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Temporary settlements for Venezuelan refugees: case studies in the city of *Boa Vista* (*Roraima*, Brazil)

Acampamentos temporários para refugiados venezuelanos: estudos de caso na cidade de Boa Vista, Roraima

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Abstract

This study aimed to analyze the temporary settlements set up for Venezuelan refugees in the city of Boa Vista-RR, Brazil, to propose guidelines for these facilities. The methodology uses multiple exploratory case studies with a qualitative approach. The research is based on a comparative analysis between data collected during field research, conducted in 2018, and the main guidelines for temporary settlements from national and international literature. It examines the physical-spatial and functional characteristics of settlements, such as layout, facilities, services and infrastructure. The results show the structure of the settlements and its organization, as well as routine activities, such as security actions, food distribution, healthcare, provision of household items and other services. Universal accessibility, psychosocial care, privacy, cultural adequacy and awareness actions are essential to enhance quality of life in settlements. Improvements need to be made over time to promote urbanization, spatial appropriation, and encourage community empowerment. The findings help to consolidate a reference framework of guidelines for decision-making regarding temporary settlements for disaster scenarios.

Keywords: Complex emergency. Disaster. Field research. Homeless. Humanitarian Aid.

Resumo

Este estudo tem como objetivo analisar os acampamentos temporários instalados para os refugiados venezuelanos na cidade de Boa Vista-RR, Brasil, como forma de embasar a proposição de diretrizes para essas instalações. A metodologia utiliza múltiplos estudos de casos exploratórios com abordagem qualitativa. A pesquisa baseia-se em uma análise comparativa entre os dados

coletados durante a pesquisa de campo, realizada em 2018, e as principais diretrizes para acampamentos temporários levantadas com base na literatura nacional e internacional. O estudo examina as características físico-espaciais e funcionais dos acampamentos, como o leiaute, as instalações, os serviços e as infraestruturas. Os resultados mostram a estrutura dos acampamentos e sua organização, além de atividades de rotina, como ações de segurança, distribuição de alimentos, cuidados de saúde, fornecimento de artigos domésticos e outros serviços. A acessibilidade universal, os cuidados psicossociais, a privacidade, a adequação cultural e as ações de sensibilização são essenciais para melhorar a qualidade de vida nos acampamentos. Ao longo do tempo, é preciso realizar melhorias para promover a urbanização, a apropriação espacial e incentivar o empoderamento comunitário. Os resultados ajudam a consolidar um quadro de referência de diretrizes para a tomada de decisão relativa aos acampamentos temporários para desastres.

Palavras-chave: *Emergência complexa. Desastre. Desabrigado. Ajuda humanitária. Pesquisa de campo.*

Introduction

Millions of people are forced to leave their homes every year around the world for their freedom and safety due to disasters. By the end of year 2022, an unprecedented 108,4 million individuals were forcibly displaced worldwide because of persecution, conflict, violence, or human rights violations. Among them are nearly 29,4 million refugees. Since 2018, more than five million Venezuelans left their homes, travelling mainly towards Latin America and the Caribbean. People have been leaving the country for many reasons, such as violence, insecurity, fear of being targeted for their political opinions, lack of access to social services (including lack access to food and daily necessities) and being unable to support themselves and their families (UNHCR, 2019; UNHCR, 2023a).

According to O'Neil (2018), since the former President Hugo Chavez's ascent to power in 1999, an estimated two million Venezuelans have left their country. Now, these flows will likely continue, as Maduro's government remains the economic direction. The economic and humanitarian crises, combined with rising political persecution, have forced many Venezuelans to flee; around five hundred thousand have left the country and more de 800,000 asked for asylum in 2023. The expectation is that the Venezuelan refugee crisis is about to surpass the scale of the Syrian crisis (Bahar; Dooley, 2019).

In Brazil, the year 2018 was the largest in number of requests for recognizing refugee status, mainly due to the large increase in Venezuelan displacement flow. In total, there were more than 80,000 requests, 61,681 of which were from Venezuelans. Venezuelans arrive in the country mainly through the state of Roraima, in the small city of Pacaraima, and then go towards Boa Vista, which is experiencing a difficult situation of vulnerability (Brasil, 2019). Due to this, several temporary settlements have been set up in this city to shelter the homeless Venezuelan refugees, leading to mobilizations in governments and in society.

