



Mapping of Waste Pickers in Vietnam



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WASTE PICKERS

FORWARD

In the context of Vietnam's rapid urbanization, managing municipal and rural waste has become one of the country's most urgent challenges. Although the efforts of informal waste pickers (IWPs) in collecting and recycling discarded materials have made significant contributions to the circular economy, this work is still largely undervalued. These individuals are "unsung heroes," playing a crucial role in minimizing waste, promoting recycling, and safeguarding the environment.

The report "Mapping of Waste Pickers in Vietnam" was developed to shed light on the current status of waste pickers in major urban centers across Vietnam, assess their socio-economic conditions, working environments, health risks, and the obstacles they face in accessing social welfare. The report also offers strategic recommendations to improve these workers' quality of life, health, and social standing, while advancing a more efficient waste management system overall.

With this publication, we hope to draw broader attention from government authorities, civil society organizations, businesses, and the public toward offering greater support and formal recognition to waste pickers. We trust that these research findings will provide fresh impetus and evidence for designing timely policies and programs – benefiting not only the environment and the economy, but also ensuring social welfare for waste picker communities.

Respectfully,

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We hope that this report will serve as a useful resource for policymakers, civil society organizations, and everyone committed to improving livelihoods, ensuring rights, and enhancing the overall environment for the waste picker community in Vietnam.

Executive Summary

This study examines the socio-demographic characteristics, working conditions, economic challenges, social interactions, and health issues faced by informal waste pickers (IWPs) in Vietnam. Amidst the country’s rapid urbanization and economic growth, waste generation has surged, with approximately 3.1 million metric tons of plastic waste released onto land annually. As waste management infrastructure struggles to keep pace, IWPs have emerged as vital contributors by collecting, sorting, and recycling various waste materials. Despite their significant role in promoting environmental sustainability and supporting the circular economy, IWPs in Vietnam encounter numerous challenges that adversely affect their livelihoods, health, and social standing.

The research reveals that the majority of IWPs are middle-aged to older women with low educational attainment, predominantly migrants in major urban centers like Hanoi. In Da Nang, for instance, 97% of surveyed IWPs are women, reflecting a global trend where traditional gender roles and limited educational opportunities confine women to informal, labor-intensive jobs. These workers often endure long and irregular working hours, averaging up to 9.64 hours daily in Ho Chi Minh City. Such demanding schedules contribute to severe physical strain and chronic musculoskeletal issues.

The inconsistent and frequently inadequate use of personal protective equipment (PPE) among IWPs heightens their exposure to hazardous materials. This increases the risk of occupational injuries and health problems such as

respiratory issues, skin disorders, and digestive ailments. The lack of proper PPE not only endangers their physical health but also exacerbates the challenges associated with their working conditions.

Economic instability is another critical issue faced by IWPs, stemming from their reliance on fluctuating market prices for recyclables and dependence on intermediaries who often exploit them by offering unfavorable rates. The COVID-19 pandemic exacerbated these challenges, causing significant drops in daily earnings and pushing many IWPs toward the brink of poverty. Social stigma further complicates their situation, leading to social isolation and negatively impacting their mental well-being. This stigma not only affects the IWPs but also extends to their families, limiting educational and professional opportunities for younger generations and perpetuating cycles of poverty and exclusion.

Access to social welfare and healthcare services remains critically inadequate for IWPs in Vietnam. The lack of formal recognition within the labor system prevents them from accessing essential social protection programs, leaving many without health insurance and excluded from government-sponsored healthcare initiatives. Financial constraints and fear of income loss deter IWPs from seeking medical attention, resulting in untreated health issues and exacerbating their vulnerabilities. Regional disparities are evident, with IWPs in Ho Chi Minh City benefiting from more active non-governmental organizations (NGO) involvement and cooperative models that provide better income stability and access to support services, whereas those in Hanoi and Da Nang receive less support and face greater social stigma.

The study underscores the fragmented and insufficient support structures available to IWPs. While NGOs play a crucial role in providing essential assistance, they face significant challenges such as funding limitations and inconsistent collaboration with local governments. This lack of cohesive support hampers efforts to improve the livelihoods, health conditions, and social status of IWPs.

To address these multifaceted issues, the study proposes several evidence-based intervention strategies. These include formally recognizing IWPs within Vietnam's waste management system, integrating them into social welfare programs, and facilitating their inclusion in formal waste management frameworks through cooperatives and public-private partnerships. Additionally, enhancing occupational health and safety measures, providing economic support through fair pricing mechanisms and vocational training, and launching public awareness campaigns to reduce social stigma are essential steps toward improving the conditions of IWPs.

In conclusion, while IWPs are indispensable to Vietnam's waste management and environmental sustainability efforts, they operate under precarious conditions with limited recognition and support. Comprehensive policies and collaborative efforts among the government, NGOs, and other stakeholders are imperative to formalize and support the informal waste picking sector. Implementing these recommendations will not only enhance the well-being and economic security of IWPs but also contribute to a more sustainable and inclusive waste management system in Vietnam.

List of Abbreviations

AEPW	Alliance to End Plastic Waste
AOR	Adjusted Odds Ratio
CAB	Center for Adaptive Capacity Building Research
CBO	Community-Based Organizations
COVID-19	Coronavirus Disease 2019
DONRE	Department of Natural Resources and Environment
EPR	Extended Producer Responsibility
ESCAP	Economic and Social Commission for Asia and the Pacific
FGD	Focus Group Discussions
IDI	In-Depth Interview(s)
IUCN	International Union for Conservation of Nature
IWPs	Informal Waste Pickers
NGOs	Non-Governmental Organizations
PPE	Personal Protective Equipment
PRO Vietnam	Packaging Recycling Organization Vietnam
UNDP	United Nations Development Program

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Introduction

In recent years, Vietnam has experienced rapid urbanization and economic growth, leading to a significant increase in waste generation (1). Every year, Vietnam releases approximately 3.1 million metric tons of plastic waste onto land, and around 10% of this waste is improperly managed and finds its way into waterways (2). As the waste management infrastructure struggles to keep up with the growing demand, waste pickers have emerged as crucial components of the waste management sector.

Informal waste pickers (IWPs) in Vietnam play a vital role in collecting and sorting various waste materials for recycling, thereby reducing the amount of waste that ends up in landfills and contributing to environmental sustainability (3). In Ho Chi Minh City, there are nearly 2,000 street waste pickers, 4,200 independent IWPs, and about 1,816 aggregators (4). They often work independently or in small groups, primarily focusing on collecting recyclable materials such as paper, plastic, glass, and metals. By salvaging and selling these materials to junk dealers and recycling facilities, waste pickers contribute to the circular economy and provide valuable raw materials for industries (5).

Despite their significant contributions, IWPs in Vietnam face numerous challenges that impact their livelihoods, health, and social standing. They often work in hazardous environments without proper protective gear, exposing them to various health risks and increasing their vulnerability to injuries, infections, and long-term health issues (6). Their income is generally low and unstable, as it depends on the fluctuating market prices of recyclable materials, and they lack job security or formal employment contracts (7). Many of these individuals migrate from rural areas to the city to earn a living from this work. They often rent accommodations in areas with affordable housing, which lack basic amenities. Their temporary residency status renders them ineligible for various types of insurance, thereby exacerbating their vulnerability and marginalization. Furthermore, they face self-consciousness and hesitation in seeking assistance, which leads to limited access to support services.

Existing literature may not provide a comprehensive and specific overview regarding the status of IWPs, the organizations that support them, and the challenges encountered by both the IWPs and these supporting organizations. Therefore, this study intends to fill this knowledge gap by investigating these aspects, which would be instrumental in shaping evidence-based policies and strategies for more effective support of IWPs in Vietnam.

Research Purpose

The purpose of this study is to assess the current living and working conditions of IWPs in Vietnam, evaluate existing support structures and identify gaps in services, and provide recommendations for policies aimed at improving their livelihoods, health, and social inclusion. By focusing on specific aspects such as income stability, access to healthcare, and social recognition, the study aims to contribute to social change by informing the development of effective interventions and policies that promote environmental sustainability and social equity.

Research Questions

This study seeks to answer the following research questions:

1. *What are the challenges related to income generation and social interaction that the IWPs in Vietnam face?*
2. *What are the obstacles that the existing IWPS's support organizations have to overcome?*

Research Objectives

To address these research questions, the study has the following objectives:

1. The current living and working conditions of IWPs in Vietnam, focusing on challenges related to income stability, health risks, and social interaction are identified.
2. The existing support structures for IWPs in Vietnam are identified, and the measures to overcome the obstacles of the support organizations are recommended.

Significance of the Study

By shedding light on the challenges faced by IWPs and the limitations of current support mechanisms, this study aims to contribute to the development of evidence-based policies and strategies. The ultimate goal is to improve the social welfare of IWPs, promote a cleaner environment through enhanced waste management practices that involve and support IWPs, and influence policy-making that acknowledges and supports this vulnerable group. By providing specific recommendations for policy and practice, the study seeks to enhance income stability, access to healthcare, and social recognition for IWPs, thus promoting social equity and environmental sustainability in Vietnam.

Chapter 1 Literature Review

1.1. The Situation of Waste and IWPs

1.1.1. Global context

The management of municipal solid waste is a critical global challenge, intensified by rapid urbanization, population growth, and changing consumption patterns. IWPs play a pivotal role in mitigating this issue by collecting, sorting, and recycling waste materials (Figure 1). Globally, an estimated 15 to 20 million IWPs contribute significantly to environmental sustainability by reducing landfill use, conserving resources, and lowering greenhouse gas emissions (8, 9). Despite their essential contributions, IWPs often operate without formal recognition, facing precarious working conditions, social stigma, and economic instability

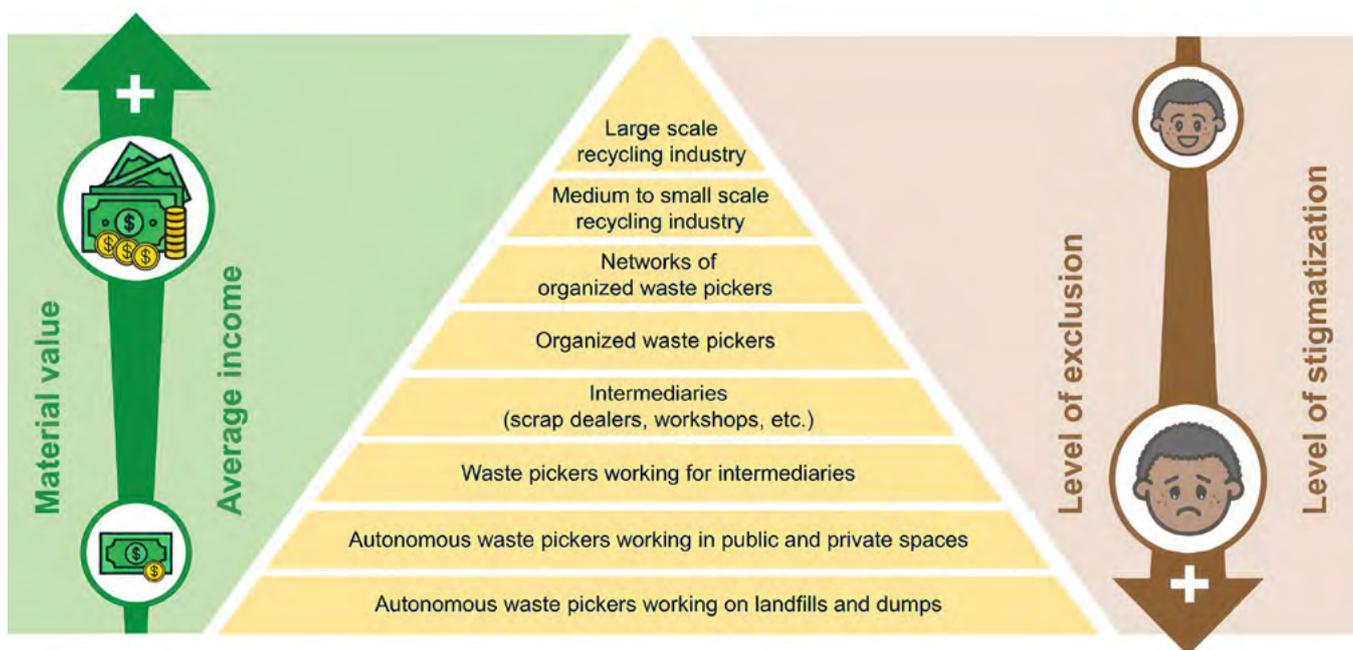


Figure 1. Social and economic standing of IWPs in the plastic value chain

1.1.2. Vietnam's context

In Vietnam, the rapid economic development and urbanization have led to a substantial increase in solid waste generation. As of 2019, the country produces over 61,000 tons of domestic solid waste daily, with urban areas accounting for more than 37,000 tons (10). IWPs, locally known as *dong nat* in the North and *ve chai* in the South, are integral to the waste management system (Figure 2). They collect, sort, and recycle a significant portion of waste, contributing to resource recovery and environmental sustainability (11).

IWPs in Vietnam typically collect recyclable materials such as plastics, paper, metals, and glass directly from households, streets, and dumpsters (Figure 3). They often sort these materials in informal settings before selling them to intermediaries or recycling facilities (Figure 4). Their activities not only reduce the burden on formal waste management systems but also support the recycling industry by supplying raw materials (12).

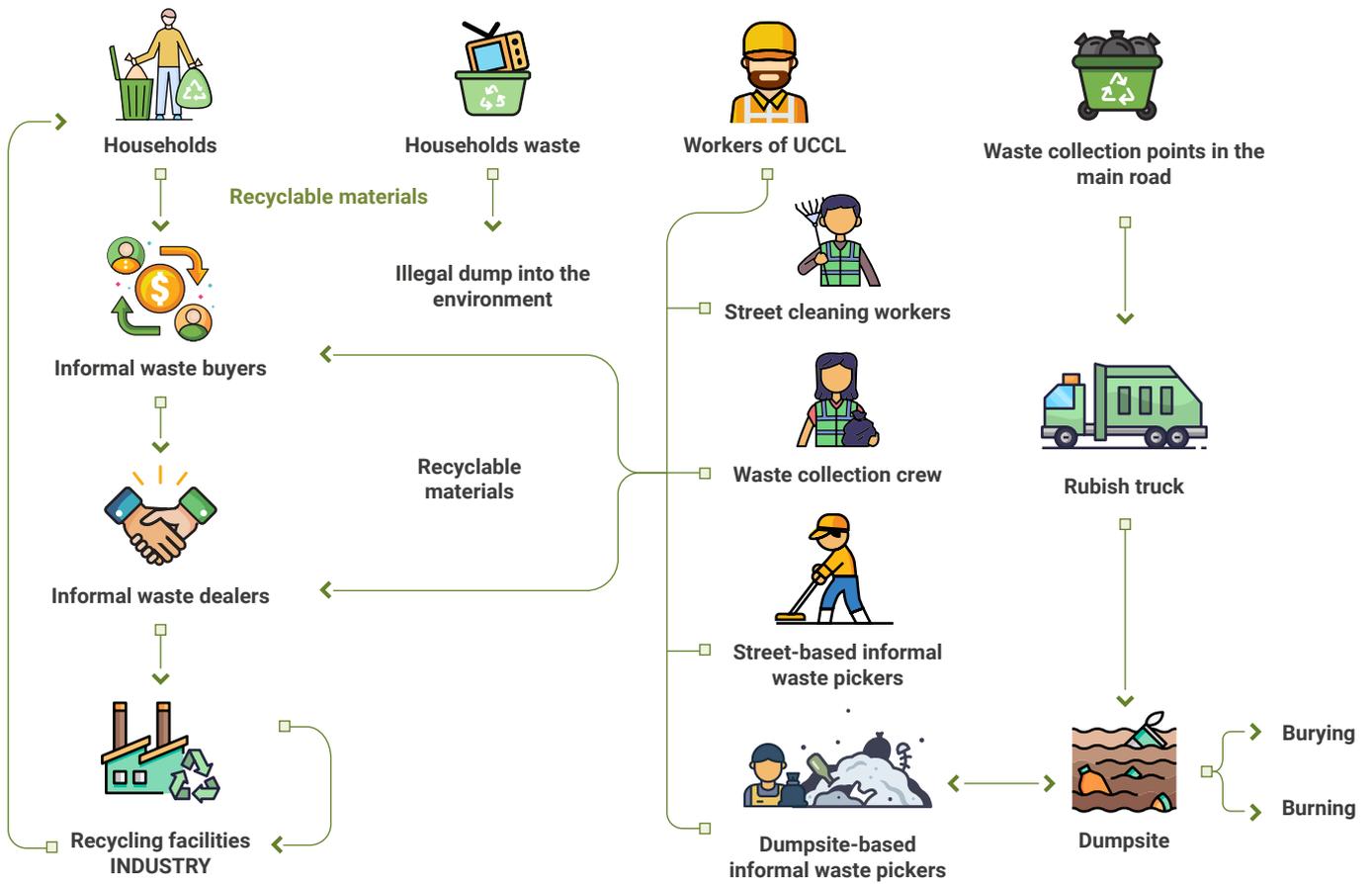


Figure 2. Flow diagram for actors and recycling activities in Vietnam



Figure 3. Network of IWPs and recyclers



Figure 4. The chain of scrap collection, transportation and recycling

1.2. Challenges Faced by IWPs and Potential Consequences

1.2.1. Occupational Hazards and Health Risks

IWPs in Vietnam endure hazardous working conditions due to the nature of their work. They are frequently exposed to sharp objects, toxic chemicals, and infectious waste without adequate personal protective equipment (PPE) or safety training (13). The lack of PPE increases the risk of injuries, such as cuts and punctures, and health issues, including respiratory problems, musculoskeletal disorders, and skin diseases (14). Prolonged exposure to these hazards without appropriate protection can lead to chronic health conditions, negatively impacting their quality of life and ability to work.

1.2.2. Economic Instability

Economic instability is a significant challenge for IWPs, primarily due to fluctuating market prices for recyclables and reliance on intermediaries who often exploit them by offering low prices (15). IWPs typically have low and irregular incomes, making it difficult to meet basic needs and plan for the future. The lack of formal employment contracts or social security exacerbates their financial vulnerability, leaving them without a safety net during economic downturns or personal crises.

1.2.3. Social Stigma and Isolation

WPs frequently face social stigma and discrimination because waste picking is perceived as low-status and dirty work (16). This stigma can lead to social isolation, as IWPs may feel ashamed of their occupation and hesitate to engage with their communities. The resulting social exclusion can adversely affect their mental health and limit access to social support networks, further marginalizing them within society.

1.2.4. Lack of Access to Social Welfare and Support Services

Due to their informal employment status, IWPs are typically excluded from social protection programs, such as health insurance, welfare benefits, and labor rights (17). They often lack access to healthcare services, education, and training opportunities, which hinders their ability to improve their working conditions and economic situation. Without formal recognition, they cannot advocate effectively for their rights or access government support.

