" and from "very satisfied" to "very dissatisfied," respectively. Table 2 presents the three parts of the questionnaire:

Content analysis was used to assess qualitative data collected from scavengers' speech. The aim of this method is to seek meanings and the significance of the provided information by taking into consideration respondents' realities and the effects they had on the interviewer in order to better understand and interpret the analyzed reality (Cardoso et al., 2021).

The Statistical Package for Social Sciences (SPSS), version 28.0, was used to analyze the herein collected quantitative data. χ^2 tests were run to assess the association between categorical variables and gender, and this was followed by adjusted residuals or Fisher's exact test. Student's t-test was used to compare the recorded means at 5% significance level ($p < 0.05$).

It is worth observing that the research instrument was validated before the questionnaires were applied to the RMC associations in order to adjust the instrument to research aims and to ensure study extrapolation.

Table 1 – Associations' name, foundation year, and number of members in the association for 6 months or more.

Association/name	Foundation year	Number of members
Bormann – Associação de Catadores de Materiais Recicláveis Bormann Limpo	September 01, 2016	8
Parque das Palmeiras – Associação de Catadores Parque das Palmeiras	March 12, 2017	9
Esplanada – Associação de Catadores Esplanada	May 17, 2017	14
Asmac – Associação de Catadores de Materiais Recicláveis de Chapecó	May 05, 2015	7
Lider – Associação dos Catadores de Materiais Recicláveis Lider	March 20, 2019	6
Vila Betinho – Associação de Catadores de Materiais Recicláveis	October 02, 2017	24
Asmavi – Associação de Catadores de Materiais Recicláveis Nova Vida	September 07, 2011	5
Armarluz – Associação de Catadores de Materiais Recicláveis Raio de Luz	October 05, 2009	6
Acran – Associação de Catadores de Materiais Recicláveis Amigos da Natureza	February 20, 2015	14
Esperança – Associação de Catadores de Materiais Recicláveis Esperança	February 05, 2019	10
Arsol – Associação de Catadores de Materiais Recicláveis Solidário de Chapecó	June 14, 2014	8
Rota na Reciclagem – Associação de Catadores de Materiais Recicláveis na Rota da Reciclagem	May 17, 2016	9
*Ecovida – Associação de Reciclagem Ambiental	----	---
**Acmar – Associação dos Catadores de Chapecó	---	---
Total number of members		120

*The ECOVIDA president decided not to participate in the research. **The Chapecó Waste Collectors Association (ACMARC) president decided not to participate after the research had started.

Source: based on Borges et al. (2024).

Table 2 – Applied questionnaire.

No.					
Location:		Date:			
1st part					
1. Sex: a. () Male; b. () Female.					
Knows NSWP		Yes ()		No ()	
Knows MNCR		Yes ()		No ()	
How do you identify yourself?		Scavenger ()	RMC ()	Recycler ()	T. R ()
Do you consider the professional card important?		Yes ()		No ()	
Do you pay INSS?		Yes ()		No ()	
What is the age of those who pay INSS?		X years			
Do you think INSS is important?		Yes ()		No ()	
How long have you been working as a scavenger?		Yes ()		No ()	
How long have you been a member of the association for?		Yes ()		No ()	
2nd part					
Do you feel discriminated against at work/What type of discrimination?		Yes () Answer		No () Answer	
Is there prejudice in your neighborhood?/What kind of prejudice?		Yes () Answer		No () Answer	
Do you know the importance of waste picking for the environment?/Which ones?		yes () Answer		No () Answer	
3rd part					
Questions	Very important	Important	Neutral	Little important	Non-important
Importance of knowing NSWP					
Importance of social security					
Importance of waste picking for the environment					
Is waste picking important for the community?					
What is the importance of community recognition for scavenging?					
Questions	Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied
RMCs' satisfaction with the profession					
Satisfaction with children following the scavengers' profession					
Satisfied with how the community views the scavenging activity					

São Francisco Cooperative and the Environmental Recycling Association (ECOVIDA) joined this process. The ECOVIDA did not agree to join the research, but it agreed to be part of the instrument validation. A total of 16 interviews were conducted, and the interviewees' profiles are available in Table 3.

Instrument validation allowed interviewers to become familiar with the assessed group; therefore, it was decided to apply the instrument to associated/cooperative RMCs. Independent RMCs do not follow the same work procedures set by the institutions, such as schedules, RM separation and sales routines, and other work accountabilities of associated/cooperative RMCs. This feature allowed adjusting the instrument to the associated RMCs. Thus, questions about labor issues were added to the

instrument, including whether respondents contribute to National Institute of Social Security (INSS) and the duration of their contributions. This process led to analyses taken as relevant to the study aim.

Results and Discussion

Waste pickers' knowledge about NSWP, MNCR, and labor rights

Results on RMC's knowledge about NSWP, MNCR, and their identity as workers of the recycling sector, labor rights, the time they have been performing this activity, and their time in the association are variables associated with gender issues (Table 4).

Table 3 – Associations' name, total number of respondents, and gender.

Association/cooperative	Total	Gender	
		Male	Female
Associação de Reciclagem Ambiental – Ecovida	4	1	3
Cooperativa de Trabalho de Catadores de Materiais Recicláveis São Francisco – Cooperação Francisco	12	6	6
Total number of respondents	16	7	9

Table 4 – Associated RMCs' knowledge about NSWBP, MNCR, and labor rights.