Shelter is a vital survival mechanism in times of crisis or displacement. It is also key to restoring personal security, self-sufficiency, and dignity (UNHCR, 2023d). The right to shelter is implicit in the Universal Declaration of Human Rights and in several documents prepared by multilateral organizations. In year 1996, was held in Wisconsin, USA, the first International Emergency Settlement Conference, being established that access to basic and contextually appropriate shelter is an essential human need. The standards for settlements may vary depending on the cultural context, climate and other factors (University of Wisconsin, 1996). However,

providing adequate settlements is one of the most intractable problems in humanitarian response and it is very complex to determine performance standards for them, as there are many variables that affect their suitability (UK Government, 2011).

Recent reflection by *Médecins Sans Frontière* (MSF) has identified a number of important operational challenges to be faced in order to respond to the needs of these migratory populations located in urban settings, such as: appropriate assessments; measurable indicators of vulnerability and impact; pertinent operational approaches and medical strategies; adapted security management; and responsible closure of activities (Lucchi, 2012).

Therefore, it is observed the importance of assessing real situations (case studies) and the adequacy of temporary settlements to the population's demands and needs. However, no studies were found analyzing the standards, guidelines, and indicators established in publications of humanitarian aid organizations to assess the situation of temporary settlements set up for Venezuelan refugees in Brazil. This comparative analysis between literature and reality can help to highlight problems and inadequacies in these spaces, indicating alternatives and solutions that can support humanitarian workers in the decision-making process, aiming to improve the living conditions in these places.

To address this research gap, this contribution aims to assess the temporary settlements set up to shelter Venezuelan refugees in Brazil, from case studies conducted in 2018 in the city of Boa Vista, to propose guidelines for these facilities. The study is based on a comparative analysis between data collected during the field research and the main standards, guidelines and indicators for temporary settlements present in national and international handbooks. Case studies assess aspects related to their physical-spatial characteristics, services and infrastructure, and minimum quantitative indicators.

This study is an important part of a doctoral thesis whose objective was to create a multi-criteria decision model for the design of temporary planned settlements for disaster scenarios. This research was developed in the first stage of the application of the Analytic Hierarchic Process (AHP) multicriteria method and was fundamental to assess the proposed hierarchy, and complement it with information from case studies in Brazil.

The migratory crisis around the world

Humanitarian crises and forced displacements around the world are consequences of the environmental, technological, social and political problems. Much of them are due to conflicts, violence, persecution, and human rights violations. Five countries, such as Myanmar, South Sudan, Afghanistan, Venezuela, and the Arab Republic of Syria, account for the largest number of victims of humanitarian crises, generating approximately 68% of refugees (UNHCR, 2021b).

By analyzing the countries that assist the largest number of refugees, it is possible to identify the implementation of several settlement, which have been mapped and catalogued on the Infrashelter platform (VIRTUHAB/UFSC, 2023). In Syria, the Abu Khashab, Al-Hawl, Azraq and Zaatari settlements assist thousands of refugees. Yida, Savanna Woodland, Juba, Maban, Ajuong Thok, Nyeel and Rakuba settlements have been set up to cater for refugees from South Sudan. In Bangladesh, the Kutupalong settlement has expanded more than twenty times and has become one of the world's largest settlements for more than one million Rohingya refugees from Myanmar. Moreover, refugees from Afghanistan number 5,532,867 in the countries of Iran, Pakistan, Uzbekistan, Tajikistan and Turkmenistan and are dispersed in various forms of settlement

(UNCHR, 2023b). But recently, the refugee crisis has hit Latin America hard, with the socio-economic deterioration of Venezuela, whose population has sought refuge in neighboring countries, including Brazil.