1.2.5. Consequences if Challenges Remain Unaddressed

If the challenges faced by IWPs are not addressed, they will continue to experience health deterioration, economic hardship, and social marginalization. This not only affects their individual well-being but also has broader societal implications. The inefficiencies in waste management due to the underutilization of IWPs' potential can lead to increased environmental pollution, public health risks, and strain on municipal waste management systems. The loss of IWPs' contributions could result in higher costs for waste management and missed opportunities for recycling and resource recovery.

1.3. Current Knowledge and Research Related to IWPs

1.3.1. Studies on IWPs in Vietnam

Several studies have highlighted the significant role of IWPs in Vietnam's waste management system and the multifaceted challenges they face. Nguyen (2022) examined the demographic characteristics of waste workers in Ho Chi Minh City, finding that a substantial proportion are female immigrants with low educational qualifications (18). The United Nations Development Programme (UNDP) conducted research in Da Nang, revealing that IWPs often earn between 100,000 and 200,000 VND per day and face financial instability, health risks, and social stigma (19).

Mitchell (2008) explored the informal waste sector in Hanoi, noting its growth due to rural migration and its vital role in managing the city's increasing waste. Studies have also documented the lack of formal recognition and support for IWPs, emphasizing the need for policies that integrate them into formal waste management systems (11, 12).

1.3.2. Global Research on IWPs

Globally, research has documented similar challenges faced by IWPs, including hazardous working conditions, income instability, and social exclusion (17, 20, 21). Studies have examined the impact of policy and regulatory frameworks on IWPs, the effectiveness of support structures, and the role of NGOs in providing assistance (22, 23). There is a growing body of literature advocating for the formal recognition of IWPs and their integration into official waste management strategies to enhance their livelihoods and contributions to environmental sustainability (24, 25).

1.4. Gaps in Knowledge and the Need for This Research

1.4.1. Lack of Comprehensive Data on IWPs in Vietnam

Despite existing studies, there is a lack of comprehensive, up-to-date data on the sociodemographic characteristics, working conditions, and challenges faced by IWPs across different regions in Vietnam. Many studies are localized

or focus on specific aspects, leaving gaps in understanding the full scope of IWPs' experiences and the variations between different urban centers.

1.4.2. Consequences of the Knowledge Gap

The lack of comprehensive information hinders policymakers, NGOs, and other stakeholders from designing targeted interventions that address the specific needs of IWPs. Without a detailed understanding of the challenges and existing support mechanisms, efforts to improve IWPs' conditions may be ineffective or misdirected. This could lead to continued health risks, economic instability, and social marginalization for IWPs, as well as missed opportunities to enhance waste management systems and environmental sustainability.

1.4.3. Purpose of This Research

This research aims to fill these gaps by:

- **Examining the sociodemographic characteristics and working conditions of IWPs:** Providing detailed data on who the IWPs are, their backgrounds, and the nature of their work across different cities in Vietnam.
- **Identifying challenges related to income generation and social interaction:** Identifying the specific economic and social challenges IWPs face, including income instability and social stigma.
- **Identifying and analyzing existing support structures:** Investigating the role of NGOs, government agencies, and other organizations in supporting IWPs, as well as the obstacles these entities face.
- **Informing policy and intervention development:** Offering insights that can guide policymakers and stakeholders in creating effective strategies to support IWPs, improve their livelihoods, and integrate them into formal waste management systems.

By addressing these objectives, the research will contribute to a more comprehensive understanding of IWPs in Vietnam and support the development of interventions that can enhance their well-being and the efficiency of waste management practices.

Chapter 2 Methodology

2.1. Study design

We conducted a mixed-method study combining quantitative and qualitative techniques to comprehensively evaluate the status and organization of IWPs in Vietnam. The study was structured into three distinct phases: a pilot study, a quantitative survey, and qualitative research (Figure 6).

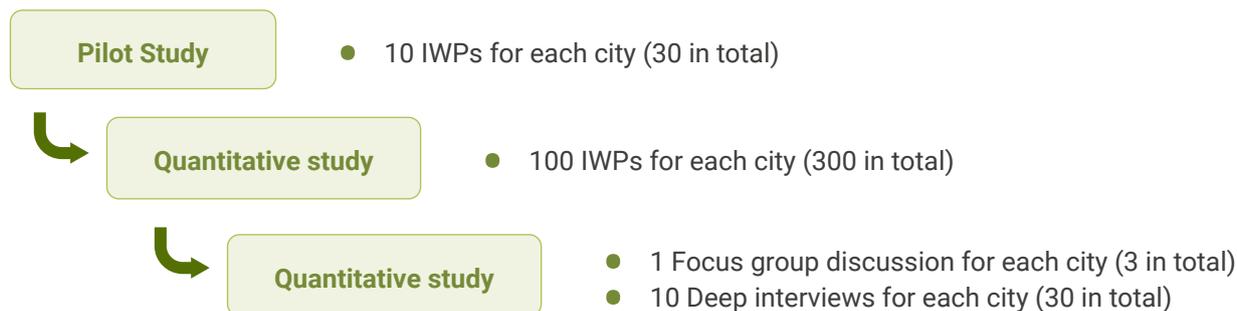


Figure 5. Flow chart of the study

Pilot Study: The pilot study aimed to test and refine the data collection instruments. We conducted the pilot in three major Vietnamese cities Hanoi, Da Nang, and Ho Chi Minh City, selecting 10 IWPs from each city. Feedback from the pilot informed adjustments to the questionnaires to ensure clarity and cultural relevance.

Quantitative Study: The quantitative phase involved a cross-sectional survey of IWPs in Hanoi, Da Nang, and Ho Chi Minh City, aiming to collect data on their socio-demographic characteristics, working conditions, health status, and challenges faced.

Qualitative Study: The qualitative phase comprised in-depth interviews and focus group discussions with IWPs and other stakeholders, providing deeper insights into the experiences, challenges, and support structures related to IWPs.

2.2. Study Population

2.2.1. Population of Interest

The target population for this study was all IWPs operating in urban areas of Vietnam, specifically focusing on Hanoi, Da Nang, and Ho Chi Minh City. While a recent article reports that there are approximately **3 million** people engaged in informal waste collection and recycling across Vietnam (26), the exact number of IWPs in each of the selected cities is not precisely known due to the informal nature of their work and lack of official records.

2.2.2. Selection of Cities

We selected Hanoi, Da Nang, and Ho Chi Minh City for the following reasons (Figure 7):

- **Representation of Different Regions:** Hanoi (North), Da Nang (Central), and Ho Chi Minh City (South) provide geographical diversity, capturing regional variations in waste picking activities.
- **Urbanization Levels:** These cities are among the most urbanized and populous in Vietnam, with significant waste generation, making them focal points for waste picking activities.

- **Relevance and Feasibility:** Focusing on major cities allows for a more in-depth study within the constraints of available resources and time.



Figure 6. Three study locations. The yellow dots indicate the locations of informal waste buyers

2.3. Quantitative method

2.3.1. Sample Size

The sample size was calculated using the formula for estimating a proportion in a finite population:

$$n = \frac{Z^2 \times P (1 - P)}{d^2}$$

Where:

n= required sample size

Z = Z-score (1.96 for 95% confidence level)

P = estimated proportion of IWPs experiencing a particular issue (assumed to be 50% to maximize sample size)

d = margin of error (0.1)

$$n = \frac{1.96^2 \times 0.5(1-0.5)}{0.1^2} = 96$$

Considering potential non-response and incomplete questionnaires, we rounded up to a sample size of 100 IWPs per city, totaling 300 participants across the three cities.

2.3.2. Data Collection

We employed different sampling techniques in Da Nang compared to Hanoi and Ho Chi Minh City due to the availability of sampling frames and resources.

Da Nang

In Da Nang, we obtained a sampling frame of IWPs from local NGOs that work with the CAB. Then we randomly selected participants from the sampling frames.

Procedure:

- **Step 1:** Calculated the sampling interval by dividing the total number of IWPs in the sampling frame by the desired sample size (100).
- **Step 2:** Randomly selected a starting point within the first interval.
- **Step 3:** Selected every *n*th IWP according to the sampling interval until the sample size was reached.

This method ensured that every IWP in the sampling frame had an equal chance of being selected, enhancing the representativeness of the sample in Da Nang.

Hanoi and Ho Chi Minh City

In Hanoi and Ho Chi Minh City, due to the absence of a comprehensive sampling frame resulting from the informal nature of IWPs and the lack of centralized records, we employed a purposive sampling methods to reach participants effectively

Procedure:

- **Step 1:** Collaborated with local community leaders, waste management departments, and NGOs to identify districts with high concentrations of IWPs.
- **Step 2:** Estimated the proportion of IWPs in each district based on available information and previous studies.
- **Step 3:** Allocated the sample size proportionally across these districts to reflect the estimated distribution.
- **Step 4:** Within each district, research assistants approached IWPs in common work areas (e.g., markets, streets, recycling centers) and invited them to participate.

Although convenience sampling has limitations, balancing the sample according to district-level estimates helped to improve the diversity and representativeness of the sample within the constraints faced.

2.3.3. Inclusion and Exclusion Criteria

Inclusion Criteria:

- Individuals aged 16 years or older.
- Currently engaged in informal waste picking activities.
- Operating within the selected cities..

Exclusion Criteria:

- Individuals not actively engaged in waste picking at the time of the study.
- Those unable or unwilling to provide informed consent.
- Individuals who did not understand the survey language.

2.3.4. Questionnaire

Trained research assistants conducted face-to-face interviews using a structured questionnaire. The questionnaire was developed based on literature reviews and pilot testing, covering (Table 1):

- **Basic Characteristics:** Age, gender, educational level, residence location, residence status (local or migrant to the current city which research conducted), housing status, and marital status.
- **Economic Status:** Economic classification (poor, near poor, not poor), average daily income from waste collection, involvement in secondary occupations, total monthly household income, and household size.
- **Working Conditions:** Type of employment (freelance or contract), years in occupation, daily working hours, weekly working days, primary locations for waste collection, and transportation methods used.
- **Safety and Health:** Use of PPE, frequency of heavy lifting, health issues encountered in the past year, types of accidents experienced, self-assessed health status, and frequency of medical visits.
- **Social and Communication Supports:** Interaction levels with neighbors and friends, stigma-related communication barriers, types and frequency of support received from various organizations, and effectiveness and desirability of received support.
- **Job Challenges and Satisfaction:** Reasons for choosing waste collection as a job, specific job challenges faced, overall job satisfaction, and future job change intentions.

Interviews were conducted face-to-face using a structured questionnaire that was developed based on the study's objectives. The questionnaire covered various aspects of the IWPs' demographic details, working conditions, health status, social interactions, and the challenges they face. Each interview lasted approximately 30-45 minutes for 42 questions (Appendix 1), ensuring that IWPs could provide detailed information without significant disruption to their workday (See Table 1. Variables of quantitative study in the Appendix 3)

2.3.5. Ethical Considerations

Consent was obtained from all participants before commencing the interviews. The study's purpose, its potential benefits, and the confidential nature of their responses were explained thoroughly. Participants were informed that they could withdraw from the study at any time without any consequences. All data collected was anonymized to maintain the privacy and security of the participants.

2.4. Qualitative method

2.4.1. Qualitative Study Design

We used a phenomenological approach to explore the lived experiences of IWPs and stakeholders. This approach allows for an in-depth understanding of participants' perspectives.

2.4.2. Study population

- **IWPs:** Selected purposively to capture a diversity of experiences (age, gender, migrant status).
- **Stakeholders:** Including junk shop owners, NGO representatives, government officials, DONRE company, formal waste workers.

2.4.3. Sample Size

- **10 In-depth Interviews (IDIs) per city:** Conducted with 2 IWPs, 1 formal waste picker, 2 junk shop owners, 1 employee from the environmental company involved in waste management, 1 representative from DONRE, and 3 representatives from organizations' working with IWPs.
- **Focus Group Discussions (FGDs):** One FGD per city with 6-8 IWPs each.

2.4.4. Data Collection methods

- **Semi-Structured Interviews:** An interview guide with open-ended questions was used, covering themes such as daily challenges, health issues, social interactions, and perceptions of support structures (Appendix 2).
- **Focus Group Discussions:** Facilitated discussions to encourage interaction and uncover collective experiences (Appendix 2).

2.4.5. Data Processing

- **Transcription:** Audio recordings were transcribed verbatim in the local language.
- **Coding:** Transcripts were imported into Excel. We used thematic analysis to code data, identifying patterns and themes.
- **Analysis by Groups:** Data were analyzed separately for IWPs and stakeholders to understand different perspectives.
- **Triangulation:** Findings from qualitative data were triangulated with quantitative results to enrich and contextualize the study's conclusions.

2.5. Data Analysis

2.5.1. Quantitative Data Analysis

- **Descriptive Statistics:** Frequencies, percentages, means, and standard deviations were calculated.
- **Inferential Statistics:** Chi-square tests and logistic regression were used to identify associations between variables.
- **Software:** Data were analyzed using R-studio.

2.5.2. Qualitative Data Analysis

- **Thematic Analysis:** We followed Braun and Clarke's (2006) six-step framework for thematic analysis.
 1. **Familiarization:** Reading and re-reading transcripts.
 2. **Coding:** Generating initial codes systematically across the data set.
 3. **Searching for Themes:** Collating codes into potential themes.
 4. **Reviewing Themes:** Checking if themes work in relation to coded extracts.
 5. **Defining and Naming Themes:** Refining specifics of each theme.
 6. **Producing the Report:** Selecting vivid, compelling extract examples.
- **Validation:** Member checking was conducted with a subset of participants to validate the findings.

2.5.3. Integration of Quantitative and Qualitative Data

We adopted a concurrent triangulation design, where quantitative and qualitative data were collected and analyzed simultaneously. The findings from both methods were integrated during the interpretation phase to provide a comprehensive understanding of the research questions.

2.6. Study limitations

Although the methodology outlined above was designed to comprehensively capture IWPs' experiences, several limitations should be considered when interpreting the findings.

First, sampling bias may limit the generalizability of our results. Because convenience sampling was necessary in Hanoi and Ho Chi Minh City—due to the lack of a comprehensive sampling frame—our sample might not fully represent all IWPs in these cities. Additionally, the use of random sampling in Da Nang versus convenience sampling elsewhere complicates cross-city comparisons.

Second, as much of the data are self-reported, participants may have struggled to recall events accurately (recall bias) or provided answers they perceived as socially desirable (social desirability bias). The cross-sectional design further restricts our ability to infer causal relationships; we capture a snapshot in time, not changes over an extended period. Relatedly, any policy shifts or economic fluctuations that emerged before or after our data collection are not reflected, potentially affecting the relevance of some findings.

The geographic scope presents another limitation: the study focused solely on three major cities, possibly excluding distinct experiences of IWPs in smaller towns or rural areas, where socioeconomic and cultural factors could differ significantly. Language and communication barriers also came into play, as some participants might have struggled with certain questions due to dialectical or literacy challenges. Subtleties in responses could have been lost or misinterpreted during translation and transcription. Furthermore, cultural and policy variations across different regions of Vietnam might constrain the applicability of these results nationwide.

The small number of in depth interview and group discussion provided limited data came from the IWPs and support providers. Collected data might not reflect the different angles of opinions and proposed solution as well.

Additionally, non-response and missing data represent a concern, given that some participants either skipped questions or provided incomplete answers, potentially affecting data analysis and validity. Finally, observer bias in qualitative analysis must be acknowledged: the coding and interpretation of interview transcripts are subject to researchers' perspectives, which could inadvertently shape how themes are identified and conclusions are drawn.

Despite these constraints, the mixed-methods approach—combining quantitative surveys with qualitative interviews and focus group discussions nonetheless provides a rich and multifaceted view of the realities faced by IWPs in Vietnam.

Chapter 3 Findings and Discussion

3.1. DEMOGRAPHIC CHARACTERISTICS OF IWPs

3.1.1. Gender, age, and migration status

The dominant gender among IWPs in Vietnam is female and the majority age group is more than 45 years old. Figure 7 show that **87.7%** of IWPs are female and **83%** are over the age of 45. This aligns with Nguyen (2022), who noted that 76% of workers at aggregators in Ho Chi Minh City are female, and 85% are immigrants with low educational qualifications (18). Such trends mirror global patterns where women with low educational attainment often work in precarious, labor-intensive jobs with no social protections (19, 20, 27-29).

The predominance of older women among IWPs reflects broader cultural and socioeconomic factors in Vietnam (30, 31).

The research results indicate that migration status is one of the IWPs characteristics. The percentages of migrants in Ha noi, Da Nang and Ho Chi Minh city are significantly different.

- **Ha noi:** 90% are migrants, often renting rooms (98%).
- **Da Nang:** Only **20%** are migrants, with most IWPs owning their houses or living with family.
- **Ho Chi Minh City:** 52% are migrants, with 65% renting.



An IWP from Da Nang stated:

“Now at our age, who else would do this job? Young people wouldn’t be caught doing scrap collecting... We’re older, uneducated, so we have no other choice” (IWP from Da Nang, GC1).

Further, **migration status** significantly influences IWPs’ living conditions ($P < 0.05$). These demographic vulnerabilities, older age, female gender, and migrant status, limit upward mobility and highlight the feminization of poverty (32).

3.1.2. Educational level

Low education level status of IWPs, especially in Ho Chi Minh city raises a special concern regarding their vulnerability. Figure 8 reveals that most IWPs in Vietnam have limited educational backgrounds. Overall, 63% have an education ranging from “cannot read and write” to primary school completion, and only 7% have completed high school. There are significant differences between the three cities ($P < 0.05$):



One IWP from Hanoi illustrated how limited schooling affects employment options:

“I didn’t have the chance to go to school, so this job is the only way I can earn money for my family.”

- **Hanoi:** No IWPs reported being unable to read or write. Most have primary schooling (66%), and 13% have completed high school—the highest among the cities.
- **Da Nang:** 8% cannot read or write, 58% have primary schooling, and 6% have completed high school.
- **Ho Chi Minh City:** The highest proportion (12%) of IWPs who cannot read or write, with 43% having primary schooling and only 3% completing high school.



An NGO representative emphasized how low education hampers IWPs' ability to claim their rights or access social benefits.

"They lacked of awareness to proactively claim their rights due to low education level. They don't have social benefits like health check-ups or health insurance, and their income isn't much. Waste pickers aren't considered a disadvantaged group, so they don't receive support from social organizations" (NGO Representative, IDI N2-1).

3.1.3. Marriage status

More than 75% of IWPs were married. There is no significant difference about the marriage status of IWPs among 3 cities.