Variables	Total	Gender		P-value
		Male	Female	
Knows NSWBP – n (%)				0.200 ^b
Yes	28 (23.3)	17 (29.3)	11 (17.7)	
No	92 (76.7)	41 (70.7)	51 (82.3)	
Knows MNCR – n (%)				0.106 ^b
Yes	54 (45.0)	31 (53.4)	23 (37.1)	
No	66 (55.0)	27 (46.6)	39 (62.9)	
How do you identify yourself? – n (%)				<0.001 ^b
Scavenger	25 (20.8)	13 (22.4)	12 (19.4)	
RMC	26 (21.7)	22 (37.9) [*]	4 (6.5)	
Recycler	65 (54.2)	21 (36.2)	44 (71.0) [*]	
Works in recycling	4 (3.3)	2 (3.4)	2 (3.2)	
Do you consider the professional card important? – n (%)				0.829 ^b
Yes	89 (74.2)	42 (72.4)	47 (75.8)	
No	31 (25.8)	16 (27.6)	15 (24.2)	
Do you pay INSS? – n (%)				0.269 ^a
Yes	23 (19.2)	14 (24.1)	9 (14.5)	
No	97 (80.8)	44 (75.9)	53 (85.5)	
What is the age of those who pay INSS? – mean±SD	43.3±14.5	44.3±15.7	41.8±13.3	0.696 ^a
Do you consider INSS important? – n (%)				0.352 ^c
Yes	116 (96.7)	55 (94.8)	61 (98.4)	
No	4 (3.3)	3 (5.2)	1 (1.6)	
Time scavenging (years old) – n (%)				0.993 ^b
Up to 4	16 (13.3)	8 (13.8)	8 (12.9)	
5–9	32 (26.7)	16 (27.6)	16 (25.8)	
10–14	19 (15.8)	9 (15.5)	10 (16.1)	
Over 15	53 (44.2)	25 (43.1)	28 (45.2)	
Time in the association (years old)				0.453 ^b
Up to 4	59 (49.2)	31 (53.4)	28 (45.2)	
5–9	44 (36.7)	21 (36.2)	23 (37.1)	
Over 10	17 (14.2)	6 (10.3)	11 (17.7)	
Total	120 (100%)	58 (48.3%)	62 (51.7%)	

^aStudent's t-test; ^b χ^2 test; ^cFisher's exact test; ^{*}Statistically significant association in the residuals test adjusted to 5% significance.

The rate of women working in the associations is larger than that of men, and this finding corroborates data presented by Niño and Hernández (2012), MNCR (2014), Parra (2020), and Borges et al. (2023), who have confirmed the recycling sector's feminization. In total, 76.7% of the associated RMCs are unfamiliar with the NSWP. Knowing the legislation is essential for all citizens since it allows pickers to consciously and responsibly exercise their rights and duties. According to these data, a significant portion of associated waste pickers is fully unaware of updates brought about by NSWP and of the benefits this category has achieved due to legal provisions, and it was confirmed in the work by Baptista (2015).

The group's lack of coordination was also confirmed: more than 55% of the pickers are not familiar with MNCR. The organization was responsible for the category's collective mobilization that has led to the waste picker profession's recognition by BCO in 2002, as well as to the adoption of the term "recyclable material collector." Whenever they were asked about how they identify themselves, 54.2% of the pickers called themselves recyclers, whereas only 21.7% of them called themselves RMC. This finding does not meet data from MNCR and disagrees with results published by Cardoso (2021, p. 172) who stated that this category "has strong identity, identifies itself as recyclable material collectors rather than as recyclers." According to Cardoso (2021), the recycler is the boss, the one who owns the recycling company. Results showed that a large fraction of the interviewed group does not identify itself as "RMC"; more than 50% of these individuals call themselves "recyclers."

From this perspective, this finding has a statistically significant association with gender, since 37.9% of those who declared themselves RMC were men and only 6.5% of them were women. This finding is likely related to the fact that most leaders in these collective organizations are men who join the process to create these associations, including training courses. They identify themselves as professionals at the very basis of the recycling sector, i.e., as "RMCs."

Another statistically significant aspect regards respondents in Chapecó who identify themselves as recyclers: 36.2% of them are men and 71% women. This outcome reinforces the idea that neither the male nor the female group identifies itself as a recycler. Therefore, it is important to emphasize that 93.5% of the women in these associations do not identify themselves as recyclers; they only work to have another income source for their families. On the other hand, this rate is lower among men: 63.8% of the total. This disparity likely emerges from these women's inability to attend training courses, since they are responsible for caring for their families and for working in the association, a fact that prevents them from having time for additional activities (Figure 1).

According to 74.2% of the participants, having a formal job is important; 96.7% of the assessed group sees the importance of paying the INSS. A significant fraction of this group does not identify itself as belonging to a recycling sector category, i.e., as RMC; thus, the possibility of coordinating efforts to adjust labor rights is remote. Therefore, MNCR has been struggling at the Chamber of Deputies' Social Security and Family Committee to approve Senate Bill no. 399/12⁴, which would include RMCs in the list of Special Social Security beneficiaries (MNCR, 2013). Only 19.2% of this group pays INSS as self-employed workers, and the group of payers comprised older RMCs (over 43.3 years old) who aimed to retire. Figure 1 is consistent with the national scenario, since, according to MNCR (2013), 80% of RMCs do not have access to social security.

When it comes to the time spent in garbage collection, approximately 60% of this group has been in this activity for more than 10 years, and 50.9% of it has been affiliated with the associations for 5 years or more. Studies carried out in the Ponta Grossa municipality, Paraná State, pointed out that 25% of waste collectors have been in this profession for more than 10 years; 56.3% of them have been active in associations for 1–4 years (Moura et al., 2020). Data from Asunción, in Paraguay, showed that 31.8% of these professionals have been in this activity for less than 6 years and 31.8% of them for 6–10 years (Rodero et al., 2021). The values recorded for Chapecó associations are higher than the ones presented above.