Researchers have been studying issues related to temporary settlements for emergency situations, such as Hailey (2009), which examines the space and idea of settlement as a defining dimension of twenty-first century life, analyzing, for instance, the temporary settlements of relief and assistance, such as refugee settlements. Omidvar, Baradaran-Shoraka and Nojavan (2013) propose a model for appropriate and systematic site selection for temporary settlements, before a disaster, using a geographical information system and Multi-Attribute Decision Making (MADM) based on an earthquake damage assessment and applied in the capital of Iran. Alnsour and Meaton (2014) assess the housing conditions in a Palestinian refugee settlement in Jordan. Kikano, Labbé and Lizarralde (2017) investigate the link between space appropriation and physical factors in places of refuge in two temporary settlements (unplanned and planned) for Syrian refugees in Lebanon. Kikano and Lizarralde (2019) performed a comparative study examining the living conditions of Syrian refugees in two temporary planned settlements, located in Lebanon and Jordan, analyzing the political and economic contexts, housing, services and infrastructure, and social challenges. Trovato (2019) analyzes two informal (unplanned) settlements for Syrian refugees in Lebanon through the landscape lens, interpreting the spatial organization of these places as an expression of imported cultures. Oesch (2020) demonstrates how the urbanization of a refugee settlement occurs based on fieldwork conducted in the Al-Hussein Palestinian refugee settlement in Amman, Jordan. Recent research conducted by Miyamoto (2023) comparatively assessed two refugee settlements, Dadaab, more traditional and assistentialist, and Kalobeyei, with a more innovative model. The research emphasized the importance of the involvement of planners, urban designers, architects, social workers, psychologists, among other professionals, to confer high physical-spatial quality and minimum infrastructure to the settlements. Other investigations conducted by Carbonari (2021) and Carbonari and Librelotto (2020) dedicated to study solutions and best practices for temporary settlements.

One of the effective actions to support refugees has been the humanitarian provision of settlements, respecting the time people need to recover physically, economically and emotionally. This is fundamental to promoting the survival and dignity of refugees in situations of crisis or displacement (UNHCR, 2023b). However, many refugee settlements are set up hastily, without prior planning, due to the urgency, which can negatively impact residents' stay (Carbonari, 2021). It is therefore essential to plan settlements in advance, which is the aim of the Infrashelter platform (VIRTUHAB/UFSC, 2023).

Main concepts for temporary settlements

Several authors make a differentiation between the terms "sheltering" and "housing" for emergencies. While sheltering refers to a place to stay during the immediate aftermath of an emergency, suspending daily activities, housing denotes the return to household responsibilities and daily routines. Based on this distinction, there are four distinct phases that can be employed: emergency sheltering; temporary sheltering; temporary housing; and permanent housing. The differences between these phases are often not well defined and their duration depends on existing overlaps between two or more phases. They do not always develop in a linear way and are configured as a dynamic social process (Félix *et al.*, 2015; Félix; Branco; Feio, 2013; Quarantelli, 1995). The involvement of local actors in all phases is key to avoid unexpected outcomes (Davidson *et al.*, 2007; Jha, 2010).

The focus of this study is on the temporary sheltering phase, where places are provided to be used for an expected short stay, ideally no more than a few weeks to months. In many cases, it goes

beyond the emergency period and extends for longer, requiring more planning, infrastructure, and services (Quarantelli, 1995). Much of the international literature categorizes the options of temporary settlement into six types (Corsellis; Vitale, 2005, 2007, 2010; International Federation of Red Cross and Red Crescent Societies; Office for the Coordination of Humanitarian Affairs, 2015; International Organization for Migration; Norwegian Refugee Council; UNHCR, 2015; Jha, 2010; Norwegian Refugee Council, 2010; Shelter Centre, 2012; Sphere Association, 2018). In this study, the Sphere Association (2018) terminology was adopted, as it is the most current reference, grouping these six types into: (a) dispersed solutions: rental arrangement; hosted arrangement; spontaneous arrangement; and (b) communal solutions: collective accommodation, planned settlement; and unplanned settlement.

To standardize and improve the quality of response actions in emergencies, was started in 1997, the Sphere Project, developed by a group of non-governmental organizations (NGOs) and the International Red Cross and Red Crescent Movement. The output of this project defined a set of universal standards synthesized in the document entitled "The Sphere Handbook: Humanitarian Charter and Minimum Standards for Humanitarian Response in Disaster Situations" (Sphere Association, 2018). The main objective of this document is to guide initial humanitarian actions after the occurrence of a crisis. Since then, this document has been a reference in the administrative actions of temporary settlements and more than 80 countries adopt their guidelines and indicators (Secretaria de Estado da Defesa Civil do Rio de Janeiro, 2006).