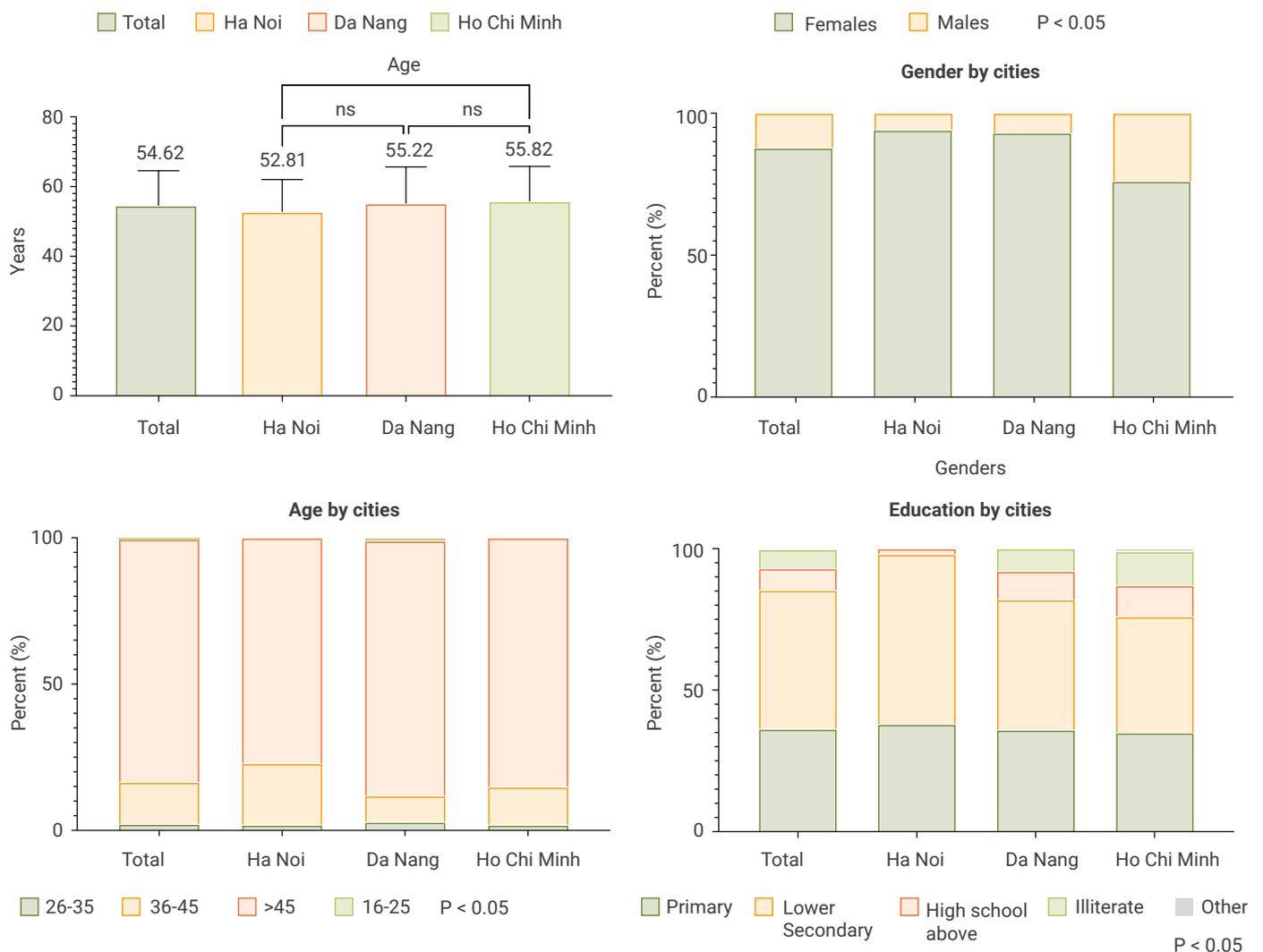


Figure 7. Demographic of IWPs by cities

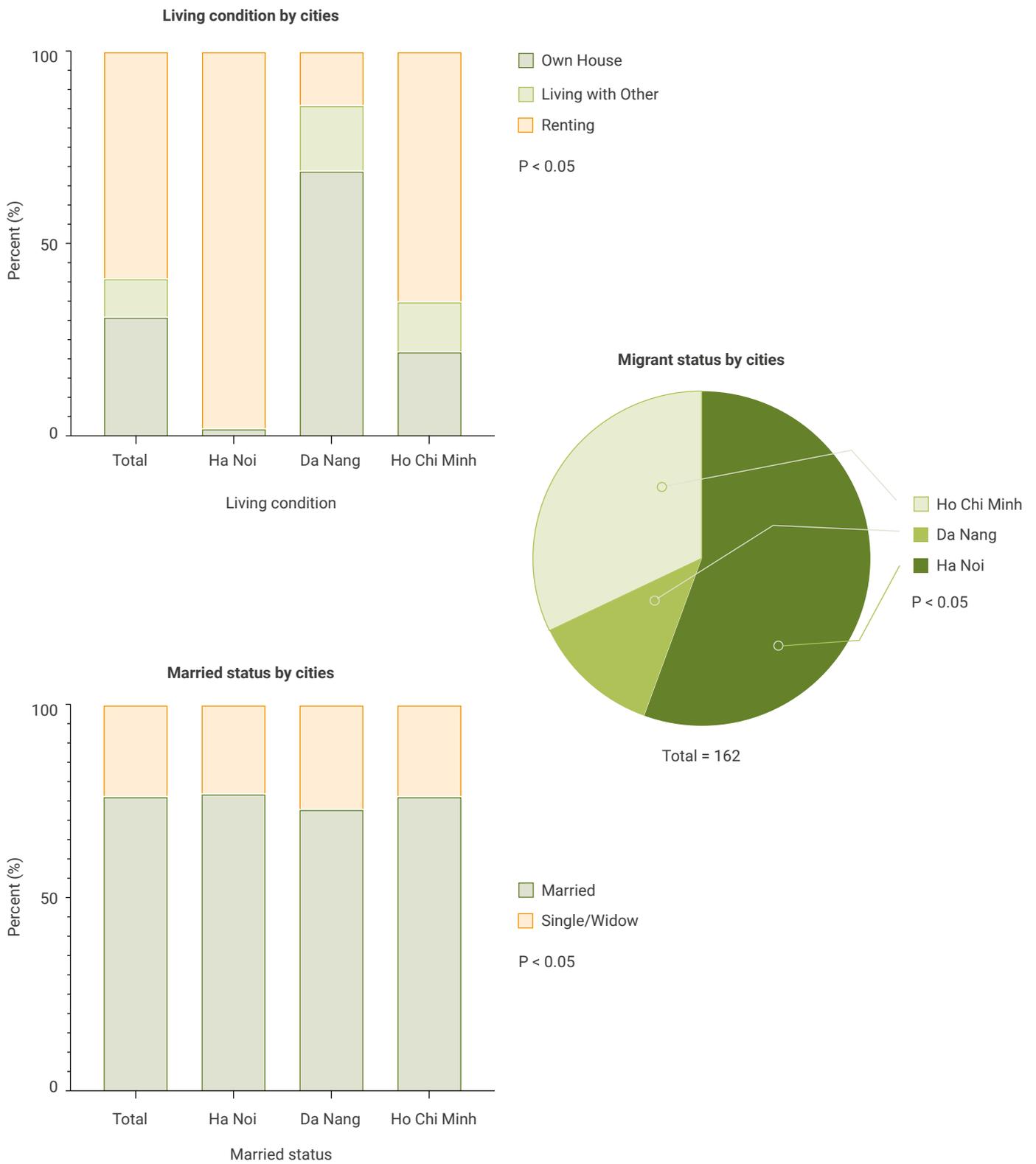


Figure 8. Housing, migration, and marital status of IWPs by cities

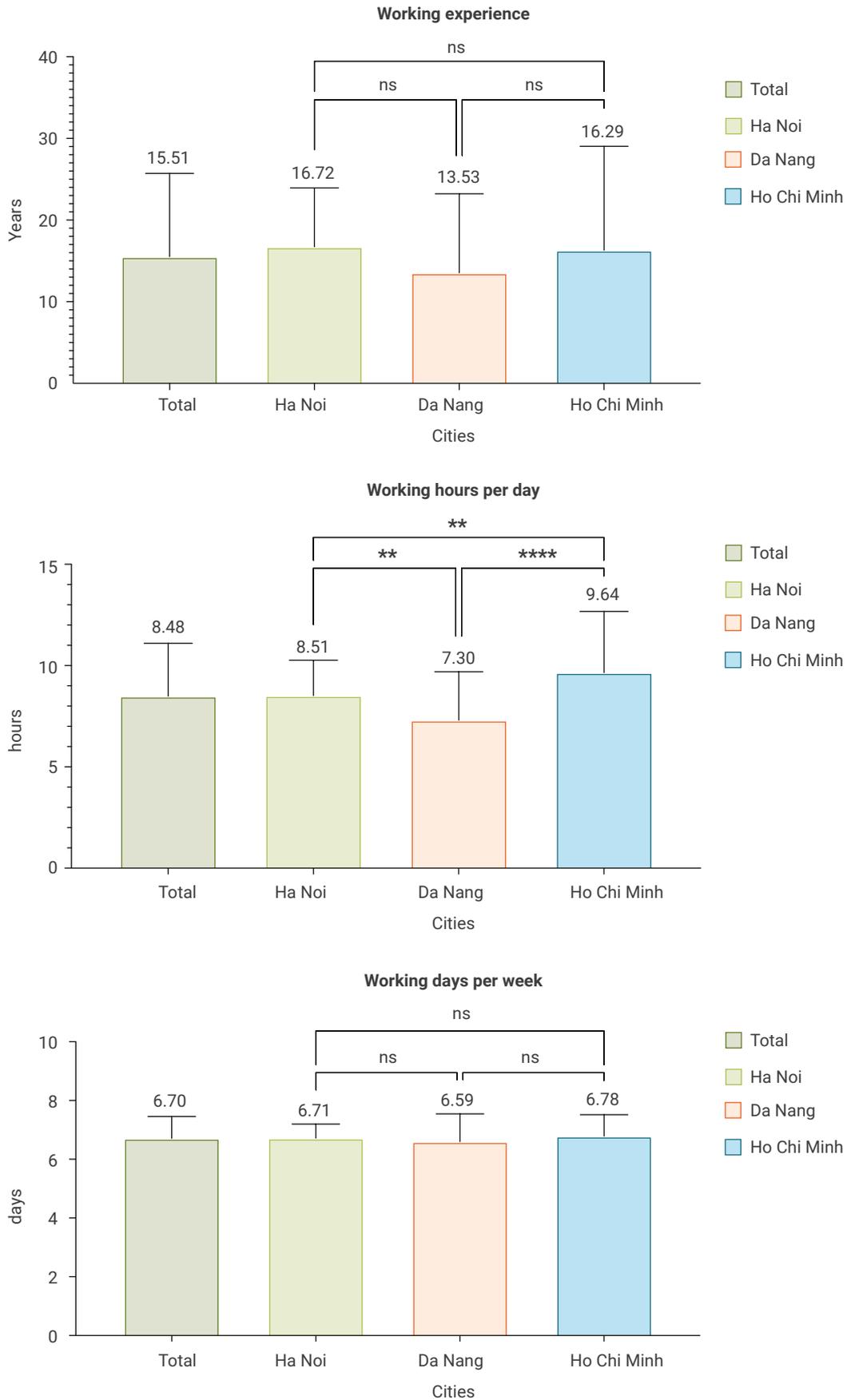


Figure 9. Work Experience and Working Patterns IWPs

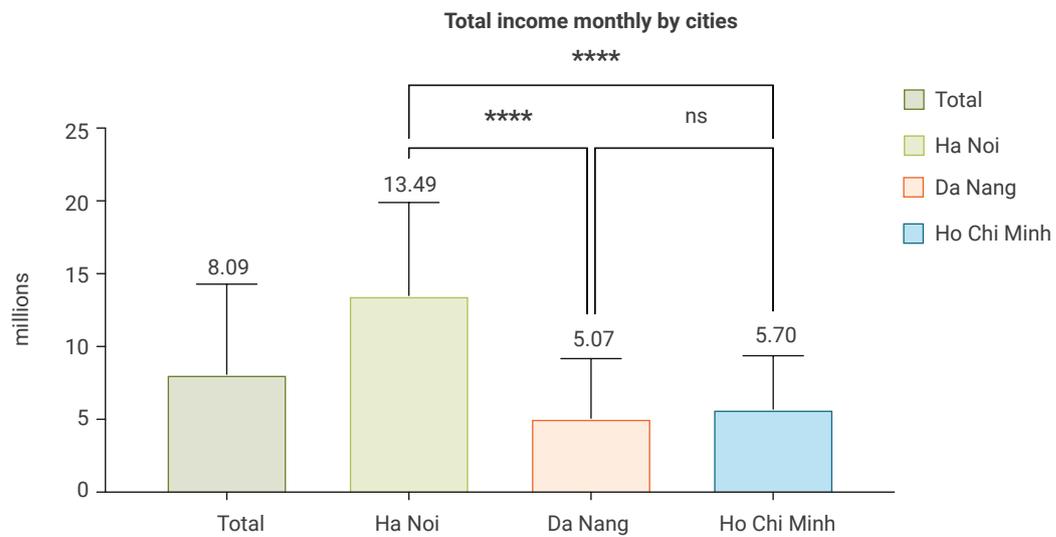
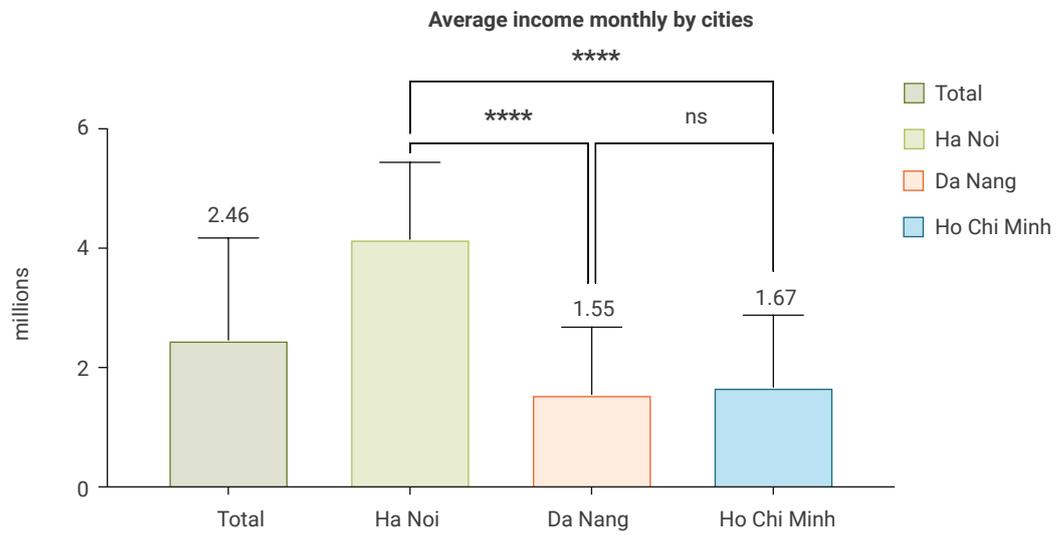
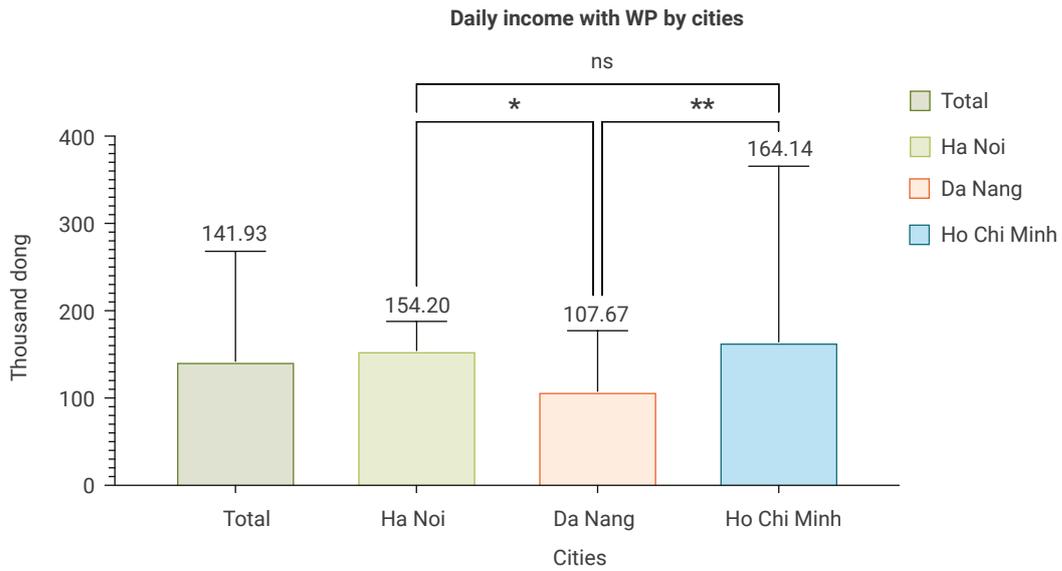