According to these results, the assessed group has engaged in waste collection for over a decade; more than half of them have been members of an association for at least 5 years. The time they have been both in the activity and in the association turns the possibility of seeking another occupation into a quite remote move. The debate about the fact that 76.7% of RMC members are not familiar with SNWP and that only 21.7% of pickers call themselves RMC reinforces the idea that the analyzed group of people do not recognize their rights nor consider themselves workers of the recycling sector. These individuals found in waste collection the means of their survival, as reported: "I had no way out, I couldn't find a job, so I joined it in here" (CMR 30, 2022, Chapecó/SC).

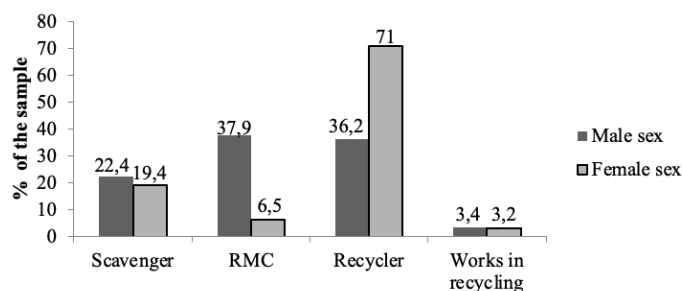


Figure 1 – How do you identify yourself according to gender?

⁴ Bill no. 3997/2012 includes recyclable material collectors in the group of Special Social Security insured individuals. Thus, this sector would contribute with approximately 2% of its own income to retirement benefits (MNCR, 2013).

Nevertheless, they realize the urgency of adjusting labor rights to enable future retirement.

The current results highlight the vulnerability of the assessed group, as they expose a lack of coverage for retirement, as well as for cases of illnesses and labor accidents. This scenario makes it impossible for RMCs to perform their work activities; these data were confirmed by Borges et al. (2024). If one bears in mind the environmental and social contributions RMCs give to the community, it is interesting to observe that they are often not recognized as workers, besides suffering from precarious working conditions and from a lack of social protection (Rodero et al., 2021; Ruíz et al., 2022; Borges et al., 2023). This reality is also observed in Latin American countries such as Argentina, Chile, Colombia, Costa Rica, Ecuador, Mexico, and Peru (Niño and Hernández, 2012; Ruíz et al., 2022; Espinosa-Aquino et al., 2023).

How important it is to know NSWP and social security

Data on the relevance of knowing NSWP and of having a social security number based on answers by the analyzed group were related to gender (Table 5).

As shown in Table 4, although 76.7% of the assessed group was unaware of NSWP, 74.2% of the associated RMCs considered it very important or important to learn about the law. This result highlights the need for continuous training for waste pickers in order to improve their work, their participation in enterprises' management, and the possibility of turning these collectives into recycling cooperatives. This progress would allow these professionals to achieve certain labor rights, including INSS payment⁵.

The group of RMC members sees the relevance of having a social security number because 98.4% of them answered that it was very important or important. This finding reinforces the urgency of adjusting labor rights for these RMC members. Although this activity is regulated by BCO, MNCR demands a whole series of social security benefits, such as these professionals' status as special insured persons, 2% income contribution to INSS, and retirement based on time working without contributions (MNCR, 2013). This is one of MNCR's challenges, namely seeking the approval of Bill n. 399/2012 by the National Congress (MNCR, 2013).

Thus, H1 was not confirmed, as a significant fraction of the RMC group in Chapecó associations are unaware of their rights and 76.7% of this group is unaware of NSWP. Only 21.7% of these group members call themselves RMC and 55% of them are unaware of MNCR. Therefore, they do not recognize themselves as a category of the recycling sector, namely, as RMC. According to this group of workers, the recycling activity represents an alternative job for their survival; these people are often excluded from the labor market due to low schooling, illness, and age (Niño and Hernández, 2012; Medina, 2017; Crocco et al.,

2020; Ruíz et al., 2022; Borges et al., 2023). In the words of these waste pickers: "I was out of work and school" (CMR 110, 2022, Chapecó/SC), or even, "at the age you are at, you don't get a job anymore" (CMR 88, 2022, Chapecó/SC).

Finally, the association among data of "associated collectors' knowledge on SNWP, MNCR, and labor rights" (Table 4), of "relevance of knowing SNWP," and "of having a social security number" (Table 5) linked to gender allowed observing no statistically significant associations among them ($p > 0.05$).

Scavenging relevance for the environment and its stigmas

The group's answers were associated with gender in order to assess the discrimination faced by associated RMCs, the prejudice they deal with in their neighborhoods, and the relevance of their activity for the environment. A semi-structured questionnaire was applied in this research stage, and its results are shown in Table 6.

In total, 50.8% of the assessed group said "yes" to feeling discriminated against due to their waste collection activities, whereas 49.2% said "no" to the same question. RMC associations in Chapecó have unique features that deserve to be highlighted: they get selective collections from the city, part of the group works in warehouses sorting materials, and some waste pickers work on the city streets with their own vehicles, which are authorized by the city to circulate. This collection is performed in neighborhoods, and it is not allowed to remove RMs from containers (Borges et al., 2024). Therefore, only part of RMCs travel around the city in their vehicles looking for RM; furthermore, they face the population's prejudice, as shown by the interviews: "In fact, in the eyes, going through trash is like being trash, you are like part of the trash can" (CMR 9, 2022, Chapecó/SC); "Sometimes on the street, yes, they call a waste collector, a beggar" (CMR 88, 2022, Chapecó/SC); "There are people who face prejudice because of their dirty clothes, of the dirt" (CMR 30, 2022, Chapecó/SC).