Following the development of the Sphere Handbook (now in its fourth edition), several manuals and documents have been produced by international agencies regarding the shelter issue in the humanitarian response, such as UNHCR (1999, 2008, 2015), ANLAP (2003), Corsellis and Vitale (2005, 2007, 2010), Médecins Sans Frontière (2009), Jha (2010), Norwegian Refugee Council (2010), Shelter Centre (2012), International Organization for Migration, Norwegian Refugee Council and UNHCR (2015), International Federation of Red Cross and Red Crescent Societies; Office for the Coordination of Humanitarian Affairs (2015), Care International (2016), Global Shelter Cluster (2019), among others. Some of these documents were compiled by the Shelter Centre (2011) to establish a reference. In Brazil, some organizations adopt procedures based on the Sphere Handbook, but as this document presents some specifications that do not match the Brazilian reality, the Secretaria de Estado da Defesa Civil do Rio de Janeiro (2006) developed a handbook to provide a national literature.

Case studies: temporary settlements for Venezuelan refugees

In Roraima, Brazil, two options of temporary settlement were set up in urban areas to shelter Venezuelan refugees, being in some cases a combination of them: collective accommodation, a pre-existing facility or structure where multiple households take shelter. Infrastructure and basic services are provided on a communal basis or access to them is made possible. And planned settlement, a purpose-built settlement for displaced people where the site layout is planned and managed by government, United Nations (UN), NGOs or civil society, and where infrastructure, facilities and services are available (Sphere Association, 2018).

In August 2018, eight temporary settlements and two transitional settlements were in operation in Roraima, one in the city of Pacaraima and the others in the capital Boa Vista. The objective of transitional settlements is to serve as a passage place, assisting temporarily the Venezuelans, who go through a screening, vaccination and registration. Later, the refuges are transferred to temporary settlements or forwarded to other cities (interiorization process). The temporary settlements were being managed by UNHCR partner NGOs or was administered by residents, with the support of the NGO Fraternity without Borders. The transitional settlements were under the responsibility of the Brazilian Armed Forces.

In all settlements, residents must follow rules and help with the cleaning and maintenance of the place, distribution of meals and other activities. The rules and other important information are written in Spanish and are allocated near the pedestrian access of the settlements. Some of those information are a map of the city with indications of essential public services, guidelines on how to enroll in the public-school network, procedures to report violence against women, how to prevent diseases, *etc*. Figure 1 shows the approximate location of the settlements (1 to 12) and two squares (A and B), where many refugees were settled while waiting for vacancies.

In Figure 1, it is possible to see that most of the settlements are in the city of Boa Vista, near the center. Hélio Campos (4) is the farthest, approximately 13 km away. This city concentrates about two thirds of the inhabitants of Roraima, with an approximate population of 436,591 inhabitants and a territorial area of 5,687,037km^2. The city has a humid tropical climate, with dry winter and rainy summer, and an average annual temperature of 84.38 °F, being at an altitude of 90 m, with 90% flat relief and 10% with little declivity, from 0 to 8% (Instituto Brasileiro de Geografia e Estatística, 2023).