Figure 10. Income of IWPs

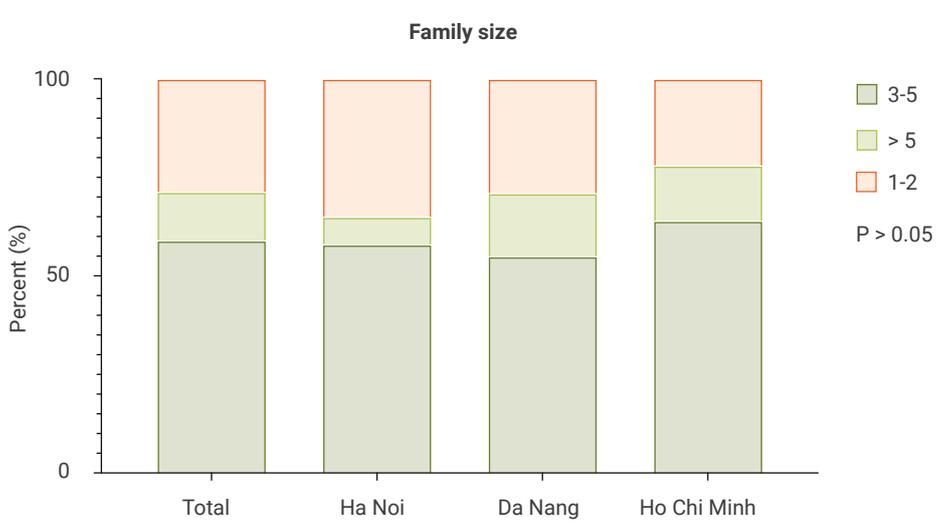
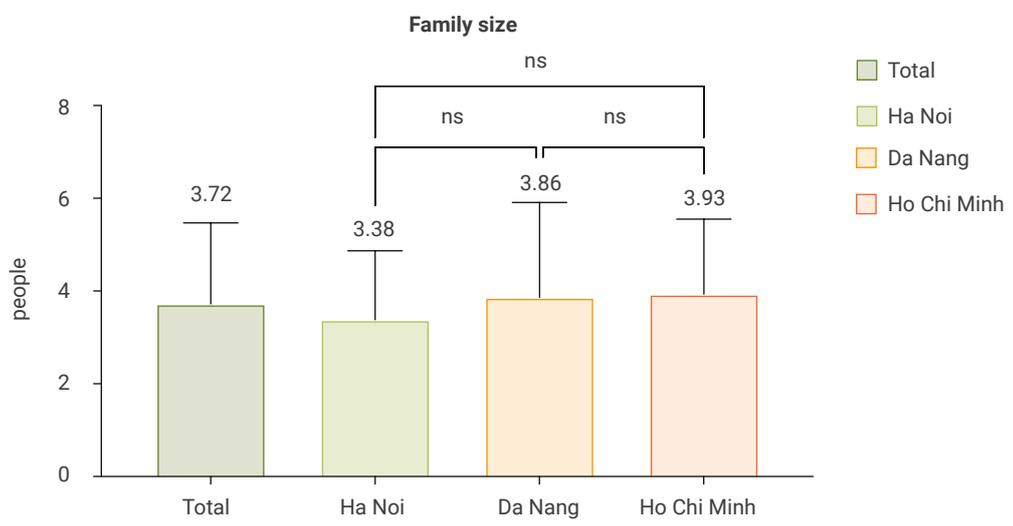
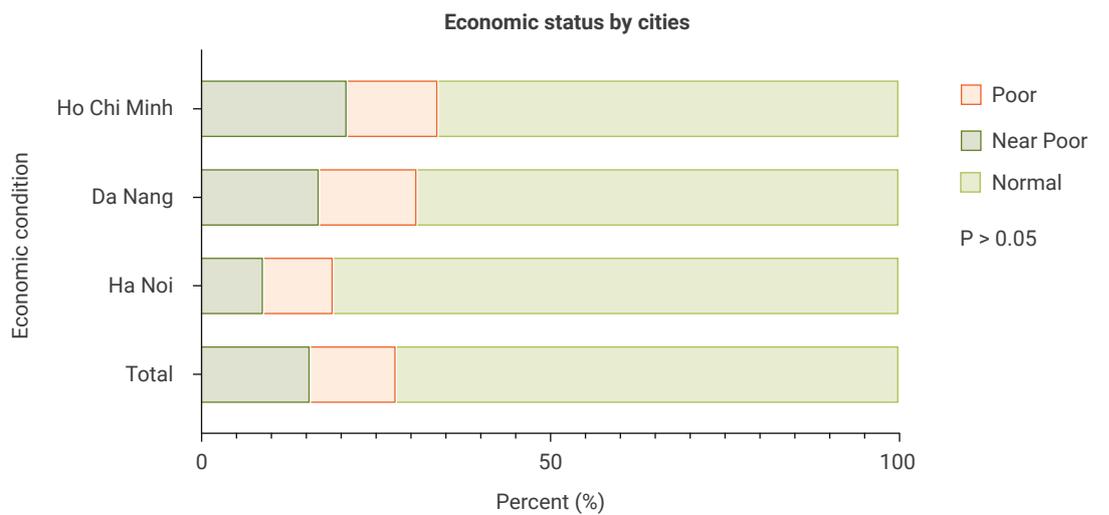


Figure 11. Economic conditions and family size

3.1.4. Working Hours and Income

As shown in Figure 9, IWPs commonly log 8.48 hours per day, 6.7 days per week, though Ho Chi Minh City averages a significantly higher 9.64 hours ($P < 0.05$). Despite these extensive hours, incomes remain low and unstable, subject to fluctuating market prices for recyclables (15). Reported daily incomes range from roughly 164,141 VND in Ho Chi Minh City to 107,670 VND in Da Nang (Figure 10).

3.2. WORKING CONDITION AND TO HEALTH STATUS

3.2.1. Irregular schedule working

Most of IWPs' do not work based on regular schedule. Their work depends on the customer availability, the suitable weather. Many of them skip meals or eat at inconsistent times. The irregular schedule manner of working usually increase risks of fatigue, and nutritional deficits. Moreover, this situation might cause chronic stress and other health complications.



One IWP from Da Nang recounted:

"Some days, I don't eat until 3 pm or 3:30 pm... Sometimes I'm so busy or far from home that I just skip meals" (IWP from Da Nang, GC-1).

3.2.2. Physically hard working demand

The IWPs have to face hard working intensity including long travel to collect waste. Figure 9 underscores that many IWPs have lengthy work experience averaging 15.51 years overall, and spend considerable time (6.7–9.64 hours/day) collecting recyclables, typically 6–7 days per week. Figure 12 shows that they have to walk, ride bicycles (especially in Hanoi, at 100%), or tricycles (notably 28% in Ho Chi Minh City) in order to look for the waste.

Figure 12 further shows that IWPs in Ho Chi Minh City collect waste in roadside or street bins, while those in Da Nang frequently work in residential areas. The type of collected materials also varies (e.g., plastic, metals, cardboard), reflecting localized market demands.



An IWP from Hanoi noted:

"Transporting heavy loads is tough when the bike breaks down, and I don't have money to hire a vehicle" (IWP from Hanoi, GC-2)

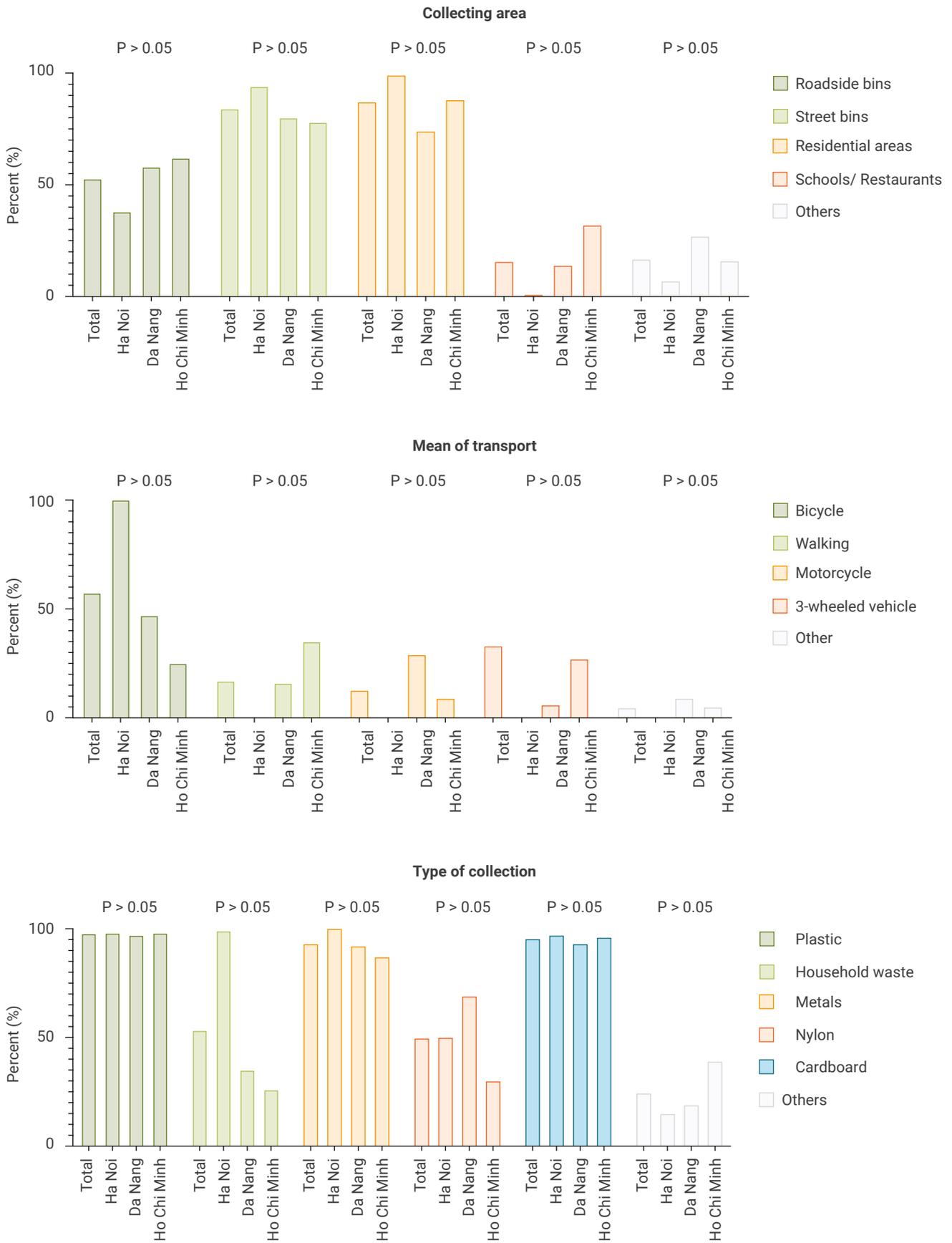


Figure 12. Waste Collection Practices among IWPs by cities

3.2.3. Increasing risk of occupational diseases

A significant number of IWPs have reported their experiences about the signs relating to working conditions such as respiratory and musculoskeletal symptoms.

As summarized in Table 2, common symptoms include:

- General symptoms: Fatigue (79%), Headaches (77.7%), General Body Pain (83.7%).
- Respiratory symptoms: Coughing (36.8%), Shortness of Breath (38%), Chest Pain (31.7%)
- Musculoskeletal symptoms: Back Pain (86%), Arm/Wrist Pain (80.3%), Leg Pain (78.7%).



One IWP from Da Nang underscored the gravity of these risks:

“Honestly, the health issues are serious. Almost everyone in scrap collecting ends up with lung problems because we inhale so many toxic substances... We breathe in all sorts of fumes; there’s no way to avoid it” (IWP from Da Nang, GC-1).

These accounts align with global research on the informal waste sector, where workers face higher risks of chronic illnesses due to sustained exposure to filth, dust, and toxic substances (15, 21, 33)



Musculoskeletal pain was also frequently reported; an IWP shared:

“My legs are swollen all over... My whole body aches; sometimes I can’t bear the pain in my hands and knees” (IWP from Da Nang, GC-1).

Table 2. Work-related symptoms among IWPs by cities

Symptoms	Ha Noi			Da Nang			Ho Chi Minh			Total			P
	Never/Rare	Occasionally	Often	Never/Rare	Occasionally	Often	Never/Rare	Occasionally	Often	Never/Rare	Occasionally	Often	
Headache	8	72	20	25	32	43	34	43	23	22.3	49	28.7	<0.05
Fatigue	23	68	9	17	37	46	23	42	35	21	49	30	<0.05
Cold	46	54	0	36	54	10	70	21	9	50.7	43	6.3	<0.05
Loss of Appetite	43	52	5	49	35	16	68	25	7	53.3	37.3	9.3	<0.05
Cough	50	48	2	63	32	4	76	21	3	63.2	33.8	3	<0.05

Symptoms	Ha Noi			Da Nang			Ho Chi Minh			Total			P
	Never/ Rare	Occasionally	Often										
Excessive phlegm	91	7	2	75	23	2	84	15	1	83.3	15	1.7	<0.05
Shortness of breath	35	58	7	69	24	7	82	13	5	62	31.7	6.3	<0.05
Chest pain	64	31	5	66	25	9	75	20	5	68.3	25.3	6.3	>0.05
Sore throat	55	40	5	65	29	6	80	17	3	66.7	28.7	4.7	<0.05
Nausea	80	19	1	71	25	11	89	11	0	80	18.3	1.7	<0.05
Diarrhea	94	6	0	84	16	0	92	8	0	90	10	0	<0.05
Abdominal pain	50	48	2	76	23	1	82	15	3	69.3	28.7	2	<0.05
Bloody stools	94	6	0	97	3	0	97	3	0	96	4	0	<0.05
Constipation	79	21	0	88	10	2	96	4	0	87.7	11.7	0.7	>0.05
Itching	77	20	3	58	27	15	65	19	16	66.7	22	11.3	<0.05
Hives	84	16	0	73	23	4	82	9	9	79.7	16	4.3	<0.05
Peeling skin	87	13	0	86	8	6	85	9	6	86	10	4	>0.05
Dry cracked skin	75	25	0	87	10	3	86	9	5	82.7	14.7	2.7	<0.05
General body pain	4	33	63	20	26	54	25	18	57	16.3	25.7	58	<0.05
Back pain	0	24	76	23	28	49	19	13	68	14	21.7	64.3	<0.05
Arm/ wrist pain	1	47	52	32	26	42	26	16	58	19.7	29.7	50.7	<0.05
Leg pain	20	58	22	25	29	46	19	19	62	21.3	35.3	43.3	<0.05
Eye itchy	11	11	11	65	25	10	78	11	11	62	27.3	10.7	<0.05
Blurred vision	81	16	3	50	31	19	70	16	14	67	21	12	<0.05
Eye infection	100	0	0	91	7	2	100	0	0	97	2.3	0.7	<0.05

3.2.4. Occupational accidents

The IWPs usually face with the accident due to work in street and at the garbage dump. Occupational accidents further exacerbate IWPs' vulnerability. As shown in Figures 13 and 14 the most common incidents include:

- Cuts from Sharp Objects: 69% overall, with Hanoi notably at 100%.
- Falls: 30% (Hanoi: 38%).
- Traffic Accidents: 8.8% overall, rising to 19% in Ho Chi Minh City.



An IWP in Hanoi provided a telling example:

“Once, I was breaking plastic at home when a piece flew into my eye... Another time, I bought sharp metal roofing, and it sliced my hand. I’ve had sharp objects stab me, heavy items fall on me—it’s dangerous work” (IWP from Hanoi, GC-2).

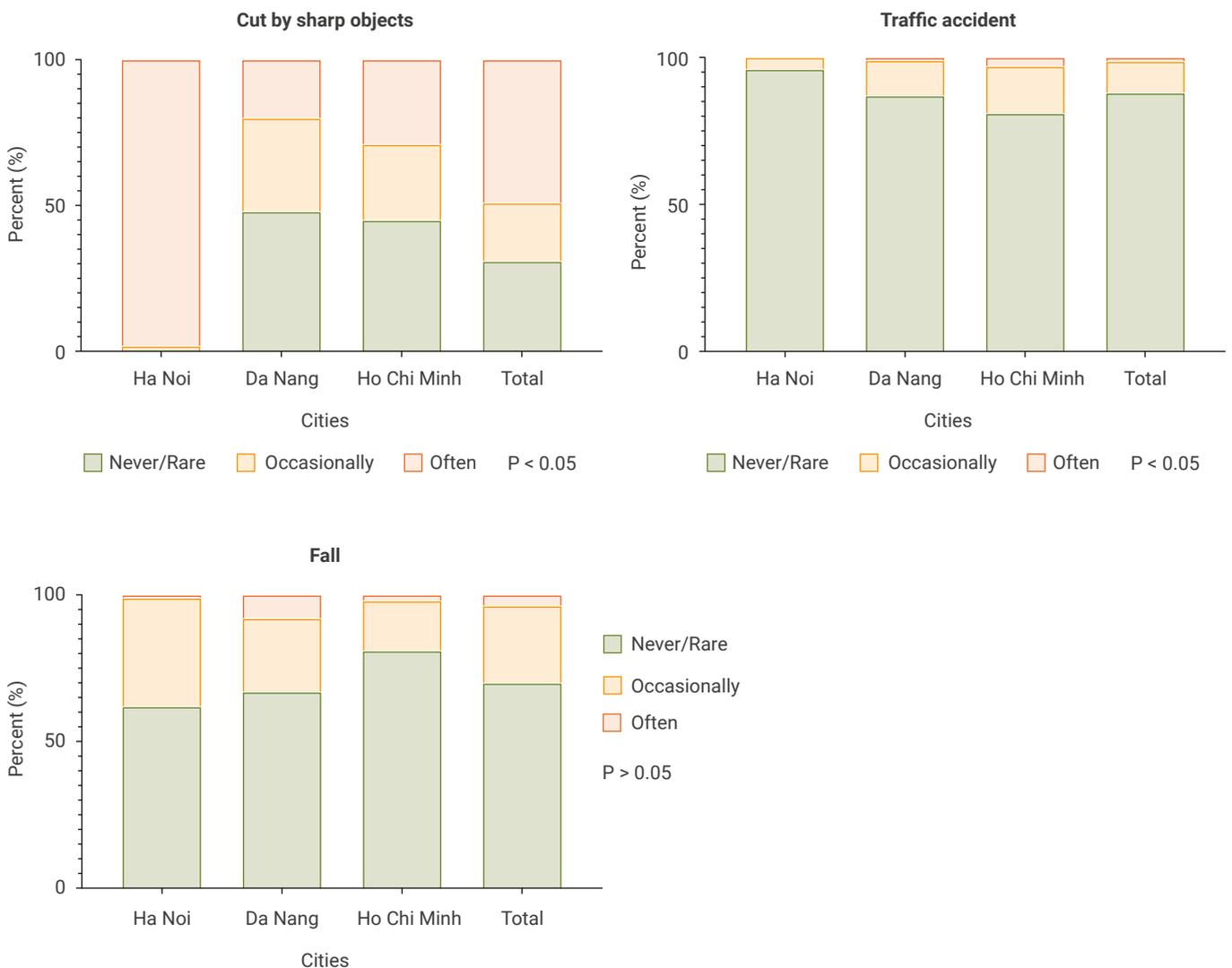


Figure 13. Common occupational accidents among IWP by cities

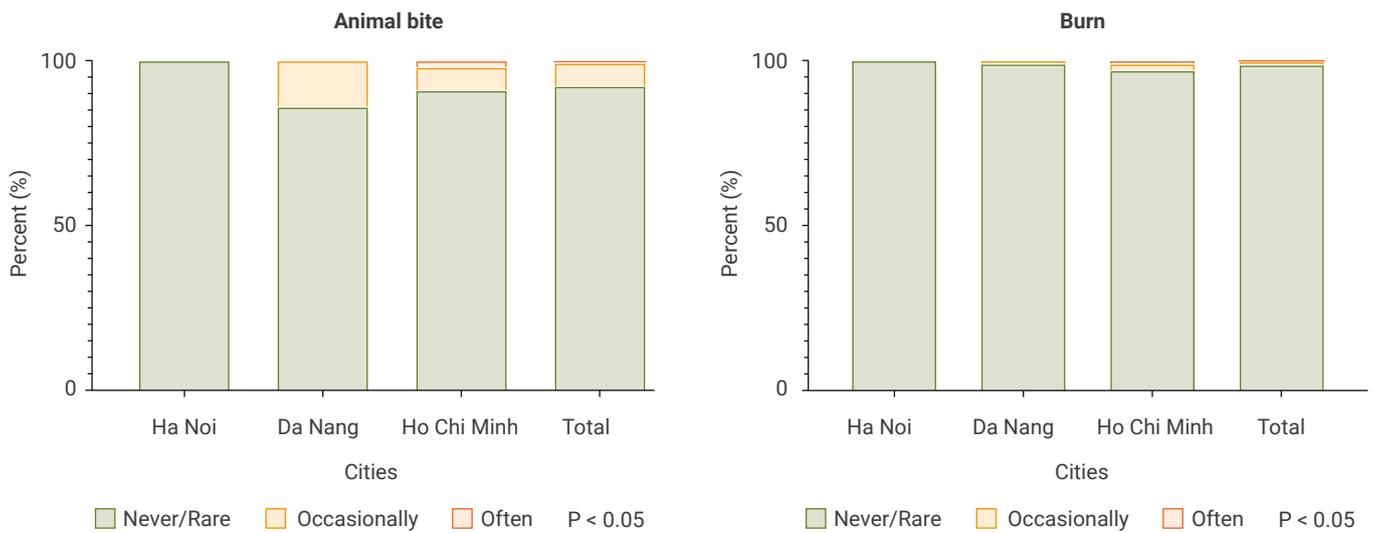


Figure 14. Other occupational accidents among IWPs by cities



She also emphasized the constant fear of tetanus, noting:

“In this line of work, what I fear most are sharp shards, broken pottery, rusted metal. If we get cut, we have to get a tetanus shot within 24 hours, or it could be fatal” (IWP from Hanoi, GC2).