The stigma experienced by waste pickers, who work with materials discarded by the community, is confused with the raw materials they collect to support their livelihood, and it confirms the belief that impurity and dirt are part of their identity (Douglas, 2001; Parra, 2020; Dimarco, 2021; Ruíz et al., 2022; Borges et al., 2023). The stigma of working with society's waste is a defining feature of these workers' lives, and it extends to the family sphere. The prejudice suffered by waste pickers' children in the school environment, for example, is addressed by Silva et al. (2020). This feature gets clear in the assessed group through the interviews with the waste picker: "At school, my daughter would hear: 'Look at the trash-can daughter,' and, then, my daughter said she saw this girl's mother picking up recyclables on the street" (CMR 82, 2022, Chapecó/SC).

⁵ The association does not force the payment of social security contributions, whereas 11% of cooperative members' remuneration is transferred to INSS (Silva, 2017).

Table 5 – Relevance of knowing NSWP and of having a social security number.

Variables	Total	Sex		P-value
		Male	Female	
Relevance of knowing NSWP – n (%)				0.857 ^b
Little important	2 (1.7)	1 (1.7)	1 (1.6)	
Neutral	29 (24.2)	16 (27.6)	13 (21.0)	
Important	62 (51.7)	29 (50.0)	33 (53.2)	
Very important	27 (22.5)	12 (20.7)	15 (24.2)	
Importance of having a social security number n (%)				0.361 ^b
Neutral	2 (1.7)	1 (1.7)	1 (1.6)	
Important	44 (36.7)	25 (43.1)	19 (30.6)	
Very important	74 (61.7)	32 (55.2)	42 (67.7)	
Total	120 (100)	58 (48.3)	62 (51.7)	

^b χ^2 test.

Table 6 – Discrimination against the scavenging activity, prejudice in waste pickers' neighborhoods, and the relevance of their activity for the environment.

Variables	Total	Gender		P-value
		Male	Female	
Do you feel discriminated against at work? – n (%)				0.995 ^b
Yes	61 (50.8)	30 (51.7)	31 (50.0)	
No	59 (49.2)	28 (48.3)	31 (50.0)	
Is there prejudice in your neighborhoods? – n (%)				0.793 ^b
Yes	25 (20.8)	11 (19.0)	14 (22.6)	
No	95 (79.2)	47 (81.0)	48 (77.4)	
Do you know scavenging relevance for the environment? – n (%)				0.441 ^c
Yes	113 (94.2)	56 (96.6)	57 (91.9)	
No	7 (5.8)	2 (3.4)	5 (8.1)	
Total	120 (100)	58 (48.3)	62 (51.7)	

^b χ^2 test; ^cFisher's exact test.

Discrimination against “trash” workers is observed in research carried out in Latin American countries such as Colombia, Peru, Chile, Mexico, Nicaragua, Argentina, and Paraguay (Hartmann, 2012; Favela Ávila et al., 2013; Rateau and Tovar, 2019; Crocco et al., 2020; Parra, 2020; Dimarco, 2021; Ruíz et al., 2022; Tucker, 2024). Despite the prejudice suffered for working with what is discarded by the community, associated RMCs have noticed a change in the community after environmental education campaigns were broadcast by Chapecó City Hall. These professionals are now seen as workers: “At first, they called us garbage collectors, but a few years later, they started to see us as workers. They recognized us; we were recycling to save the water” (CMR 13, 2022, Chapecó/SC); “It was V who changed scavengers' perspective in Chapecó, they started to give visibility to the collectors [...] they started to be better valued” (CMR 25, 2022, Chapecó/SC).

The aforementioned information was confirmed in the research by Borges et al. (2023). According to them, social recognition of RMCs' work is an ongoing process mainly linked to awareness campaigns about waste collection relevance for both society and the environment.

When it comes to prejudice toward waste pickers' work in their neighborhoods, 79.2% of the assessed group stated that they did not experience discrimination. According to the respondents, many neighbors worked or still work in the waste collection activity. One of these pickers stated: “A lot of people in my neighborhood work with this (waste collection)” (CMR 33, 2022, Chapecó/SC). These data reflect a local profile because, based on respondents' statements, the associations are located near pickers' homes. Furthermore, the local population works, or worked, in the waste collection activity.

Nevertheless, when they were asked whether they knew the relevance of their activity for the environment, 94.2% of the assessed group gave a positive answer to it. The following pickers confirmed this information in their interviews: “Clean up the planet. If we don’t clean it, everything ends up scattered around, little bags, polluting everything, and we’re the ones picking it up and taking it to the right place” (CMR 08, 2022, Chapecó/SC); “If we recycle and send it to the right place, it prevents it from going into rivers and from contaminating nature” (CMR 12, 2022, Chapecó/SC).

It is clear that associated RMCs acknowledge the relevance of waste collection activities as a means for the correct disposal of RMs in order to avoid environmental contamination. This finding corroborates those by Parra (2020), Borges et al. (2023), and Espinosa-Aquino et al. (2023), according to whom, environmental issues are perceived as a very important aspect of the work performed by RMCs. Therefore, discrimination against waste collection activities, prejudice in neighborhoods, and this activity’s relevance for the environment showed no statistically significant associations ($p>0.05$) with gender issues.

The relevance of waste collection for the environment, the community, and professional recognition

Data about the question on relevance of scavenging for the environment, the community, and the recognition of this activity by the population in association with gender issues are shown in Table 7.

According to Table 7, 100% of the associated RMCs consider the activity they perform as very important and important for the environment, as observed throughout the questionnaires:

Waste doesn’t end up in the environment, as it takes a long time to decompose, and trash ends up on the streets and in the rivers. The amount of material we remove from the landfill and the time it takes to decom-

pose. People aren’t aware of how to properly separate waste (CMR 25, 2022, Chapecó/SC).

It’s always good, because many people dump liters of waste in the woods, and it takes a long time for it to decompose. Keeping the city clean is good for our children in the future (CMR 16, 2022, Chapecó/SC).