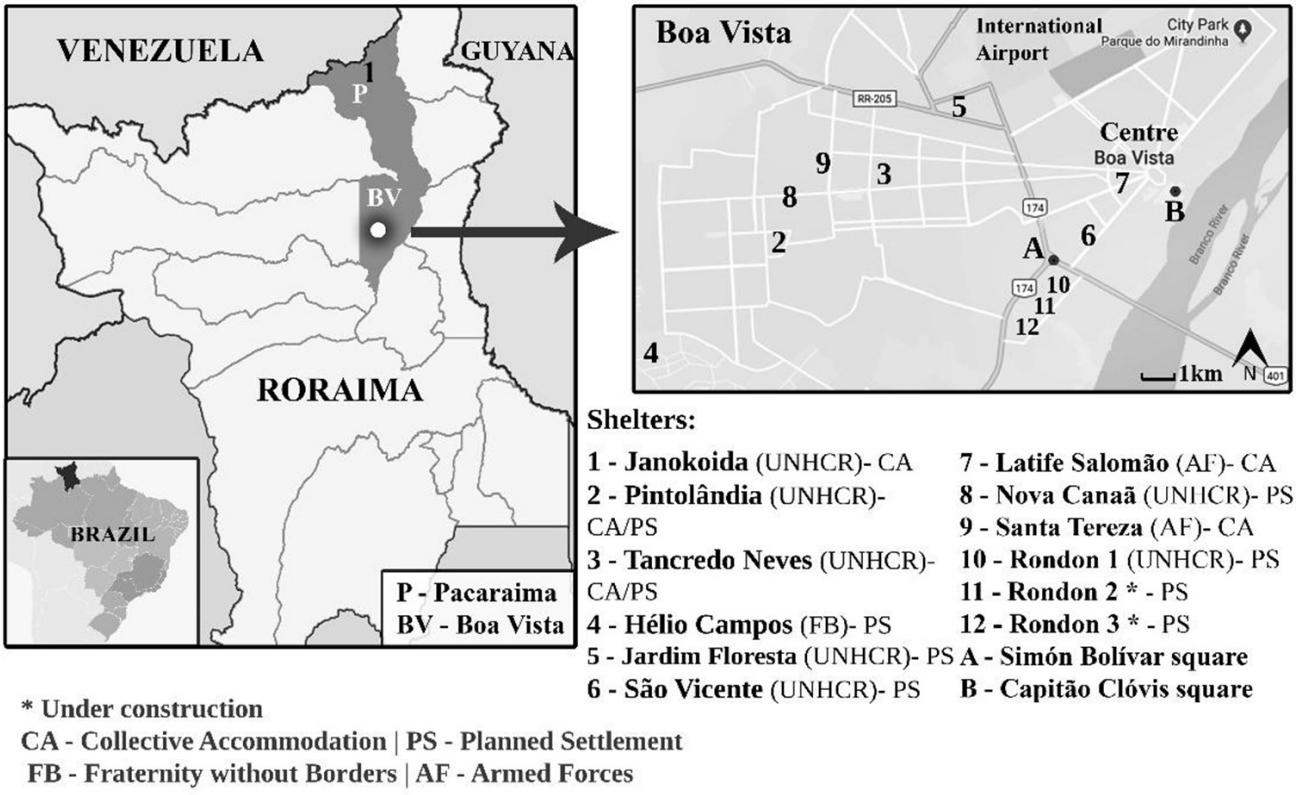


Figure 1 – Location of settlements in Roraima.
Source: authors (august, 2018).

For each settlement, a target public was defined, with five profiles: indigenous Warão and Eñepa (1 and 2); families with children, pregnant women, older adults and disabled people (4, 5, 6, 8 and 10); couples without children, LGBTQI and single people (7); couples without children and single men (3); and single or unaccompanied men (9).

Methodological Procedures

This research uses the strategy of multiple exploratory case studies (Yin, 2014) with a qualitative approach. It seeks to analyze the location of the temporary settlements in the city of Boa Vista and their physical-spatial and functional characteristics, including general aspects, layout,

main facilities, services and infrastructure and their adequacy to people's needs. The choice of more than one case allowed a comparative analysis, highlighting aspects of convergence and divergence between them. Six of the seven temporary settlements that were in operation in August 2018 were selected as case studies, as it was not possible to access the São Vicente settlement due to the absence of a manager to guide the visit.

A methodological approach based on a research design was established, organized into five components: (1) study's questions; (2) study's proposition; (3) study's units of analysis; (4) the logic linking the data to propositions; and (5) the criteria for interpreting the findings (Yin, 2014). It started with the following question: how was the provision of temporary settlements for Venezuelan refugees carried out in the urban area of Boa Vista regarding their physical, spatial and functional characteristics and the main services, facilities and infrastructures?

As suggested by Yin (2014), study validity was carried out by collecting data from multiple sources of evidence (Table 1).

Table 1 – Sources for data collection.