3.2.5. Limited use of PPE

IWPs reported that they rarely use labor protection to prevent the diseases and accidents. Table 3 highlights the labor protection usage patterns. Glove usage were high in Hanoi and Da Nang, and Ho Chi Minh with, 98%, 84%, and 78% report using gloves “often”. The mask often usage is also high (61.3%), other tools such as helmets and safety shoes are far less common. For helmet usage, generally low, with only 17% in Da Nang often using helmets. Gloves help prevent cuts, punctures, and direct skin contact with contaminants—particularly sharp metals, broken glass, or hazardous substances. Helmets protect against head injuries caused by falling objects or collisions with vehicles when navigating busy streets, while safety shoes prevent foot injuries from stepping on sharp objects and provide better stability when carrying heavy loads. Regular use of PPE not only reduces the likelihood of accidents and infections but also improves overall well-being by limiting direct exposure to waste-borne pathogens and chemicals, ultimately allowing IWPs to work more safely and confidently in demanding environments.



An IWP shared:

“Sometimes I find thicker gloves, but I can’t work with them... Protective gear can make the job harder, so I prefer using what’s comfortable” (IWP from Hanoi, GC-2).

The research result found that there are many reasons that affected the IWPs behaviors of labor protective equipment use. The IWPs mentioned to the barriers such as cost, discomfort in hot climates, and lack of awareness about PPE importance (14, 34).

Table 3. PPE use among IWPs by cities

Symptoms	Ha Noi			Da Nang			Ho Chi Minh			Total			P
	Never/Rare	Occasionally	Often	Never/Rare	Occasionally	Often	Never/Rare	Occasionally	Often	Never/Rare	Occasionally	Often	
Helmet	96	3	1	72	11	17	92	5	3	86.7	6.3	7	
Gloves	1	2	98	12	4	84	11	11	78	7.7	5.7	86.7	
Mask	1	50	49	11	3	86	38	13	49	16.7	22	61.3	
Reflective vest	98	1	1	75	13	12	96	2	2	89.7	5.3	5	
Safety shoes	100	0	0	76	11	13	100	0	0	92	3.7	4.3	

3.2.6. Discrimination situation in the communities

Besides the physical hard work condition, the IWPs face to the social discrimination regarding their current job. Rubbish collecting is not considered by majority of communities as a valuable work. Figure 15 details the proportion of IWPs in each city (Hanoi, Da Nang, Ho Chi Minh City) who feel compelled to avoid casual conversations or social events due to fear of judgment. It highlights Hanoi as having the highest rates of stigma-related avoidance, while Da Nang and Ho Chi Minh City show moderately lower levels - suggesting city-specific cultural or social factors influencing IWPs' experiences of shame and marginalization. A considerable proportion of IWPs avoid social contact because of negative perceptions surrounding waste picking. Specifically, 35% hesitate to talk to neighbors—rising to 68% in Hanoi—and 37% hesitate to talk to friends—again, 68% in Hanoi. These figures suggest that social stigma is more pronounced in Hanoi, potentially due to denser urban environments or deeper-rooted cultural attitudes.

Such stigma stems from societal assumptions that link waste work with uncleanness, and by extension, low social standing (16, 35). In many cultures, tasks involving garbage or recyclables are considered “dirty jobs,” exacerbating discrimination against those who perform them (36).



An IWP from Hanoi explained:

“People look down on us; they think collecting scrap is dirty and lowly. Many see us as pitiful, but strangely enough, I like what I do. Even if they scorn us, I enjoy my work.” (IWP from Hanoi, GC-2).



Another IWP from Hanoi explained:

“I feel embarrassed when people ask about my job, so I avoid social gatherings. They think we’re unclean, and it makes me uncomfortable.” (IWP from Hanoi, GC-2).

The stigma has profound psychological ramifications, leading to shame, embarrassment, and low self-esteem.

Over time, these attitudes may result in social withdrawal, heightened stress, and mental health concerns, as IWPs internalize society’s negative views (22). Feeling unwelcome or judged in community settings can also discourage IWPs from seeking assistance or participating in communal life, reinforcing a cycle of marginalization (37).

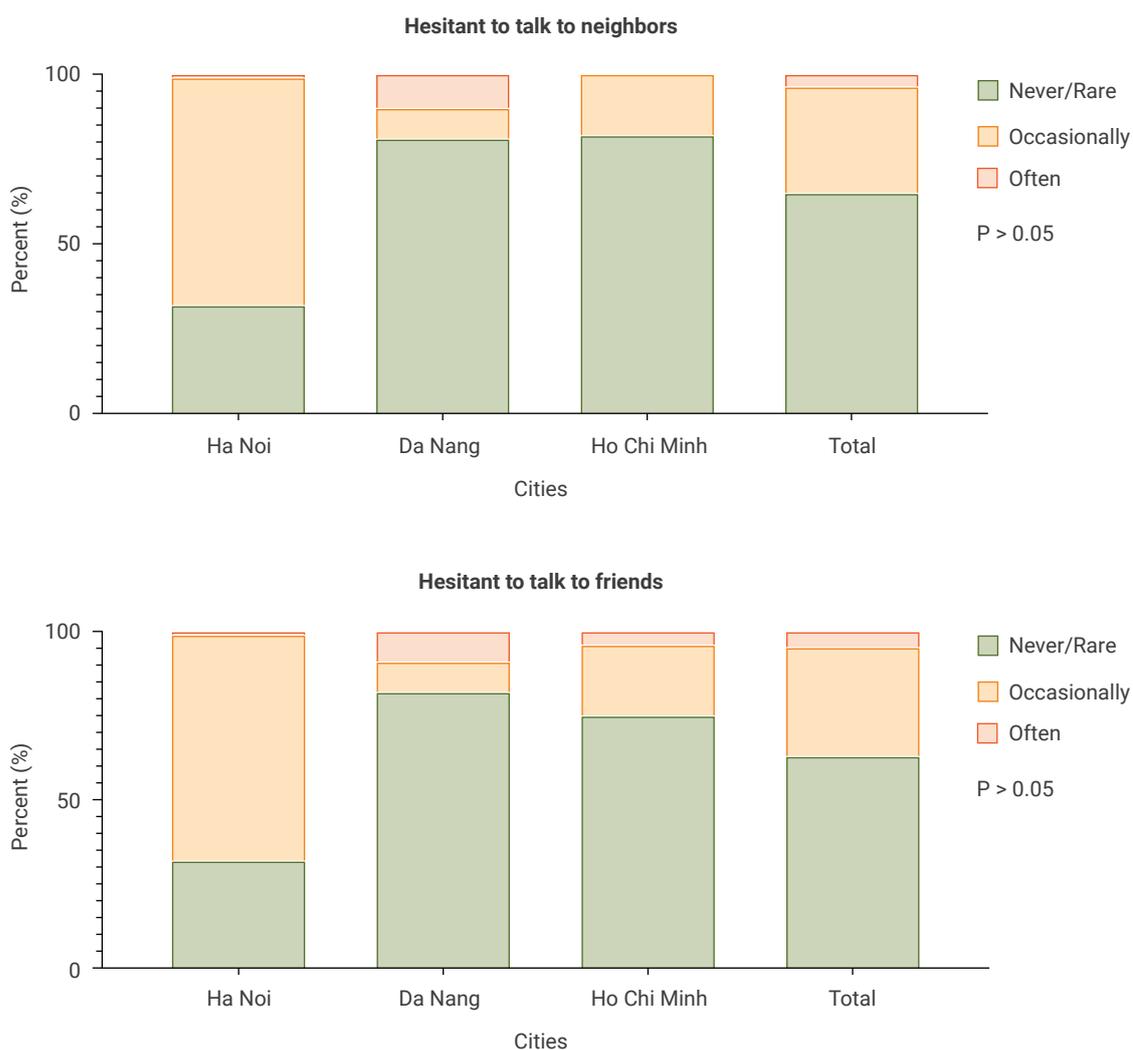


Figure 15. Social interaction with neighbors and friends of IWPs

3.3. ACCESS TO SOCIAL WELFARE AND SUPPORT SYSTEM

Although the IWPs were affected by many vulnerable factors, their current access level to the social welfare and other support system is a big concern. There were 2 main sources of support, one was from the government and another was from NGOs. This study tried to measure the IWPs' accessibility and the barriers as well.

Table 4 shows the range of challenges IWPs face: unstable income, health issues, lack of official support, and others. Table 5 and Figure 16 detail the types of support IWPs have received and the frequency of that support, illustrating the heavier reliance on NGO-led efforts.

Table 6 highlights outcomes of any received support (e.g., partial or full relief of immediate needs). Table 7 showcases IWPs' desired support, emphasizing monetary aid, medical coverage, PPE, and training.



One IWP from Da Nang recalled the bureaucratic complexity of receiving COVID-19 aid:

"During the pandemic, they had us fill out forms stating we were scrap collectors... We finally received one million VND. It was such a hassle for that small amount." (IWP from Da Nang, GC-1)

3.3.1. Limited Access to Support Services

Despite their essential contributions to waste management, many IWPs receive little formal assistance. As indicated by Figures 16, only 51.3% of IWPs report having accessed any form of support, with notable variations among the three cities:

- **Hanoi:** 77%
- **Da Nang:** 66%
- **Ho Chi Minh City:** 11%

Majority of the support form from NGOs source are money, protection equipment, or food. The governmental involvement remains sporadic.

One IWPs said that the support from the government just happened in the holiday accasiom. Another IWP observed that only “poor households or people with disabilities” receive Tet holiday gifts, underscoring how informal workers do not easily fit existing social protection categories.

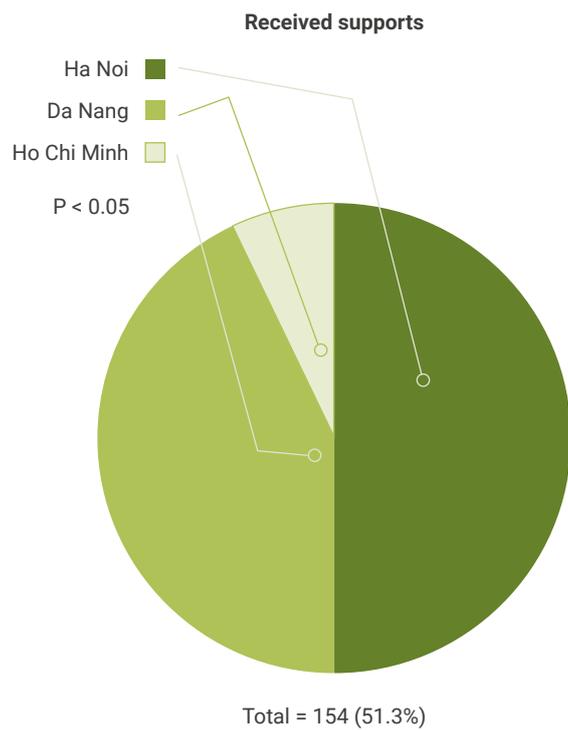


Figure 16. Support received among IWPs



Figure 17. An interview with an IWP in Ha Noi

Table 4. Challenges faced by IWPs by cities

Symptoms	Ha Noi			Da Nang			Ho Chi Minh			Total			P
	Never/ Rare	Occasionally	Often										
Money issues	6	78	16	19	41	40	3	41	56	9.3	53.3	37.3	<0.05
Lack PPE	9	79	12	52	34	14	42	36	22	34.3	49.7	16	<0.05
No health insurance	76	20	4	62	13	25	68	9	23	68.7	14	17.3	<0.05
Couldn't go to hospital	5	95	0	66	23	11	61	31	8	43.8	49.8	6.4	<0.05
Lack of food	18	74	8	60	31	9	56	33	11	44.7	46	9.3	<0.05
Lack of training	0	99	1	90	8	2	84	11	5	58	39.3	2.7	<0.05
Lack of source	0	92	8	54	24	22	62	23	15	38.7	46.3	15	<0.05
Transport issues	13	86	1	43	35	22	72	18	10	42.7	46.3	11	<0.05

Table 5. Type and frequency of supports received by IWPs

Symptoms	Ha Noi			Da Nang			Ho Chi Minh			Total			P
	Never/ Rare	Occasionally	Often										
Money support	49	51	0	79	21	0	96	4	0	74.7	25.3	0	<0.05
PPE support	83	17	0	50	49	1	100	0	0	77.7	22	0.3	<0.05
Health insurance support	88	12	0	85	6	9	98	2	0	90.3	6.7	3	<0.05
Free medical checkup	99	1	0	86	12	2	97	2	1	94	5	1	<0.05
Food support	43	57	0	88	11	1	95	4	1	75.3	24	0.7	<0.05
Training support	93	7	0	54	45	1	100	0	0	82.3	17.3	0.3	<0.05
Source support	100	0	0	92	5	3	100	0	0	97.3	1.7	1	<0.05
Transportation support	100	0	0	98	2	0	100	0	0	99.3	0.7	0	<0.05

Table 6. The results of support among IWPs received

Symptoms	Ha Noi			Da Nang			Ho Chi Minh			Total			P
	Never/Rare	Occasionally	Often	Never/Rare	Occasionally	Often	Never/Rare	Occasionally	Often	Never/Rare	Occasionally	Often	
Money support	0	100	0	18.2	59.1	22.7	25	50	25	6.5	85.7	7.8	<0.05
PPE support	0	94.1	55.9	13.7	72.5	13.7	0	0	0	6.5	85.7	7.8	<0.05
Health insurance support	0	100	0	25	6.7	73.3	0	50	50	10.3	48.3	41.4	<0.05
Free medical checkup	0	100	0	21.4	42.9	35.7	0	33.3	66.7	16.7	44.4	38.9	<0.05
Food support	0	100	0	33.3	66.7	35.7	0	40	60	5.4	90.5	4.1	<0.05
Training support	0	100	0	6.5	45.7	47.8	0	0	0	5.4	90.5	4.1	<0.05
Source support	0	0	0	25	25	50	0	0	0	25	25	50	<0.05
Transportation support	0	0	0	0	100	0	0	0	0	0	100	0	<0.05

Table 7. Desired support by IWPs

Symptoms	Ha Noi			Da Nang			Ho Chi Minh			Total			P
	Not interested	Some what interested	Very interested	Not interested	Some what interested	Very interested	Not interested	Some what interested	Very interested	Not interested	Some what interested	Very interested	
Money support	0	53	47	8	16	76	4	15	81	4	28	68	<0.05
PPE support	1	41	58	52	24	24	20	23	57	24.3	29.3	46.3	<0.05
Health insurance support	17	76	7	39	3	58	17	13	70	24.3	30.7	45	<0.05
Free medical checkup	0	3	97	28	24	48	17	13	70	15	13.3	71.7	<0.05
Food support	0	92	8	24	39	37	18	30	52	14	53.7	32.3	<0.05
Training support	0	91	9	43	22	35	58	28	14	33.7	47	13.9	<0.05
Source support	0	1	99	42	20	38	39	8	53	27	9.7	63.3	<0.05
Transportation support	3	87	10	54	19	27	51	24	25	36	43.3	20.7	<0.05

3.3.2. Barriers to Accessing Support

Previous studies reveals several obstacles limiting IWPs' ability to receive assistance. Bureaucratic hurdles, such as complex paperwork, long wait times, and the requirement of formal identification, often prevent IWPs from accessing support (38). Additionally, a lack of awareness prevents many IWPs from benefiting from available programs, as they may not know these initiatives exist or believe they do not qualify (15). Economic constraints further exacerbate the issue, as taking time off work to visit offices or NGOs leads to lost income—something IWPs can rarely afford (39). Moreover, the absence of formal recognition means that IWPs, as informal laborers, are routinely excluded from official social welfare frameworks, leaving them without critical support (23).

In this study, the IEPs mentioned the similar reasons that made them hesitated to access the support services.

3.3.3. Support expectation of IWPs

Despite limited assistance, IWPs said that they expected to be supported from outsides in order to improve their livelihood. They expressed a clear need for various types of aid. As seen in Table 7, their interest levels include:

- Money: 96%
- Health Insurance / Medical Examinations: 75.7% and 85% respectively
- PPE provision: 75.7%
- Food aid: 86%
- Training and resource access: High demand for practical skills or business resources to improve livelihood prospects



An IWP from Ho Chi Minh City highlighted how even having insurance isn't always helpful:

"I don't usually go for health check-ups... Going to the hospital takes time, and I lose work. Even though it doesn't cost much with insurance, the lost income isn't worth it." (IWP from Ho Chi Minh City, GC-3)



One IWP mentioned:

"I wish we had health insurance... But without money or insurance, by the time we discover an illness, it's often too late to treat." (IWP from Da Nang, GC-1)



One IWP mentioned:

"I don't usually go for health check-ups... Going to the hospital takes time, and I lose work. Even though it doesn't cost much with insurance, the lost income isn't worth it." (IWP from Ho Chi Minh City, GC-3)

3.4. JOB SATISFACTION

The percentage of IWPs said that they feel satisfy with their current job is quite high. Figure 19 demonstrates the job satisfaction and plan for the future. Most IWPs express satisfaction (63.7%). Ho Chi Minh City shows the highest rate (75%).