Associated RMCs’ testimonies show that pickers’ discourses disclose their environmental awareness about how they help protect the environment. RMC 16’s concern with the impact of human actions on future generations is clear. The environmental matter was confirmed in the studies by Silva et al. (2020), Ruiz et al. (2022), and Borges et al. (2023), according to whom, waste pickers acknowledge the relevance of their activity for the environment. However, Parra (2020), Silva et al. (2020), Rodero et al. (2021), Ruiz et al. (2022), and Borges et al. (2023) pointed out that one of the great challenges in pickers’ daily work lies on the lack of support from the population, which does not properly separate RMs from waste. This scenario makes their activity unhealthy and dangerous, as reported by one of the assessed scavengers: “there is always dirt in the recycling bin, diapers, food, dead cats” (CMR 30, 2022, Chapecó/SC).

When it comes to (re)signifying waste into goods, it is possible to state that discarded objects have a trajectory that allows them to become raw materials (Appadurai, 1991; Parra, 2020; Ruiz et al., 2022; Borges et al., 2023). This trajectory makes it possible to better understand how RMCs manage to (re)signify waste and their own lives through their work. This is also observed in the studies by Baptista (2015), Moura et al. (2020), and Silva et al. (2020) and expressed by the relevance of a work that provides survival alternatives. According to the interviews with associated RMCs: “Because, besides supporting our livelihood, it cleans the city” (CMR 29, 2022, Chapecó/SC); “Reducing the amount of material that will be wasted helps the cycle again, it goes to the industry again to produce another material, it helps the environment” (CMR 15, 2022, Chapecó/SC).

Table 7 – Relevance of scavenging for the environment, community, and recognition of their activity by the population.

Variable	Total	Gender		P-value
		Male	Female	
Scavenging relevance for the environment – n (%)				1.000 ^b
Important	30 (25.0)	15 (25.9)	15 (24.2)	
Very important	90 (75.0)	43 (74.1)	47 (75.8)	
Scavenging relevance for the community – n (%)				0.417 ^b
Important	32 (26.7)	13 (22.4)	19 (30.6)	
Very important	88 (73.3)	45 (77.6)	43 (69.4)	
Importance of scavenging recognition by the community – n (%)				0.316 ^b
Neutral	2 (1.7)	2 (3.4)	0 (0.0)	
Important	42 (35.0)	19 (32.8)	23 (37.1)	
Very important	76 (63.3)	37 (63.8)	39 (62.9)	
Total	120 (100)	58 (48.3)	62 (51.7)	

^b χ^2 test.

In total, 100% of the group members considered waste collection very important and vital when they were asked about its relevance for the community. Inappropriate solid waste disposal on public roads is one of the major factors leading to flooding in Brazilian cities; waste ends up carried by rainwater into storm drains, and it clogs them. Another serious issue emerging from inappropriate waste disposal, mainly plastic packaging and cans, lies in their potential to be a breeding ground for disease vectors such as dengue fever, besides contaminating soil, water, and air. The contribution of associated RMCs' during the interviews: "It's good that it doesn't flood. If it weren't for us, everything would be out on the streets, trying to clean up a bit. There's a lot of trash in storm drains" (CMR 74, 2022, Chapecó/SC) or "The material doesn't get water, which causes dengue fever, which harms the environment" (CMR 10, 2022, Chapecó/SC).

This activity's relevance for the community was also reported in the research by Parra (2020), Silva et al. (2020), and Espinosa-Aquino et al. (2023), according to whom, associated pickers are aware of their activity's relevance for the environment since it helps public authorities to maintain and clean the communities.

Notably, 98.3% of the RMC members see the recognition of their work by the community as very important or important. Waste collectors' recognition would translate into improved selective collection and into a reduction in the stigma they suffer from being in constant contact with "trash." However, the invisibility, neglect, and prejudice posed by the community over them were clear in the interview with an RMC member: "People don't know the work, they call it garbage man, and that's not cool; it's all work" (CMR 112, 2022, Chapecó/SC).

Pickers' invisibility, neglect, prejudice, and lack of recognition by society are also reported in studies by Favela Ávila et al. (2013), Parra (2020), Silva et al. (2020), Ruiz et al. (2022), and Tucker (2024). Ongoing environmental education campaigns in the community context are crucial because they can help improve selective collection and lead to the recognition of waste collection relevance for both the city and the environment. It would help reduce the stigma faced by these workers. In the words of a waste collector: "Explain to the community the importance of waste collection" (CMR 25, 2022, Chapecó/SC).

Thus, hypothesis H2, which addressed knowledge on the role played by waste pickers in protecting the environment, was confirmed. In total, 100% of the associated RMCs stated that their activity is very important and important for environmental conservation. Finally, there were no significant differences ($p>0.05$) regarding scavenging relevance for both the environment and the community, and this activity's recognition by the population in combination with gender issues.

Degree of RMCs' satisfaction with their profession, with their children following their profession, and with how the community and neighbors perceive the RMC profession

Data about the question regarding RMCs' satisfaction with their profession, with whether their children engage in the collection activity, and with how the community perceives the RMC profession in combination with gender issues are shown in Table 8.

Table 8 – Satisfaction with the profession, with whether children engage in this profession, and with how the community and neighbors perceive it.