Sources	Year	Description of data collection
News and publications	2017 and 2018	To identify fundamental concepts for the research and search for information about the temporary settlements set up in Boa Vista.
Literature research	2018 to 2020	UNHCR (1999, 2008, 2015); ANLAP (2003); Corsellis and Vitale (2005, 2007, 2010); Secretaria de Estado da Defesa Civil do Rio de Janeiro (2006); Médecins Sans Frontière (2009); Norwegian Refugee Council (2010); Shelter Centre (2012); International Federation of Red Cross and Red Crescent Societies; Office for the Coordination of Humanitarian Affairs (2015); International Organization for Migration, Norwegian Refugee Council and UNHCR (2015); Care International (2016); Sphere Association (2018); Global Shelter Cluster (2019). The documents were assessed using the content analysis technique (Bardin, 2011) to define the units of analysis (Yin, 2014).
Direct observations	August 22 to 29, 2018	Carried out in six temporary settlements in Boa Vista with the assistance of a consultant of the NGO USAID/OFDA – LAC. During field observations, data collection was done using a script for field diary and physical-spatial mapping based on the literature review.
Semi-structured interviews	August 22 to 29, 2018	The interviews were conducted individually with seven people in Boa Vista: 1. UNHCR architect in charge of settlements project (codified as P1); 2. Brazilian Army colonel in charge of settlement facilities/infrastructure (P2); 3. Brazilian Army colonel, coordinator of the Logistics and Humanitarian Task Force, in charge of site selection for settlements (P3); 4. Venezuelan refugee, resident and leadership in one of the settlements (P4); 5. Social worker, assisting in settlement management (P5); 6. Settlement manager from the NGO Fraternity without Borders (P6); 7. Settlement manager from NGO Fraternity-International Humanitarian Federation (P7).
Reports and projects	2018 to 2020	Analysis of reports and projects from the UNHCR, which presented an overview of the conditions of temporary settlements located in Boa Vista.

Source: authors.

The units of analysis that guided the field research, identified based on the literature research (Table 1), are grouped into:

a) Physical-spatial characteristics: site selection; access; universal accessibility; layout; main spaces and facilities; accommodation; expansion area; safety, safety and privacy; cultural adequacy; and environmental comfort.

b) Services and infrastructure: reception and screening; administrative area; healthcare; psychosocial attention; water supply; food supply; health facilities; sanitation; and economic aspects.

c) Minimum quantitative indicators: surface area/person; living space area/person; screening area; recreational area; common eating area; number of tanks; number of health facilities and distance from accommodations; fire safety; and terrain slope.

Data qualitative analysis was performed by the process of analysis-reflection-synthesis to integrate the data, reflect and dialogue with the theoretical framework. The six case studies were assessed according to the units of analysis. Patterns were inferred from the findings, and a comparative analysis between them was performed. This led to conclusive results and a deeper understanding of the settlements (Figure 2).