One IWP from Hanoi explained:

"I can manage my own time... I'm not dependent on anyone. It's flexible and suits me" (IWP from Hanoi, GC-2)



Figure 18. An interview with an IWP in Ho Chi Minh

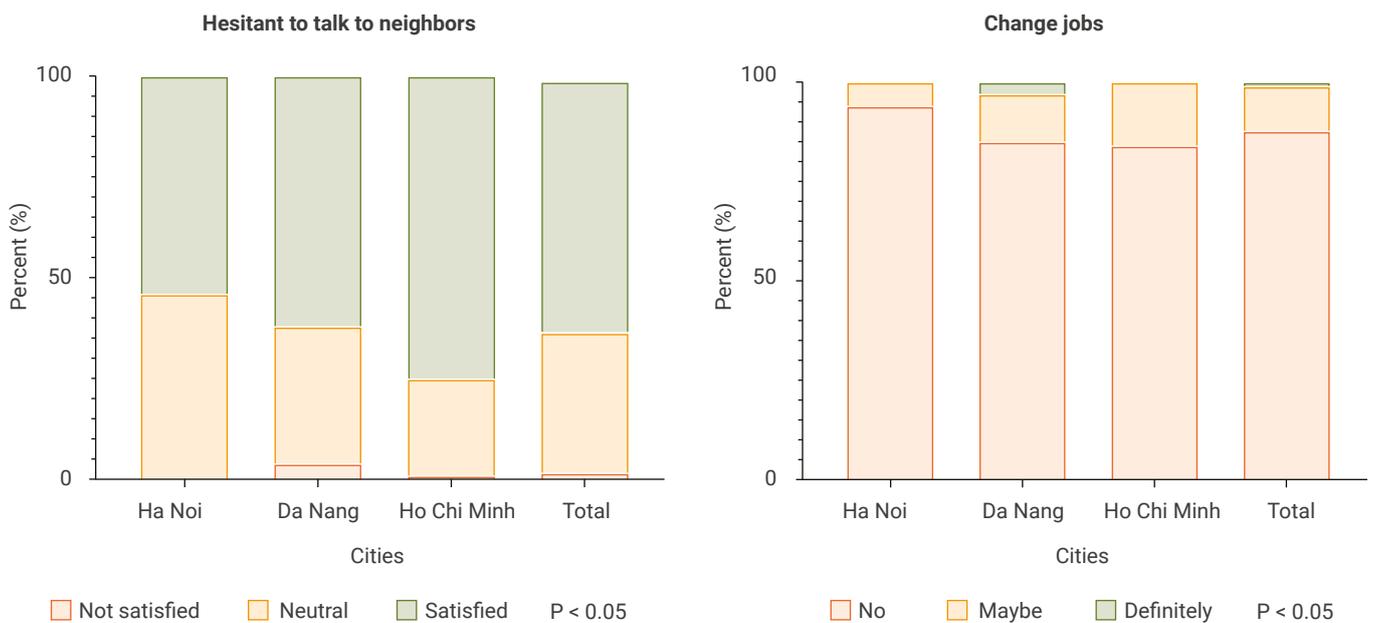


Figure 19. Job satisfaction and plan to change jobs

3.4.1. Preference for Autonomy and Flexibility preference

The Figure 20 demonstrates the major reasons for job satisfaction include including:

- **Flexibility:** 68% value the ability to manage their own time.
- **Independence:** No specific skill requirement allows for autonomy.
- **Age Factor:** Older IWP's find it tough to secure other jobs.

An IWP in Ho Chi Minh City stated:

"I enjoy this job because it's free and comfortable... There's no other work I can do" (IWP from Ho Chi Minh City, GC-3).

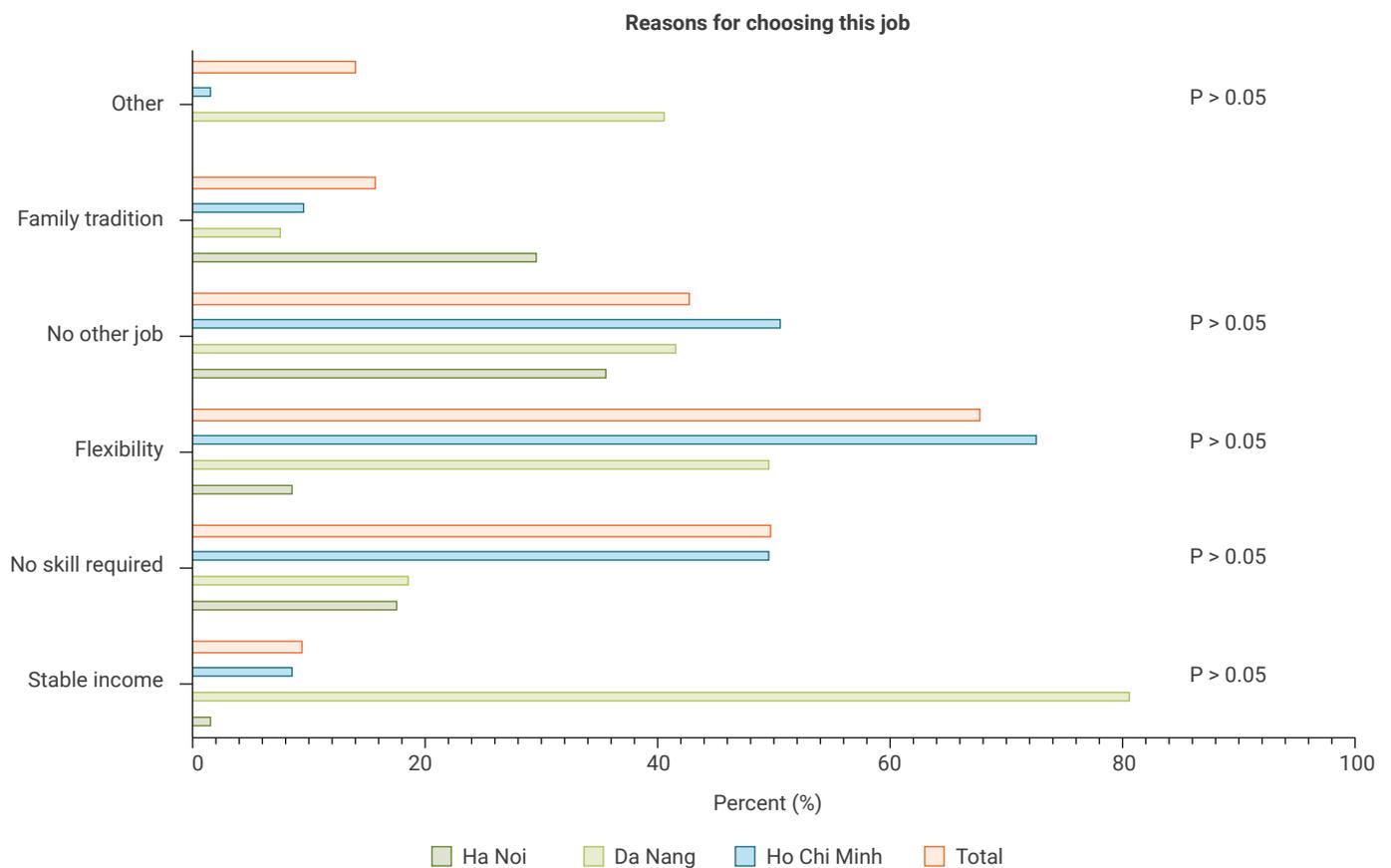


Figure 20. Reasons for choosing as IWP's

3.4.2. Low intention to change occupations

The majority of IWP's not only feel satisfied with the current occupation but also do not expect to change to another job. Figure 20 also shows that 87.7% have no plans to change jobs.

One IWP said:

"At our age, it's hard to find other work... Changing jobs isn't really an option" (IWP from Da Nang, GC-1)"



Figure 21. An interview with an IWP in Da Nang

3.4.3. Factors Associated with Receiving Support and Job Satisfaction

Tables 8 and 9 show logistic regression results for receiving support and job satisfaction.

Receiving Support

Table 8 shows that Da Nang and Ho Chi Minh City IWPs are significantly less likely to receive support compared to Hanoi.

- **Living Conditions:** Owning a house increases likelihood of receiving support (AOR = 3.46).
- **Economic Status:** IWPs classified as poor have a higher likelihood of receiving support (AOR = 2.91).

Table 8. Associated factors of receiving supports among IWPs (n=300)

Factors of receiving support	Crude OR (95%CI)	P-value	Adjusted OR (95%CI)	P-value
City				
Ha Noi			Ref.	
Da Nang	0.58 (0.31,1.08)	0.086	0.12 (0.04,0.35)	< 0.001
Ho Chi Minh	0.04 (0.02,0.08)	< 0.001	0.01 (0,0.04)	< 0.001
Gender				
Males			Ref.	
Females	2.82 (1.34,5.94)	0.006	1.57 (0.56,4.42)	0.397

Factors of receiving support	Crude OR (95%CI)	P-value	Adjusted OR (95%CI)	P-value
Age group				
< 45	Ref.			
>45	0.63 (0.34,1.16)	0.14	0.46 (0.19,1.1)	0.082
Education level				
Illiterate			Ref	
Primary	2.42 (0.87,6.76)	0.092	1.19 (0.28,5.13)	0.812
Lower education	2.86 (1.04,7.86)	0.041	1.2 (0.28,5.13)	0.802
Higher education	2.14 (0.61,7.53)	0.236	2.15 (0.38,12.12)	0.385
Migrant status				
No			Ref.	
Yes	0.76 (0.48,1.19)	0.232	0.45 (0.17,1.22)	0.117
Living condition				
Renting			Ref.	
Own house	2.01 (1.2,3.38)	0.008	3.46 (1.06,11.29)	0.04
Living with others	0.55 (0.25,1.25)	0.155	1.36 (0.38,4.84)	0.633
Married status				
Single/widow			Ref.	
Married	1.03 (0.61,1.76)	0.903	1.4 (0.7,2.8)	0.336
Economic status				
Normal			Ref.	
Near poor	1.41 (0.69,2.89)	0.343	1.9 (0.72,5.05)	0.198
Poor	1.15 (0.61,2.16)	0.671	2.91 (1.17,7.24)	0.021

Job Satisfaction

Tables 9 shows that IWPs in Ho Chi Minh City are more likely to be satisfied compared to Hanoi (AOR = 3.22). For Economic Status, poor IWPs are less likely to be satisfied (AOR = 0.44). Geographic location and economic status significantly influence support receipt and job satisfaction. Targeted interventions should consider these factors to increase program effectiveness and IWPs' well-being.

Table 9. Associated factors of job satisfaction among IWPs (n=300)

Factors of Job satisfaction	Crude OR (95%CI)	P-value	Adjusted OR (95%CI)	P-value
City				
Ha Noi			Ref.	
Da Nang	1.39 (0.79,2.44)	0.252	1.35 (0.57,3.2)	0.501
Ho Chi Minh	2.56 (1.4,4.65)	0.002	3.22 (1.57,6.61)	< 0.001
Gender				
Males			Ref.	
Females	0.94 (0.46,1.94)	0.871	1.46 (0.66,3.23)	0.349
Age group				
< 45			Ref.	
>45	0.85 (0.45,1.61)	0.625	0.81 (0.41,1.59)	0.538
Education level				
Illiterate			Ref	
Primary	0.94 (0.35,2.56)	0.907	1.1 (0.37,3.22)	0.865
Lower education	0.88 (0.33,2.33)	0.789	0.97 (0.34,2.82)	0.962
Higher education	1.53 (0.41,5.64)	0.527	1.6 (0.41,6.31)	0.500
Migrant status				
No			Ref.	
Yes	0.88 (0.55,1.42)	0.606	1.36 (0.64,2.89)	0.418
Living condition				
Renting			Ref.	
Own house	1.28 (0.75,2.17)	0.363	1.74 (0.67,4.55)	0.256
Living with others	0.91 (0.41,2.02)	0.823	0.82 (0.3,2.25)	0.703
Married status				
Single/widow			Ref.	
Married	1.19 (0.69,2.06)	0.534	1.05 (0.58,1.9)	0.863
Economic status				
Normal			Ref.	
Near poor	0.61 (0.3,1.24)	0.173	0.53 (0.25,1.13)	0.101
Poor	0.55 (0.29,1.05)	0.069	0.44 (0.22,0.88)	0.021



Figure 22. A group discussion with an IWPs

3.5. EXISTING SUPPORT FROM NGOs

3.5.1. Support role of NGOs

The government organizations have little current support for IWPs. In central level, the Ministry of Natural Resources and Environment (MONRE) formulates policies, laws, and strategies to manage solid waste and environmental protection. MONRE has not direct influence in work and livelihood of IWPs. Local municipalities currently provide minimal direct support to IWPs based on regulations of central level. Regarding the IWPs side, they work individually and have not received the official recognition. Consequently, IWPs remain excluded from many formal welfare or labor protection programs, such as health insurance or unemployment benefits. This gap reinforces their vulnerability and forces them to rely heavily on NGOs and personal networks.



One NGO representative explained:

“We chose to work with IWPs because they are vulnerable and often overlooked. They face numerous risks, physical, health-related, economic, and yet, they play a crucial role in waste management and the circular economy. By understanding their needs and challenges, we can provide appropriate solutions.” (NGO Representative, IDI N2-2)“



One municipality representative noted:

“Currently, most recyclable waste collection is done by IWPs who are not entitled to social benefits like health insurance or unemployment benefits. There are no specific policies at the central or local level to support this workforce because they operate informally.”

(Municipality Representative, IDI S1-1)

In such situation NGOs emerge as the mainstay of support for IWPs. They provide welfare services like health check-ups and PPE distribution, offer training sessions on occupational safety or financial management, facilitate livelihood projects, and help form networks or associations to enhance collective bargaining power.

It is clear that NGOs remain the primary support providers for IWPs, offering basic welfare, training, and advocacy. However, they face with many obstacles as follows:

3.5.2. Obstacles of support organizations

3.5.2.1 Regulatory and policy barriers

A key challenge is the lack of formal recognition of IWPs. Without official status, it is difficult for NGOs or community organizations to secure funding or governmental collaboration.

This policy gap similarly impacts organizations' ability to formalize IWP activities or integrate them into existing waste management frameworks.

3.5.2.2 Limited funding and resources

NGOs usually operate on tight budgets, limiting project scope and frequency of interventions. Staff shortages and the high costs of materials, such as PPE, hamper consistent coverage across all IWP communities. As a result, many IWPs—especially those in more remote areas or lacking strong local NGO relationships—may not receive any support.

3.5.2.3 Outreach difficulties

IWPs can be mobile and dispersed, making them hard to track or engage regularly. Some IWPs are also wary of outside assistance, fearing it could lead to regulatory scrutiny or jeopardize their work.

3.5.2.4 Systemic issues in waste management

As formal waste management systems advance, especially with Extended Producer Responsibility (EPR) policies there is growing competition from private sector firms. This can edge out IWPs who cannot meet new documentation or transparency requirements, risking their jobs.

Without targeted provisions to include IWPs in EPR schemes, many could be displaced or exploited by more formalized actors.



One NGO representative noted:

"They often don't understand administrative procedures, and transitioning from informal to registered businesses poses significant challenges for them. Policies requiring transparency and documentation make it difficult for IWPs to comply, risking their livelihoods." (NGO Representative, IDI N3-1)"



Figure 23. An interview with a NGO representative



According to one NGO staff member:

"They are hesitant to participate in our programs, fearing it might not be safe or could affect their work. Building trust takes time, and we often have to rely on personal connections or work through local leaders to reach them." (NGO Representative, IDI N2-2)"



According to one NGO staff member:

"When the government demands transparency in waste management, the informal sector will struggle with the required paperwork and reporting. This could lead to them losing their current jobs." (NGO Representative, IDI N1-1)"

3.5.3. Interactions Between Stakeholders

- IWPs and Junk Shop Owners: A largely transactional relationship where junk shop owners purchase collected recyclables and sometimes advise on sorting or pricing.
- NGOs and Junk Shop Owners: Collaboration is limited but growing, as NGOs explore ways to improve waste management practices with local buyers.
- NGOs and Local Municipalities: NGOs often seek municipal support for pilot projects, training initiatives, or policy advocacy, although the lack of formal IWP recognition hinders wide-scale adoption.



Figure 24. An interview with junk shop owner

3.5.4. Implications of overcoming obstacles

NGOs remain the primary support providers for IWPs, offering basic welfare, training, and advocacy. However, policy gaps, funding shortages, outreach difficulties, and systemic competition within the waste sector substantially limit their impact. Government recognition is minimal, leaving IWPs outside formal labor protections and social benefits. Consequently, any robust solution requires:

Policy Reform: Acknowledging IWPs in local or national waste management regulations, facilitating their access to official programs and funding.

- Resource Investment: Enhancing NGO budgets and staff capacity to reach more IWPs, particularly those in remote or unfamiliar areas.
- Stakeholder Collaboration: Coordinating efforts between municipalities, NGOs, junk shop owners, and the IWPs themselves to streamline support and foster a more inclusive, sustainable waste management system.
- By tackling regulatory barriers, ensuring sustained resources, and prioritizing trust-building with IWPs, support organizations can more effectively empower this underserved yet vital segment of Vietnam's waste sector.

3.6. SUPPORT STRUCTURES FOR IWPs IN VIETNAM

3.6.1. Support structures for IWPs in Vietnam.

Until now the IWPs in Vietnam exist individually and lack the effective support from the relating formal and unformal organizations. The IWPs should be organized to in order to boost their collective bargaining power and to achieve formal recognition. The support structures consist of the government organisations at all levels, the NGOs including the community based organisations. In addition, the international bodies, e.g. UNDP, IUCN, take an important role in enhancing the poplcy and institution development to support the IWPs . Figure 25 describes the support structures for IWPs in Vietnam.

As individuals, IWPs often endure low prices from intermediaries and lack leverage to advocate for fairer conditions. By forming cooperatives or associations, they can pool resources, share market information, and negotiate collectively, improving income stability and working conditions.

Moreover, formal recognition of organized IWPs simplifies the extension of support, such as training, health services, or microfinance, by local governments and NGOs. Organized groups are more likely to be included in municipal waste management plans, potentially accessing stable incomes and labor protections. This collective approach also fosters long-term sustainability, ensuring that waste pickers' vital environmental contributions are valued and integrated into broader policy frameworks.

3.6.2. Existing Cooperatives, Informal Associations, or Groups

In Vietnam, no specific cooperatives of or informal associations of IWPs are identified while various initiatives have emerged to support and organize IWPs. The formation of cooperatives and associations is considered a strategy to enhance their bargaining power and improve working conditions. With backing from NGOs and businesses, these groups help IWPs secure better prices for recyclable materials, creating a more stable income source (24). Beyond economic support, there have been attempts to formalize their work by linking them with professional associations, unions, or other structured networks.