Variables	Total	Sex		P-value
		Male	Female	
RMCs' satisfaction with their profession – n (%)				0.930 ^b
Dissatisfied	5 (4.2)	2 (3.4)	3 (4.8)	
Satisfied	82 (68.3)	40 (69.0)	42 (67.7)	
Very satisfied	33 (27.5)	16 (27.6)	17 (27.4)	
Satisfaction with their children engaging in this profession – n (%)				0.295 ^b
Very dissatisfaction	5 (4.2)	3 (5.2)	2 (3.2)	
Dissatisfied	62 (51.7)	24 (41.4)	38 (61.3)	
Neutral	4 (3.3)	2 (3.4)	2 (3.2)	
Satisfied	41 (34.2)	24 (41.4)	17 (27.4)	
Very satisfied	8 (6.7)	5 (8.6)	3 (4.8)	
Satisfied with how the community views the collection activity – n (%)				0.879 ^b
Very dissatisfied	6 (5.0)	3 (5.2)	3 (4.8)	
Dissatisfied	47 (39.2)	20 (34.5)	27 (43.5)	
Neutral	16 (13.3)	8 (13.8)	8 (12.9)	
Satisfied	46 (38.3)	24 (41.4)	22 (35.5)	
Very satisfied	5 (4.2)	3 (5.2)	2 (3.2)	
Total	120 (100)	58 (48.3)	62 (51.7)	

^b χ^2 test.

When asked about their satisfaction with their professions, 95.8% of the associated RMCs declared to be very satisfied or satisfied with it. Only a small fraction of the group (4.2%) was dissatisfied with their profession. This statement was corroborated by the interviews: “I love what I do” (CMR 25, 2022, Chapecó/SC); “You will work for yourself, I always tell my children from the moment you are the boss, you work twice as much, if you are an employee, you have a schedule” (CMR 79, 2022, Chapecó/SC); “Income here is better, registration was little” (CMR 17, 2022, Chapecó/SC); “I don’t like recycling, it is just the need” (CMR 19, 2022, Chapecó/SC).

Based on the interviews, many associated RMCs are satisfied with their work because they earn higher incomes than they would in the formal labor market and they enjoy having more flexible schedules and freedom on how they carry out their activity without having a “boss.” These flexible schedules and pickers’ autonomy were confirmed in studies by Silva (2017) and Tucker (2024). However, according to Silva (2017), this profile has contributed to increasing women’s participation in this activity, since it allows them to balance family care, work, and income generation.

On the other hand, there are some associated RMCs who are in this activity due to the need to support themselves and their families (Parra, 2020; Ruíz et al., 2022). According to studies by Silva et al. (2020) and Ruíz et al. (2022), if one considers their low schooling and lack of professional training, it is possible to state that the need for survival drives this mass of workers into waste picking. Associated RMCs in Chapecó differ from those in the studies by Carmadelo and Ferri (2020), Silva et al. (2020), and Ruíz et al. (2022). According to these authors, working as RMCs was the last option available for their survival. As for the assessed group, more than 90% of the associated RMCs are satisfied with their activity, either because their income is higher than that of the labor market or because of its great schedule flexibility.

When pickers were asked whether they would be happy with their children pursuing the RMC profession, 55.9% of the interviewees stated they would be dissatisfied or very dissatisfied with it. This finding contradicts the fact that over 90% of the assessed group was satisfied with their profession (Table 8). This conflicting result is likely related to this activity’s stigma, invisibility, and prejudice experienced by its professionals. This finding is confirmed by Carmadelo and Ferri (2020), according to whom, these professionals expect their children to pursue other professional careers.

Results recorded for the community’s perception about waste collection (Table 6) showed that 50.8% of the assessed group reported experiencing discrimination and 49.2% of them reported to do not feel it. Table 8 confirms this result; 42.5% of the group members were very satisfied or satisfied, and 44.2% of them were dissatisfied or very dissatisfied with this experience (Figure 2).

According to Parra (2020), Silva et al. (2020), and Ruíz et al. (2022), the communities’ invisibility and prejudice hinder these professionals’ work. This item did not show significant differences regarding gender issues, as well ($p>0.05$).

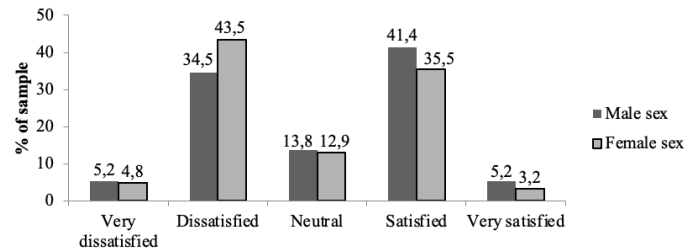


Figure 2 – Are you satisfied with how the community views the waste-picking activity?

Conclusions

The current study results highlighted that H1 was not confirmed since 76.7% of the associated RMCs were unaware of NSWP and only 21.7% of the assessed group called themselves RMCs. Consequently, they are unaware of their rights and do not recognize themselves as workers in the recycling sector. Scavenging is the means of survival for these individuals. However, H2 was confirmed, because 100% of the group members stated that their activity is very important and important for the environment. However, they face the stigma of working with the “trash” disposed of by the community. There were no differences in the assessed variables in combination with gender issues, because all variables recorded a significance level ($p>0.05$).

Briefly, the work by RMCs occupies an ambiguous position in the recycling chain. On the one hand, this activity provides economic inclusion by generating job positions; on the other, it is performed in unhealthy environments and gets no social recognition. Thus, these waste pickers seek to embody their identity as workers, and it can be translated into redefining the sense of “trash” and into the meaning of these professionals’ life, as it opens new windows for their livelihood and stresses the relevance of their activity for both the community and the environment.

One of the study’s contributions lies in highlighting this category’s socio-productive conditions within the recycling sector. The study disclosed the limitations faced by these organizations and the difficulties faced by these workers, although NSWP guidelines, which set the parameters for RMCs’ economic and social inclusion in associations and cooperatives, are in place. This finding shows that NSWP provides instruments that are not perceived by the involved stakeholders; consequently, it loses its inclusion capacity.