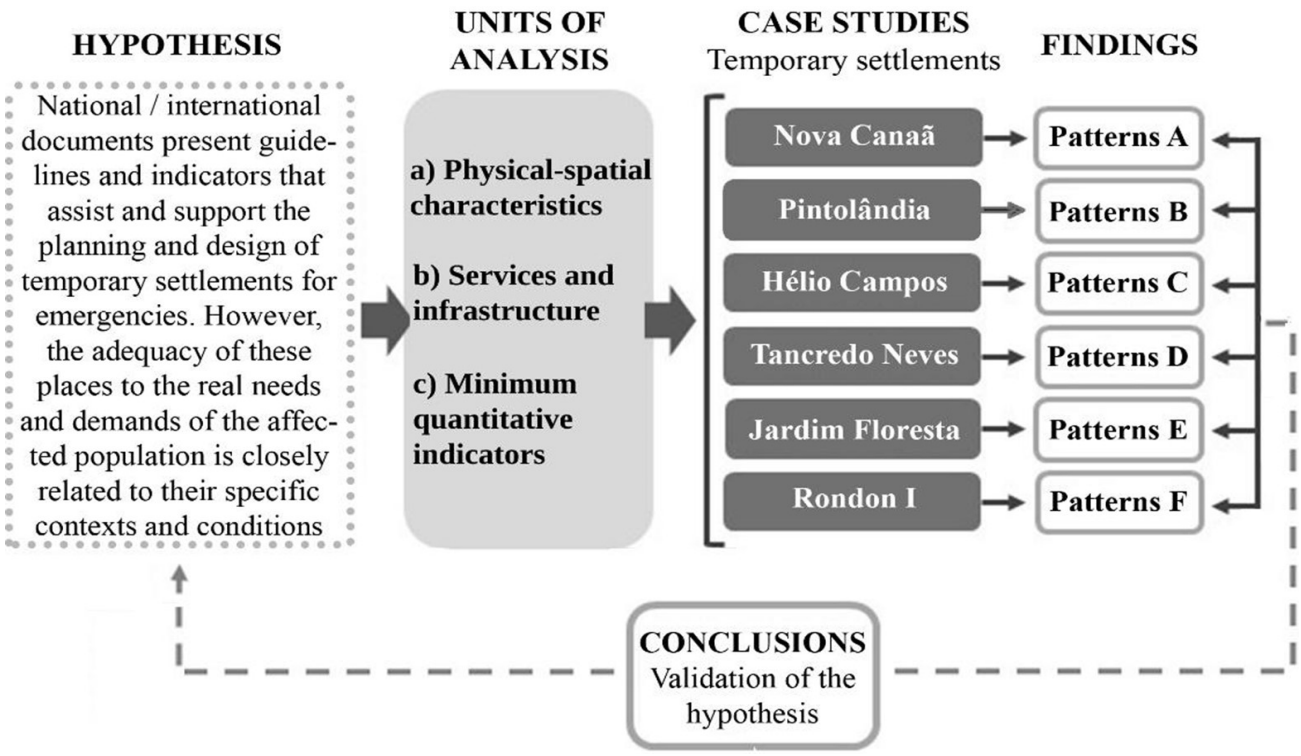


Figure 2 – Data analysis

Source: authors, based on Yin (2014).

The research process was guided by ethical principles, according to the requirements established by Resolution 510/2016 of the Brazilian National Health Council (Brasil, 2016). Research participants' consent was previously obtained as well as authorization from UNHCR to access the settlements. The study was approved by the *Universidade Federal de Santa Catarina* (UFSC) Research Ethics Committee, under report 3,822,893 (Universidade Federal de Santa Catarina, 2020).

Visits to settlements were carried out under the supervision of the agencies in charge and at previously scheduled times. Due to the distance, only the Boa Vista facilities and those with planned settlements were visited, as some of the facilities had configurations that were not the subject of this study or are transitional settlements.

As can be seen in Table 1, interviews were conducted with social workers, settlement managers, the UNHCR architect in charge of for designing the settlements and Brazilian Army colonels. Interviews with refugees were not authorized because they were already living a very traumatic reality. It was only possible to interview a refugee leader who was sheltered in one of the settlements.

Results

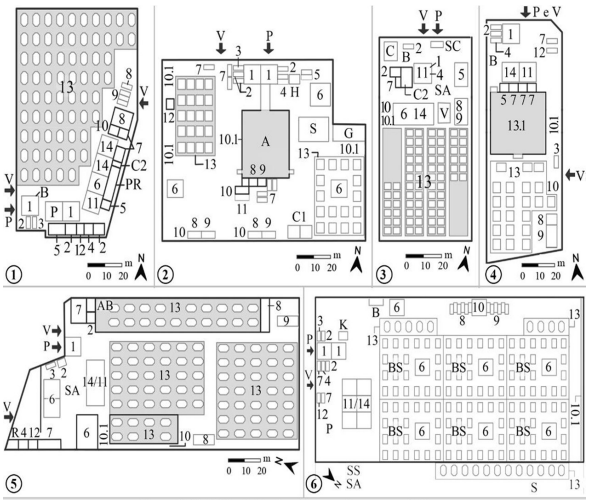
In this section, are initially presented some general information of the case studies (see Table 2), referring to August 2018, and the physical-spatial mapping of them (see Figure 3). After this, an assessment is made correlating the units of analysis with the results of field research. The settlements are referred to as: Nova Canaã (1); Pintolândia (2); Hélio Campos (3); Tancredo Neves (4); Jardim Floresta (5); and Rondon 1 (6).

Table 2 – General data of settlements.