Despite these efforts, support for IWPs remains fragmented and inadequate to address their diverse needs. Most assistance comes from NGOs, community-based organizations (CBOs), and, in some cases, public-private partnerships that seek to integrate them into formal waste management systems (Figure 25).

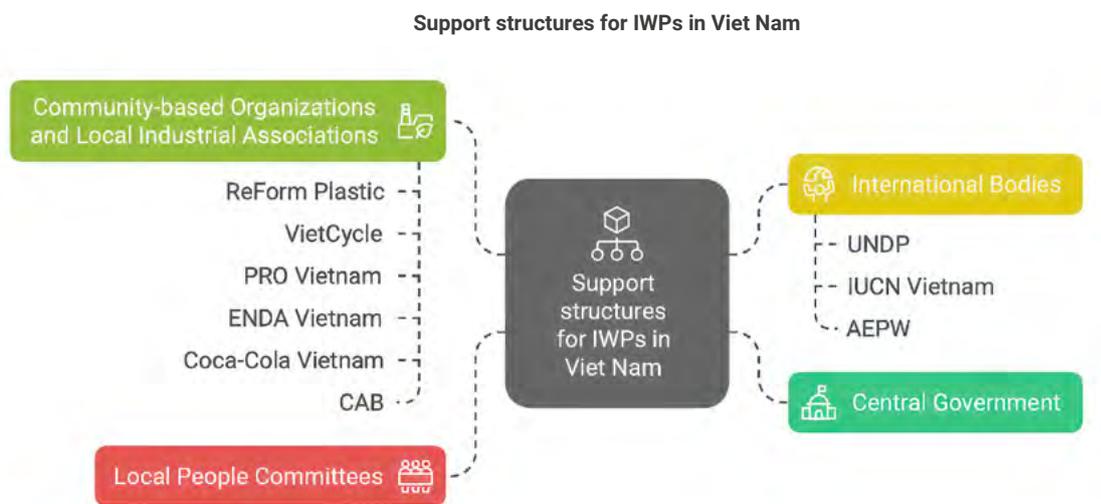


Figure 25. Support structures for IWPs in Viet Nam

3.6.3. Vietnam governmental organisations in central level

In central level, the Ministry of Natural Resources and Environment (MONRE) plays a pivotal role in unifying state management of solid waste and environmental protection by formulating policies, laws, and strategies. MONRE has not direct influence in work and livelihood of IWPs. The Law on Environmental Protection 2020 and related circulars on waste classification and management provide the environmental management guides. MONRE's issuance of technical guidelines for solid waste classification creates standardized practices that can facilitate the integration of IWPs into more organized collection and recycling frameworks. By collaborating with provincial People's Committees to tailor waste management strategies to local conditions MONRE is opening avenues for these workers to be recognized and supported within broader environmental initiatives. In addition, by advancing a circular economy that integrates recycling, reuse, and sustainable practices into national waste management strategies. The ministry also supervises environmental compliance through inspections, assessments, and enforcement of standards, which helps level the playing field for all participants in the waste management ecosystem.

Regarding the waste management regulations, Vietnam has developed a comprehensive system of waste management regulations in recent years, with the Law on Environmental Protection 2020 serving as the cornerstone. Here's an overview of the key components of Vietnam's waste management regulatory system:

Law on Environmental Protection 2020

- Came into effect on January 1, 2022
- Introduces mandatory waste sorting at source
- Establishes the EPR system
- Promotes a circular economy approach

Decree 08/2022/ND-CP

- Provides detailed guidelines for implementing the Law on Environmental Protection 2020
- Includes a chapter dedicated to the EPR system

Circular 02/2022/TT-BTNMT

Outlines specific requirements for recycling plans, reporting, and financial contributions to waste management activities.

3.6.4. Local People Committees bodies

Local People's Committees and the Women's Union play crucial roles in supporting IWPs through coordinated waste management and empowerment initiatives. Local People's Committees are tasked with implementing municipal waste segregation and management policies mandated by the Law on Environmental Protection 2020 (LEP), overseeing waste collection systems, and integrating informal waste workers into formal systems while considering local socio-economic conditions. However, the coordination between the local People's Committees and the Women's Union just happened in the specific pilot projects.

In Ho Chi Minh City, IWPs operate under the direction of these committees, which assign specific areas for waste collection and monitor their activities. In the pilot projects in Quy Nhơn city, local authorities collaborate with NGOs to formalize the role of IWPs, thereby highlighting their contributions to recycling and environmental protection. Complementing these efforts, the Women's Union is instrumental in empowering female IWPs by providing training in labor safety, environmental knowledge, and waste sorting (40, 41). In Hoi An City, a partnership between the Women's Union and the Vietnam Zero Waste Alliance has engaged female IWPs in dialogues aimed at reducing

plastic pollution and improving working conditions. Additionally, the Women's Union supports micro-financing programs that help women invest in better tools and equipment for their work and advocates for their inclusion in policies like EPR, which can provide financial incentives for recycling activities(42-44). Innovative projects co-hosted by the Women's Union in Quy Nhon further focus on improving livelihoods by transforming low-value waste into support for disadvantaged community members.

3.6.5. International Bodies

3.6.5.1 UNDP (United Nations Development Programme)

UNDP has been at the forefront of research and support initiatives for IWPs in Vietnam. In 2019, the organization conducted extensive experiments in Da Nang that conclusively identified IWPs as essential components of the waste management ecosystem. Their comprehensive approach included in-depth research through surveys, GPS tracking to map IWP routes, and interviews with key stakeholders to understand the dynamics of informal waste collection (19).

One of UNDP's most significant contributions has been their proposal for an inclusive system that directly integrates IWPs into city collection systems. This model suggests selecting one or several IWPs to manage city waste collection points according to defined standards. UNDP has strongly advocated for recognizing IWPs as legitimate stakeholders in EPR implementation, emphasizing that when IWPs are recognized as legal stakeholders, opportunities emerge for their inclusion in nationwide EPR implementation. For example, they could potentially contract with cooperatives and recycling facilities to collect various materials as required by EPR (45).

3.6.5.2 IUCN Vietnam (International Union for Conservation of Nature)

IUCN Vietnam has worked collaboratively with UNDP and the Gender and Social Inclusion Task Force of the National Plastic Action Partnership (NPAP) to advance recognition of IWPs. On March 8 in Hoi An, they organized a consultation meeting specifically focused on promoting the contributions of informal workers in reducing solid waste. This event brought together participants to acknowledge the role and importance of the informal workforce in waste collection and recycling activities (46).

The organization has been instrumental in facilitating discussions about Vietnam's preparation for the Global Plastic Treaty negotiations, ensuring that the perspectives and needs of IWPs are considered in national policy positions. IUCN's work emphasizes the intersection of environmental conservation, sustainable waste management, and social inclusion, recognizing that effective environmental solutions must include and benefit vulnerable groups like IWPs.

3.6.5.3 Alliance to End Plastic Waste (AEPW)

The Alliance to End Plastic Waste has established a partnership with VietCycle to provide tangible support to IWPs facing financial hardships. Their collaboration specifically focuses on providing rental assistance for struggling waste pickers, many of whom are migrant workers who have relocated from rural provinces such as Nam Dinh, Ninh Binh, and Thanh Hoa to urban centers for work opportunities (47).

This targeted financial assistance addresses one of the most pressing challenges for IWPs: securing stable and adequate housing. Most IWPs are rural migrants living in minimal conditions, spending the majority of their time traveling on streets to collect recyclables. By addressing basic housing needs, the AEPW-VietCycle partnership helps improve overall living conditions for these vulnerable workers, contributing to greater stability in their lives and work.

3.6.6. Community-based Organizations and Local Industrial Associations

In recent years, many community-based organizations and local industrial associations in Viet Nam have taken the IWPs support roles in different fields, mainly in reducing the hardship and enhancing the livelihood improvement. Following are the most relevance organisations and associations

3.6.6.1 ReForm Plastic and The Collector Network

This is a social enterprise founded in Da Nang, has established itself as a pioneer in addressing plastic waste challenges through a comprehensive circular approach. To date, they have processed over 150,000 kg of low-value plastics and built six waste collection and sorting points in Da Nang and Hoi An (48).

Their non-profit initiative, “The Collector Network,” specifically targets improving the lives of IWPs. Established in 2022, this network has grown to include over 4000 members (49). The organization has organized six Occupational Safety and Health (OSH) training sessions throughout Da Nang, providing essential knowledge to minimize risks associated with waste collection. Additionally, 239 IWPs received personal protective equipment including hats, masks, gloves, reflective vests, and large zippered bags. In April 2024, they provided health insurance to 50 members and connected IWPs with businesses for sustainable income through recycling collection.

3.6.6.2 VietCycle

VietCycle is a key organization supporting IWPs across Vietnam, focus on improving their living conditions. The company has built and accompanied an informal collection network for three years, helping to improve both the living and working conditions of these vulnerable workers. Their approach recognizes the challenging circumstances faced by IWPs, particularly those who have migrated from rural provinces to urban centers.

In collaboration with the AEPW, VietCycle provides monthly rental assistance to struggling IWPs. This financial support addresses one of the most immediate needs of IWPs, many of whom come from provinces like Nam Dinh, Ninh Binh, and Thanh Hoa and live in minimal conditions while spending most of their time collecting recyclables on city streets.

3.6.6.3 PRO Vietnam (Packaging Recycling Organization Vietnam)

PRO Vietnam has developed a strategic partnership with ENDA Vietnam to provide comprehensive support for IWPs in Ho Chi Minh City. They’ve implemented social welfare programs and revolving capital funds that address both the immediate and long-term needs of waste pickers. Their support extends to nearly 2,000 workers through environmental service cooperatives nationwide, demonstrating a broad commitment to improving conditions for informal waste workers.

In April 2024, they distributed nearly 200 sets of labor protective equipment along with accident and health insurance to IWPs in Nha Be District, HCMC. Additionally, PRO Vietnam provided 200 million VND to the Nha Be Agricultural and Environmental Services Cooperative to implement a revolving capital program with 0% interest loans. This financial support helps IWPs address immediate financial difficulties while building longer-term economic stability.

3.6.6.4 ENDA Vietnam

ENDA Vietnam has implemented numerous support programs specifically tailored for IWPs in Ho Chi Minh City. The organization has supported over 1,800 IWPs in HCMC, with recent expansions to Nha Be district. Their comprehensive approach aims to help IWPs achieve more stable work conditions, reduce hardship, and improve income levels.

The organization’s work is particularly significant given the estimated 10,000 IWPs in HCMC, most of whom are migrants from rural areas facing considerable hardships. ENDA Vietnam partners with various organizations to implement social welfare initiatives that address both immediate needs and long-term stability. Their continued

engagement with this community represents a sustained commitment to improving conditions for some of Vietnam's most vulnerable workers while recognizing their essential contribution to waste management systems.

3.6.6.5 *Coca-Cola Vietnam*

Coca-Cola Vietnam has demonstrated corporate social responsibility through its support of "The Collector Network" project in Da Nang. Their collaboration has focused on three key areas: expanding the network's reach, providing essential support and benefits to members, and raising awareness about the crucial role that IWPs play in society. This partnership represents a significant commitment from a major corporation to address waste management challenges while supporting vulnerable workers.

In 2024, the company launched a program called "Occupational Health and Safety Day for IWPs" at the EkoCenter Da Nang community support center. According to Deputy General Director of External Affairs, Communications and Sustainable Development, "Despite significant contributions, the work of IWPs receives little attention and understanding. It is essential to provide these collectors with opportunities to improve their livelihoods and support their transition to the formal waste management sector". This statement reflects an understanding of both the challenges faced by IWPs(50) and their potential for integration into formal waste management systems .

3.6.6.6 *Center for Adaptive Capacity Building Research (CAB)*

CAB is a non-governmental organization based in Da Nang, Vietnam that works extensively with IWPs through several key initiatives aimed at improving their working conditions, health, and overall wellbeing. CAB provides occupational safety, health, and waste classification training for IWPs. In partnership with The Collector Network and the Da Nang Red Cross Society, CAB also provided health insurance to 50 eligible IWPs in April 2024. During the COVID-19 pandemic, it offered targeted support in Da Nang to address the heightened risks and economic hardships faced by this group (51).

Chapter 4 Recommendations

Drawing on the study's findings regarding socio-demographic characteristics, working conditions, and existing support structures for IWPs, we propose the following recommendations:

4.1. Policy Development and Implementation

4.1.1. Formal Recognition of IWPs

- Action: Formally acknowledge IWPs as integral participants in the waste management system, enabling them to access social protection programs and government support.
- Stakeholders: Ministry of Natural Resources and Environment (MONRE), Ministry of Labour - Invalids and Social Affairs (MOLISA), Local People's Committees, NGOs.

4.1.2. Integration into Waste Management Plans

- Action: Include IWPs in both national and local waste management strategies by creating official registers and incorporating them into formal waste collection and recycling programs.
- Stakeholders: MONRE, Local Municipalities, NGOs, Private Sector Waste Management Companies.

4.1.3. *Simplify Administrative Procedures*

- Action: Streamline registration and licensing processes to reduce bureaucratic barriers for IWPs seeking formal worker status or cooperative formation. Provide legal aid and targeted assistance with paperwork.
- Stakeholders: MONRE, MOLISA, Local Government Offices, NGOs providing legal aid.

4.2. **Health and Safety Measures**

4.2.1. *Provision of Subsidized PPE*

- Action: Provide free or subsidized personal protective equipment (PPE)-such as gloves, masks, protective clothing-through partnerships or government funding.
- Stakeholders: Ministry of Health (MOH), NGOs, Private Sector (e.g., PPE manufacturers), Local Health Departments.

4.2.2. *Regular Health Check-ups and Mobile Clinics*

- Action: Conduct periodic health screenings for IWPs via mobile clinics to ensure convenient, low-cost access to medical services.
- Stakeholders: MOH, Local Health Departments, NGOs, Community Health Workers.

4.2.3. *Health Education Programs*

- Action: Offer workshops on occupational health risks, first aid, and preventive measures, with materials available in local languages and accessible formats.
- Stakeholders: MOH, NGOs, Local Health Departments.

4.3. **Economic Empowerment and Income Stability**

4.3.1. *Formation and Support of Cooperatives*

- Action: Encourage IWPs to establish cooperatives or associations to bolster collective bargaining power and negotiate fairer prices for recyclables. Provide training in financial literacy and cooperative management.
- Stakeholders: MOLISA, Local People's Committees, NGOs experienced in cooperative development.

4.3.2. *Access to Microfinance and Grants*

- Action: Expand microfinance initiatives, low-interest loans, or small grants for IWPs to purchase transportation or storage equipment, thus improving their capacity to collect and market recyclables.
- Stakeholders: Ministry of Finance (MOF), NGOs, Social Enterprises.

4.3.3. *Fair Pricing Mechanisms and Direct Market Access*

- Action: Facilitate direct links between IWPs and recycling facilities or producers, thereby reducing dependence on intermediaries and ensuring fair pricing. Establish marketplaces or digital platforms to connect sellers and buyers.

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- Stakeholders: Producers, Recycling Companies, MONRE, NGOs.

4.4. Social Inclusion and Reducing Stigma

4.4.1. Community Awareness Campaigns

- Action: Launch public education drives to highlight IWPs' contributions-reducing landfill use, providing raw materials for recycling-and counter negative perceptions of "dirty work."
- Stakeholders: Local People's Committees, NGOs, Media Organizations, Educational Institutions.

4.4.2. Community Engagement Programs

- Action: Organize local events, such as environmental clean-up days or recycling fairs, that involve IWPs, fostering greater understanding and respect from residents.
- Stakeholders: Local Municipalities, Community Organizations, NGOs.

4.5. Capacity Building and Education

4.5.1. Vocational Training and Skill Development

- Action: Provide specialized training (e.g., entrepreneurship, advanced waste management) that may enable IWPs to diversify income streams or secure alternative livelihoods.
- Stakeholders: MOLISA, NGOs, Vocational Training Centers, Private Sector Partners.

4.5.2. Literacy and Adult Education Programs

- Action: Enhance basic literacy and numeracy skills among IWPs to improve their ability to engage with administrative processes and better understand market dynamics.
- Stakeholders: Ministry of Education and Training, NGOs, Adult Education Providers.

4.5.3. Educational Support for Families

- Action: Offer scholarships or educational aid for IWP children, helping break the cycle of low educational attainment and limited economic opportunities.
- Stakeholders: Ministry of Education and Training (MOET), NGOs, Educational Foundations, Private Sector CSR Programs.

4.6. Collaboration and Partnerships

4.6.1. Enhanced Collaboration Between Stakeholders

- Action: Foster partnerships among government agencies, NGOs, the private sector, and IWPs to coordinate programs and pool resources for more holistic support.
- Stakeholders: All relevant ministries, NGOs, Private Sector, IWPs.

4.6.2. *Inclusive EPR Schemes*

- Action: Integrate IWPs into EPR mechanisms as authorized collectors, providing both financial incentives and technical backing.
- Stakeholders: Producers, MONRE, NGOs.

4.6.3. *Pilot Programs for Integration*

- Action: Undertake pilot initiatives in selected localities to assess different models of IWP integration into formal waste systems; identify best practices for scaling.
- Stakeholders: MONRE, Local Governments, NGOs, Private Sector Waste Management Companies.

4.7. **Financial Support Mechanisms**

4.7.1. *Subsidies and Grants for Working Conditions Improvement*

- Action: Allocate government or donor funds to subsidize PPE, storage facilities, and improved equipment for IWPs.
- Stakeholders: Ministry of Finance, NGOs.

4.7.2. *Tax Incentives for Supporting Entities*

- Action: Offer tax relief to companies or NGOs that hire or assist IWPs through training, formal employment pathways, and integration into official waste management structures.
- Stakeholders: MOF, Tax Authorities, Private Sector Companies.

Chapter 5 Conclusion

5.1. **Level of Meeting Research Needs**

By combining quantitative and qualitative methods, this study furnishes a comprehensive look at the challenges facing IWPs in Vietnam's major cities. It captures both statistical trends (e.g., income instability, occupational hazards) and personal experiences (e.g., stigma, coping strategies), thus meeting the demand for robust, evidence-based insights.

5.2. **Key Research Findings**

- Demographics: IWPs are predominantly older, female, and have limited formal education, with regional variations in migrant status.
- Working Conditions: They endure long hours, physically demanding labor, and high health risks due to inadequate PPE and exposure to unsanitary materials.
- Income Challenges: Market fluctuations and reliance on intermediaries lead to unstable incomes, with limited options for alternative employment.