The study population, which goes in and out of the recycling sector, emerges as a research limitation, since it could lead to different outcomes. Future research must expand the study field to other regions in Santa Catarina State and in Brazil. This broader study site would highlight gaps in relationships set among RMC organizations, the community, and municipal government by seeking solutions to improve this category’s working conditions, which could result in improved quality of selective collection and in social recognition.

Finally, it is worth noting that, although this workers’ class bears the stigma of working with “trash,” they are able to reframe their work and their lives. Thus, “trash” is perceived as a commodity providing the

means of livelihood for these professionals and for their families. This reality was disclosed by RMCs associated with Chapecó, who, despite the singularities setting them apart from the national scenario, depend on public and social policies to be recognized by both the government and society, and it could be translated into improved working conditions and into the establishment of labor rights.

Acknowledgments

The authors would like to thank the RMC members from Chapecó associations in Santa Catarina State, Brazil, who joined this research. Their collaboration in sharing their stories made it possible to give visibility and importance to the work they develop for society and the environment through their voices and experiences.

Authors' Contributions

Borges, R. V.: conceptualization; investigation; data curation; methodology; formal analysis; writing—original draft; writing—review and editing. **Carbonera, M.:** conceptualization; supervision; formal analysis; writing—review and editing. **Trindade, L. L.:** conceptualization; supervision; formal analysis; writing—review and editing.

References

- Appadurai, A., 1991. La mercancías y la política del valor. In: Appadurai, A. (Ed.), *La vida social de las cosas: perspectiva cultural de las mercancías*. Editorial Grijalbo, México, D.F., pp. 17-88.
- Baptista, V.F., 2015. As políticas públicas de coleta seletiva no município do Rio de Janeiro: onde e como estão as cooperativas de catadores de materiais recicláveis? *Revista de Administração Pública*, v. 49, (1), 141-164. <https://doi.org/10.1590/0034-76121603>
- Borges, R.V.; Carbonera, M.; Trindade, L.L., 2023. Catadores de materiais recicláveis: uma revisão integrativa. *Desenvolvimento em Questão*, v. 21, (59), 1-23. <https://doi.org/10.21527/2237-6453.2023.59.14271>
- Borges, R.V.; Carbonera, M.; Trindade, L.L., 2024. Políticas públicas e a constituição das associações de catadores de materiais recicláveis: um estudo de caso do município de Chapecó/SC (1999/2022). *Revista Desenvolvimento e Meio Ambiente*, v. 63, 155-176. <https://doi.org/10.5380/dma.v63i0.90066>
- Bouvier, M.; Dias, S., 2021. Catadores de materiais recicláveis no Brasil: um perfil estatístico. WIEGO (Accessed on September 1, 2025) at: <https://www.wiego.org/publications/catadores-de-materiais-reciclaveis-no-brasil-um-perfil-estatistico>
- Brasil, 2010. Lei n. 12.305. Instituiu a Política Nacional de Resíduos Sólidos e dá Providências, de 2 de agosto de 2010. Casa Civil.
- Cardoso, A., 2021. A luta dos (in)visíveis que (r)existem. In: Besen, G.R.; Jacobi, P.R.; Silva, C.L. (Eds.), *10 anos da Política Nacional de Resíduos Sólidos: caminhos e agendas para um futuro sustentável*. IEE-USP, São Paulo, pp. 166-179.
- Cardoso, M.R.G.; Oliveira, G.S.; Ghelli, K.G.M., 2021. Análise de conteúdo: uma metodologia de pesquisa qualitativa. *Cadernos da Fucamp*, v. 20, (43), 98-111 (Accessed on September 1, 2025) at: <https://revistas.fucamp.edu.br/index.php/cadernos/article/view/2347>
- Carmadelo, A.M.P.; Ferri, C., 2020. Vidas Recicladas: vulnerabilidade e risco social a partir da narrativa de catadores e catadoras de resíduos sólidos de Caxias do Sul. *Direito Ambiental e Sociedade*, v. 10, (2), 7-34. <https://doi.org/10.18226/22370021.v10.n2.01>
- Chikarmane, P.; Narayanan, L., 2024. Statistics on waste pickers: a case studies guide. WIEGO (Accessed on September 1, 2025) at: https://www.wiego.org/sites/default/files/publications/file/wiego-statistical-brief-no-39_0.pdf
- Colombijn, F., 2020. Secrecy at the end of the recycling chain: the recycling of plastic waste in Surabaya, Indonesia. *Worldwide Waste: Journal of Interdisciplinary Studies*, v. 3, (1), 1-10. <https://doi.org/10.5334/wwwj.43>
- Crocco, F.G.; Alenda, S.; Angelcos, N., 2020. Satisfaction and recognition in precarious occupations: the case of waste collectors in Chile. *Esquerda*, v. 49, (45), 848-865. <https://doi.org/10.4067/s0718-50492020000100245>
- Custódio, A., 2021. Do lixo ao Bixo: catador conta, em livro, sua história de superação até ingressar na universidade. GZH Comportamento (Accessed on September 1, 2025) at: <https://gauchazh.clicrbs.com.br/comportamento/noticia/2021/07/catador-counta-em-livro-sua-historia-de-superacao-ate-ingressar-na-universidade-ckrqpvzc007b0193ktpukeuu.html>
- Dimarco, S., 2021. "Rebuscadores de residuos" a fines del siglo XIX: historia de una profesionalización inconclusa (Buenos Aires, 1870-1911). *Revista Latino-Americana de Trabalho e Trabalhadores*, v. 2, 59-92. <https://doi.org/10.48038/revlatt.n2.34>
- Douglas, M., 2001. Purity and danger: an analysis of concept of pollution and taboo. Routledge, London and New York, 203 p.
- Espinosa-Aquino, B.; Gabarrell Durany, X.; Quirós Vargas, R., 2023. The role of informal waste management in urban metabolism: a review of eight Latin American countries. *Sustainability*, v. 15, (3), 1826. <https://doi.org/10.3390/su15031826>
- Favela Ávila, H.; Ojeda-Benítez, S.; Cruz-Sotelo, S.E.; Taboada-González, P.; Aguilar-Virgen, Q., 2013. Los pepenadores en la recuperación de reciclables en sitios de disposición final en Baja California, México. *Revista Ambiente*, v. 29, (Suppl. 3), 59-65 (Accessed September 1, 2025) at: <https://www.redalyc.org/pdf/370/37029665007.pdf>
- Ferreira, A.C.X.D.; Silva, R.B.; Silva, R.M.A., 2023. Mulheres de Catadoras de Materiais Recicláveis: condições de vida, trabalho e estratégias organizativas no Brasil. IPEA, Brasília. <https://doi.org/10.38116/bmt75/esp4>
- Gutberlet, J.; Carenzo, S., 2020. Waste pickers at the heart of the circular economy: a perspective of inclusive recycling from the Global South. *Worldwide Waste*, v. 3, (1), 1-14. <https://doi.org/10.5334/wwwj.50>
- Hartmann, C.D., 2012. Uneven urban spaces: accessing trash in Managua, Nicaragua. *Journal of Latin American Geography*, v. 11, (1), 43-163. <https://doi.org/10.1353/lag.2012.0003>
- Instituto Brasileiro de Geografia e Estatística (IBGE), 2023. Estatísticas sociais e populações. IBGE, Rio de Janeiro.

- Medina, M., 2017. Reciclaje de desechos sólidos en América Latina. *Frontera Norte*, v. 11, (21), 7-31. <https://doi.org/10.17428/rfn.v11i21.1411>
- Moura, R.R.; Szul, K.D.; Sene, T.S., 2020. O catador de materiais recicláveis no município de Ponta Grossa, Paraná: perspectivas e necessidade de intervenção numa sociedade desigual. *Revista Desenvolvimento Social*, v. 26, (2), 238-234. <https://doi.org/10.46551/issn2179-6807v26n2p238-264>
- Movimento Nacional dos Catadores de Materiais Recicláveis (MNCR), 2013. Luta pela aposentadoria especial para catadores continua. MNCR (Accessed on September 1, 2025) at: <https://www.mnrc.org.br/noticias/noticias-regionais/luta-pela-aposentadoria-especial-para-catadores-continua>
- Movimento Nacional dos Catadores de Materiais Recicláveis (MNCR), 2014. Mulheres são a maioria entre os catadores de materiais recicláveis. MNCR (Accessed on September 1, 2025) at: <https://www.mnrc.org.br/noticias/noticias-regionais/mulheres-sao-maioria-entre-catadores-organizados-em-cooperativas>
- Niño, J.J.C.; Hernández, L.P., 2012. El trabajo en la pepena informal en México: nuevas realidades, nuevas desigualdades. *Estudios Demográficos y Urbanos*, v. 27 (1), 95-117. <https://doi.org/10.24201/edu.v27i1.1406>
- Parra, F., 2020. The Struggle of Waste Pickers in Colombia: From being considered trash, to being recognised as workers. *Anti-Trafficking Review*, (15), p. 122-136. <https://doi.org/10.14197/atr.201220157>
- Rateau, M.; Tovar, L., 2019. La formalisation des récupérateurs à Bogota et Lima: reconnaître, réguler puis intégrer? *EchoGéo*, v. 47, 1-14. <https://doi.org/10.4000/echogeo>
- Rodero, P.; Merino, I; Fernández, P., 2021. Condiciones de trabajo y salud en población recicladora de un asentamiento precario de Asunción (Paraguay). Un estudio desde el análisis de prevalencias dermatológicas. *Revista Facultad Nacional de Salud Pública*, v. 39, (3), e342738. <https://doi.org/10.17533/udea.rfnsp.e342738>
- Ruíz, S.S.R.; Rocha, C.J.M.; Perdomo, S.M.M.; Cortés, L.F.T., 2022. Análisis contextual del oficio de recicladores en el municipio de Ubaté: logros y limitaciones Organizacionales. *Pensamento Udecino*, v. 6, (1), 66-90. <https://doi.org/10.36436/23824905.433>
- Severo, A.L.F.; Guimarães, P.B.V., 2020a. As dimensões da atividade do catador de material reciclável na política brasileira socioambiental. *Revista Jurídica Luso-Brasileira*, Ano 6, (5), 171-196 (Accessed on September 1, 2025): at: https://www.cidp.pt/revistas/rjlb/2020/5/2020_05_0171_0196.pdf
- Severo, A.L.F.; Guimarães, P.B.V., 2020b. Democracy, development and legislative policies for recyclable waste: Brazilian case. *Revista Catalana de Dret Ambiental*, v. 11, (1), 1-19. <https://doi.org/10.17345/rcda2641>
- Silva, K.A.T.; Brito, M.J.; Campos, R.C., 2020. O lixo pode ser mais que lixo: o sentido do trabalho para catadores de materiais recicláveis. *Farol*, v. 7, (19), 622-658. <https://doi.org/10.25113/farol.v7i19.4935>
- Silva, R.B., 2017. A organização coletiva de catadores de material reciclável no Brasil: dilemas e potencialidades sob a ótica da Economia Solidária. IPEA, Brasília.
- Tucker, J.L., 2024. Barriers to inclusive recycling in Asunción, Paraguay: a just transition? *Development and Change*, International Institute of Social Studies, v. 55, (2), 276-301. <https://doi.org/10.1111/dech.12819>