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- **Social Stigma:** Negative perceptions isolate IWPs, affecting their self-esteem and reducing community support.
 - **Limited Formal Support:** Access to social welfare or healthcare services remains low, largely due to IWPs' informal employment status.
 - **NGOs as Main Supporters:** Although NGOs play a pivotal role in providing relief, training, and advocacy, governmental engagement is inconsistent and fragmented.

5.3. Limitations of the Study

- **Sampling Bias:** Reliance on convenience sampling in Hanoi and Ho Chi Minh City may limit generalizability.
- **Self-Reported Data:** Responses may be skewed by recall or social desirability bias.
- **Cross-Sectional Design:** Temporal relationships and causal inferences are constrained.
- **Geographic Scope:** Focusing on three major cities excludes potentially different rural or smaller-town experiences.
- **Language/Communication Barriers:** Dialect and literacy issues may have influenced data accuracy.
- **Observer Bias in Qualitative Analysis:** Researchers' interpretations may shape thematic categorization.

5.4. Need for Continued Research

- **Longitudinal Studies:** Track changes over time to evaluate the sustained impact of interventions.
- **Expanded Geographic Coverage:** Investigate IWPs' circumstances in rural areas or smaller municipalities for a more complete national picture.
- **Policy Impact Assessment:** Examine the efficacy of newly implemented formalization policies or EPR frameworks.
- **Gender Dynamics:** Explore female-specific vulnerabilities and empowerment strategies.
- **Health Interventions:** Develop targeted programs to reduce occupational hazards, from proper PPE usage to mental health support.
- **Economic Models:** Investigate cooperative ownership or direct market platforms that could yield more stable incomes for IWPs.

In conclusion, IWPs perform a vital environmental service by collecting and sorting a substantial proportion of recyclable materials in Vietnam. Yet they remain socially and economically marginalized due to low incomes, occupational hazards, and limited official recognition. By adopting the recommendations proposed in this study—ranging from formal recognition and PPE provision to cooperative formation and EPR inclusion—stakeholders can create a more supportive policy environment and integrate IWPs into sustainable waste management systems. This inclusive approach not only enhances IWPs' livelihoods and dignity but also strengthens environmental outcomes for Vietnam as a whole.

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Appendix

Appendix 1 Quantitative interview questions

Informal waste pickers

Hello, we are a research team from the Center for Resilience Building (CAB), Da Nang. With approval from the People’s Committee of Da Nang City, we are conducting a research project to better understand the working conditions and health of scrap collectors in the city. The purpose of this study is to gather information about your working conditions, health, and the social support you receive. Our conversation today will take about 30 minutes. Please be assured that all the information you provide will only be used for research purposes and will not be shared with anyone outside our team. There are no right or wrong answers—what’s most important is your honest experience and opinion. We sincerely appreciate your time and insight. Thank you for speaking with us today.

Surveycode: _ _ _

TT	Question	Answer	Note
A	Socio-demographic characteristics		
1	What is your name?	_____	
2	What year were you born? Or how old are you?	_____	
3	Sex	1. Male 2. Female	
4	What grade did you attend/What is your highest level of education?	1. Illiterate 2. Primary school (grades 1, 2, 3, 4, 5) 3. Middle school (grades 6,7,8,9) 4. High school or higher (grade 10 or above)	
5	Which district of Da Nang/Ha Noi/ Ho Chi Minh do you live in?	_____	
6	Do you have a permanent residence in Da Nang, or are you temporarily residing here for work?	1. Permanent resident of Da Nang 2. _____	Specify location
7	What is your current housing status?	1. Rent a private house 2. Rent a room 3. Own home 4. Stay with relatives 5. Other _____ —	
8	Do you smoke regularly?	1. Yes 2. No	
9	Do you drink alcohol regularly?	1. Yes 2. No	

TT	Question	Answer	Note
10	Are you married?	1. Not yet 2. Have a family 3. Single/widowed	
B Economic status			
11	Is your family classified as poor or near-poor?	1. No 2. Near poor 3. Poor	Certificate
12	How much do you earn on average per day from this job?	_____ (VND)	
13	Do you have any other jobs besides collecting scrap?	1. No 2. Yes (Specify)	
14	What is your household's total monthly income?	_____ (million dong)	
15	How many people are in your household?	_____ People	
C Working conditions			
16	Are you self-employed or under contract?	1. Self-employed 2. Contracted	
17	How many years have you been doing this job? year	
18	How many hours a day do you spend collecting scrap? hour	
19	How many days a week do you work collecting scrap? day	

TT	Question	Answer	Note																								
20	Where do you usually collect scrap?	1. On the street 2. Roadside trash can 3. Houses, restaurants, eateries 4. School 5. Other (specify) _____	Multiple choices																								
21	How do you usually collect scrap?	1. On foot 2. By bicycle 3. By motorcycle 4. By tricycle 5. Other (specify) _____																									
22	What types of materials do you typically collect?	1. Household waste 2. Plastics 3. Metals 4. Nylon 5. Cardboard 6 (Specify) _____	Multiple choices																								
D	Safety and health																										
23	How often do you use personal protective equipment (PPE)? 1. Never 2. Occasionally 3. Regularly	<table border="0"> <tr> <td>1. Helmet</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>2. Mask (not cloth)</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>3. Gloves</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>4. Safety shoes</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>5. Reflective vest</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>6. Other _____</td> <td>1</td> <td>2</td> <td>3</td> </tr> </table>	1. Helmet	1	2	3	2. Mask (not cloth)	1	2	3	3. Gloves	1	2	3	4. Safety shoes	1	2	3	5. Reflective vest	1	2	3	6. Other _____	1	2	3	Read each answer and circle only one number indicating the level.
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5. Reflective vest	1	2	3																								
6. Other _____	1	2	3																								

TT	Question	Answer	Note																																																																																																												
24	Do you need to lift heavy objects often?	1. Never 2. Occasionally (1-2 times) 3. Regularly (3 and more times)																																																																																																													
25	In the past year, have you experienced any of the following health issues: 1. Never 2. Occasionally (1-2 times) 3. Regularly (3 times or more)	<table border="0"> <tr><td>1.1 Headache</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>1.2 Fatigue</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>1.3. Cold/Flu</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>1.4. Loss of appetite</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>2.1. Cough</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>2.2. Excessive phlegm</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>2.3. Shortness of breath</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>2.4. Chest pain</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>2.5. Sore throat</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>3.1. Nausea or vomiting</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>3.2. Diarrhea</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>3.3. Abdominal pain</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>3.4. Blood in stools</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>3.5. Constipation</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>3.6. Abdominal pain</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>4.1. Itching</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>4.2. Hives</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>4.3. Peeling skin</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>4.4. Dry, cracked skin</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>5.1. Body aches</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>5.2. Back pain</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>5.3. Hand and wrist pain</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>5.4. Leg pain</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>6.1 Itchy eyes</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>6.2 Blurred vision</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>6.3 Eye infections</td><td>1</td><td>2</td><td>3</td></tr> <tr><td>7. Other _____</td><td></td><td></td><td></td></tr> </table>	1.1 Headache	1	2	3	1.2 Fatigue	1	2	3	1.3. Cold/Flu	1	2	3	1.4. Loss of appetite	1	2	3	2.1. Cough	1	2	3	2.2. Excessive phlegm	1	2	3	2.3. Shortness of breath	1	2	3	2.4. Chest pain	1	2	3	2.5. Sore throat	1	2	3	3.1. Nausea or vomiting	1	2	3	3.2. Diarrhea	1	2	3	3.3. Abdominal pain	1	2	3	3.4. Blood in stools	1	2	3	3.5. Constipation	1	2	3	3.6. Abdominal pain	1	2	3	4.1. Itching	1	2	3	4.2. Hives	1	2	3	4.3. Peeling skin	1	2	3	4.4. Dry, cracked skin	1	2	3	5.1. Body aches	1	2	3	5.2. Back pain	1	2	3	5.3. Hand and wrist pain	1	2	3	5.4. Leg pain	1	2	3	6.1 Itchy eyes	1	2	3	6.2 Blurred vision	1	2	3	6.3 Eye infections	1	2	3	7. Other _____				Read each answer and circle only one number indicating the level.
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26	In the past year, have you experienced any of the following accidents while working? 1. Never 2. Occasionally (1-2 times) 3. Regularly (3 times or more)	<table border="0"> <tr> <td>1. Cut by sharp objects</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>2. Traffic accidents</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>3. Animal bites</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>4. Falls</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>5. Burns</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>6. Other _____</td> <td>1</td> <td>2</td> <td>3</td> </tr> </table>	1. Cut by sharp objects	1	2	3	2. Traffic accidents	1	2	3	3. Animal bites	1	2	3	4. Falls	1	2	3	5. Burns	1	2	3	6. Other _____	1	2	3	Read each answer and circle only one number indicating the level.
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4. Falls	1	2	3																								
5. Burns	1	2	3																								
6. Other _____	1	2	3																								
27	How would you rate your overall health?	1. Good 2. Average 3. Poor 4. Other _____																									
28	Have you had a medical check-up or been hospitalized in the past 12 months?	1. Yes 2. No																									
E Communication and social support																											
29	Have you ever felt embarrassed to talk to your neighbors because of your work as a waste picker?	1. Never 2. Occasionally 3. Often																									
30	Have you ever felt uncomfortable socializing with friends because of your job as a waste picker?	1. Never 2. Occasionally 3. Often																									
31	Have you received support from a government agency or any external organization because of your work as a waste pickers ?	1. No 2. Government support 3. NGO support	If not, go to question 34.																								

TT	Question	Answer	Note																																				
32	How many times have you received support in the past year?	1. 1-2 times 2. 3-5 times 3. more than 5 times 4. Received but don't remember																																					
33	If applicable, can you name the organizations/agencies that provided support?	1. _____ 2. _____ 3. _____ 4. _____																																					
34	In the past 12 months, how often have you encountered the following challenges? 1. Never 2. Occasionally 3. Often	<table border="0"> <tr> <td>1. Financial problems</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>2. Lack of PPE</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>3. No health insurance</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>4. Illness but unable to visit a doctor</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>5. Lack of food</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>6. Lack of training on safe waste collection</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>7. Lack of sources for collecting scrap</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>8. Problems with transportation (e.g., broken vehicle)</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>9. Other _____</td> <td>1</td> <td>2</td> <td>3</td> </tr> </table>	1. Financial problems	1	2	3	2. Lack of PPE	1	2	3	3. No health insurance	1	2	3	4. Illness but unable to visit a doctor	1	2	3	5. Lack of food	1	2	3	6. Lack of training on safe waste collection	1	2	3	7. Lack of sources for collecting scrap	1	2	3	8. Problems with transportation (e.g., broken vehicle)	1	2	3	9. Other _____	1	2	3	
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TT	Question	Answer	Note
35	<p>What types of support have you received in the past year, and how often?</p> <p>1. Never</p> <p>2. Occasionally</p> <p>3. Regularly</p>	<p>1. Financial aid 1 2 3</p> <p>2. PPE 1 2 3</p> <p>3. Health insurance 1 2 3</p> <p>4. Free medical check-ups or medication 1 2 3</p> <p>5. Food assistance (e.g., rice, fish sauce, instant noodles) 1 2 3</p> <p>6. Training on safe and efficient waste collection 1 2 3</p> <p>7. Connections with restaurants/hotels to increase scrap sources 1 2 3</p> <p>8. Transportation support 1 2 3</p> <p>9. Other _____ 1 2 3</p>	<p>Read each answer and circle only 1 number indicating the level</p>
36	<p>How has the above support helped you in the past 12 months ?</p> <p>1. No help</p> <p>2. Help in part</p> <p>3. Help a lot</p>	<p>1. Financial aid 1 2 3</p> <p>2. PPE 1 2 3</p> <p>3. Health insurance 1 2 3</p> <p>4. Free medical check-ups or medication 1 2 3</p> <p>5. Food assistance (e.g., rice, fish sauce, instant noodles) 1 2 3</p> <p>6. Training on safe and efficient waste collection 1 2 3</p> <p>7. Connections with restaurants/hotels to increase scrap sources 1 2 3</p> <p>8. Transportation support 1 2 3</p> <p>9. Other _____ 1 2 3</p>	<p>Ask only for support received above</p>

TT	Question	Answer	Note																																				
37	What kind of support would you like to receive, and to what extent? 1. Don't want to 2. Normal 3. Really want to	<table border="0"> <tr> <td>1. Financial aid</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>2. PPE</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>3. Health insurance</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>4. Free medical check-ups or medication</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>5. Food assistance (e.g., rice, fish sauce, instant noodles)</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>6. Training on safe and efficient waste collection</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>7. Connections with restaurants/hotels to increase scrap sources</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>8. Transportation support</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>9. Other _____</td> <td>1</td> <td>2</td> <td>3</td> </tr> </table>	1. Financial aid	1	2	3	2. PPE	1	2	3	3. Health insurance	1	2	3	4. Free medical check-ups or medication	1	2	3	5. Food assistance (e.g., rice, fish sauce, instant noodles)	1	2	3	6. Training on safe and efficient waste collection	1	2	3	7. Connections with restaurants/hotels to increase scrap sources	1	2	3	8. Transportation support	1	2	3	9. Other _____	1	2	3	Read each answer and circle only 1 number indicating the level
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9. Other _____	1	2	3																																				
F Feelings about the profession and difficulties																																							
38	What made you choose this career?	1. Stable income 2. No specific skills required 3. Flexibility and freedom 4. Couldn't find another job 5. Followed family or friends 6. Other (Specify)	Multiple answers can be selected.																																				
39	What difficulties do you find in this job?	1. Low or irregular income 2. Prone to accidents 3. Negative health impacts 4. Family disapproval 5. Weather dependence 6. High competition 7. Other (Specify): _____	Multiple answers can be selected.																																				

TT	Question	Answer	Note
40	Are you satisfied with this job?	1. Dissatisfied 2. Normal 3. Satisfied	
41	Do you plan to change jobs in the future?	1. No 2. Maybe 3. Yes	
42	If you change jobs, what do you like to do (specify)?	_____	

Thank you very much for your support!

Appendix 2 In-depth Interview Questions and Group Discussion

Please refer to this link:

https://drive.google.com/drive/folders/1fe85KCg7nOHzk5aD-h-Kbqt_CRxPdyIx?usp=sharing

Appendix 3 Variables of quantitative study

Table 1. Variables of quantitative study

No	Variable	Definition	Type of measurement	Data collection
Basic characteristics				
1	Age	Respondent's age	Continuous	Questionnaire
2	Gender	Respondent's gender	Nominal (Male, Female, Other)	Questionnaire
3	Educational level	Highest educational attainment	Ordinal (No education, Elementary, Middle school, High school or higher)	Questionnaire
4	Residence location	Respondent resides	Nominal (Urban/Rural)	Questionnaire
5	Residence status	Local residency or migrant	Nominal (Local, Migrant)	Questionnaire

No	Variable	Definition	Type of measurement	Data collection
6	Housing status	Current housing situation	Nominal (Own house, Rented house/ room, Staying with relatives, Other)	Questionnaire
7	Smoking Habits	Frequency of smoking	Nominal (Yes, No)	Questionnaire
9	Marital status	Marital status of the respondent	Nominal (Single, Married, Widowed)	Questionnaire
Economic status				
10	Economic status	Whether the family is considered poor or near poor	Nominal (Not poor, Near poor, Poor)	Questionnaire
11	Average daily income	Average daily income from waste collection	Continuous (VND)	Questionnaire
12	Secondary occupation	Involvement in additional jobs	Nominal (Yes, No)	Questionnaire
13	Monthly household income	Total monthly income of the household	Continuous (VND)	Questionnaire
14	Household size	Number of people in the household	Continuous	Questionnaire
Working Condition				
15	Employment Type	Type of employment in waste collection	Nominal (Freelance, Contract)	Questionnaire
16	Years in occupation	Number of years working in this profession	Continuous (Years)	Questionnaire
17	Daily working hours	Hours spent collecting waste daily	Continuous (Hours)	Questionnaire
18	Weekly working days	Days worked per week in waste collection	Continuous (Days)	Questionnaire
19	Common locations for waste collection	Usual locations for collecting waste	Street bins, Residential areas, Restaurants, Schools, Other	Questionnaire

No	Variable	Definition	Type of measurement	Data collection
20	Transportation for waste collection	Mode of transportation used for waste collection	Walking, Bicycle, Motorcycle, Tricycle, Other	
21	Types of waste collected	Types of waste commonly collected	Household waste, Plastic, Metal, cardboard, Other	Questionnaire
Safety and Health				
22	Use of PPE	Frequency and type of PPE used	Never, Occasionally, Often	Questionnaire
23	Heavy lifting	Frequency of heavy lifting required	Never, Occasionally, Often	Questionnaire
24	Health issues encountered	Health issues faced in the past year	Multiple selections per issue (Never, Occasionally, Often)	Questionnaire
25	Accidents encountered	Types of accidents encountered in the past year	Multiple selections per type (Never, Occasionally, Often)	Questionnaire
26	Self-assessed health status	Respondent's perception of their own health	Nominal (Good, Normal, Poor, Other)	Questionnaire
27	Medical visits	Whether the respondent had recent hospital visits	Nominal (Yes, No)	Questionnaire
Communications and social supports				
28	Social interaction with neighbors	Avoidance of talking to neighbors due to job stigma	Nominal (Never, Occasionally, Often)	Questionnaire
29	Social interaction with friends	Avoidance of socializing with friends due to job stigma	Nominal (Never, Occasionally, Often)	Questionnaire
30	Supports received from organizations	Whether support has been received from any organizations	Nominal (Never, Government, Non-government)	Questionnaire

No	Variable	Definition	Type of measurement	Data collection
31	Number of times support received	Number of times support was received in the past year	Nominal (1-3 times, 3-5 times, More than 5 times, Do not remember)	Questionnaire
32	Common challenges faced	Challenges faced in the past year	Multiple selections per challenge (Never, Occasionally, Often)	Questionnaire
33	Type and frequency of support received	Type and frequency of support received in the past year	Multiple selections per type (Never, Occasionally, Often)	Questionnaire
34	Effectiveness of received support	How helpful was the support received	Nominal (Not helpful, Partially helpful, Very helpful)	Questionnaire
35	Desired support	Type of support desired and the extent of desire	Multiple selections per type (Not interested, Somewhat interested, Very interested)	Questionnaire
Job challenges				
36	Reasons for choosing this job	Reasons for engaging in waste collection	Nominal (Stable income, No skill required, Flexibility, No other job, Family tradition, Other)	Questionnaire
37	Job challenges	Challenges associated with the job	Nominal (Low/unstable income, Accident risk, Health impact, Family shame, Weather dependency, High competition, Other)	Questionnaire
38	Job satisfaction	Satisfaction with the job	Nominal (Not satisfied, Neutral, Satisfied)	Questionnaire
39	Plans to change jobs	Whether the respondent plans to change jobs	Nominal (No, Maybe, Definitely)	Questionnaire



INTERNATIONAL
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