Temporary settlement	Type	Date opened	Land area	Owner of property	Male/female	Planned capacity	Nº of people
(1)	PS	25/04/18	±7,030 m²	Boa Vista City Hall	45% M/55% F	390	444
(2)	PS+CA	27/12/16	±12,185 m²	Boa Vista City Hall	53% M/47% F	448	754
(3)	PS	09/12/17	±5,000 m²	Not informed. Maintained by sponsors	Not informed	250	285
(4)	PS+CA	29/10/17	±5,400 m²	Boa Vista City Hall	82% M/18% F	232	342
(5)	PS	21/03/18	±13,750 m²	State Civil Défense of the Fire Department. Rented by UNHCR	47% M/53% F	594	664
(6)	PS	20/07/18	±20,000 m²	Land belonging to the Union	50% M/50% F	600	623

Note: PS: Planned Settlement; CA: Collective Accommodation.
Source: authors, based on Reach and UNHCR (2018).

In Figure 3, it is possible to verify the layout of the settlements and a legend of the main facilities, infrastructure and accommodations, with some particularities of them.



Legend: facilities, infrastructure and accommodations

Common spaces:

1) Reception and screening: covered area with pyramidal tent(s) (± 100 m ² each)
2) NGO and army offices: in 20 feet containers and/or pre-existing buildings
3) Army Lodging: 20 feet container
4) Health facility: in 20 feet container, assembled facility or pre-existing building
5) Multipurpose educational space: in 20 feet container, assembled facility or pre-existing building
6) Community area: covered area with pyramidal tent(s) (± 100 m ² each) and/or in pre-existing buildings
7) Warehouse and storage: in 20 feet container(s) and/or pre-existing buildings
8) Female sanitary facility: in 20 feet container(s) and/or pre-existing buildings
9) Male sanitary facility: in 20 feet container and/or pre-existing building
10) Laundry: in open spaces or pre-existing building with tanks
10.1) Clothesline: open area to extend clothes
11) Distribution area: for food and non-food items
12) Administration sanitary facility (mixed use): in 20 feet container(s) or pre-existing buildings
13) Collective Tents: vary according to each case. For families or groups
13.1) Individual tents: located inside multi-sport gymnasium. For couples
14) Social space/refectory: open and covered space(s) in assembled facility and/or pre-existing building

Particularities:

A) Hammock area inside gymnasium: in metallic structure
AB) Accessible bathroom: in an existing building
B) Bicycle parking
BS) Better shelter: modular shelter structure of galvanized steel and seals with polyolefin panels
C) Carpentry: facility built to produce wood pieces
C1) Collective kitchen: open space, covered by 2 pyramidal tents and gravel on the floor (200 m²)
C2) Collective kitchen: in a pre-existing building
C3) Support kitchen: in pre-existing building, for special needs
G) Community garden: space delimited by grid
H) Handicraft: in a tent of ± 25 m²
K) Administration kitchen: in a tent of ± 31 m²
P) Parking: unbounded area
PR) Playroom: in existing building
R) Registration area: in existing building
S) Sand soccer field: open area
SA) Shade area with vegetation: with chairs or hammocks for leisure
SS) Smoking space: in open area
SC) Security cabin: built in masonry for access control (±15 m²)
V) Sand volleyball court: ± 80 m²

V- Vehicle access | P- People access
Covered tent area: by pyramidal tents, other structure or pre-existing buildings
Uncovered tent area

Figure 3 – Layout of settlements

Source: authors, based on REACH and UNHCR (2018).

From the analysis of Table 2 and Figure 3, it is possible to observe that most of the sites were installed in planned settlements, with two mixed cases, in which accommodations were arranged in the external area of the site and inside multi-sport gyms. Settlement 1 was the first to be set up and, like the others, had no date scheduled for closure. By August 2018, all places were overcrowded, which led to some problems related to an increase in the number of people per accommodation and improvisation of additional facilities. This problem was identified especially in settlement 1, which was sheltering almost double the number of people it was planned for. In most cases, the number of men and women is similar, except for settlement 4, which has a larger proportion of men, due to the profile of its target public.

Units of Analysis X Case Studies: between prescribed and reality

The following is an analysis of field research results, correlating them with the units of analysis presented in the method.

a) Physical-spatial characteristics

Site selection: temporary settlements should be located on land that is safe, legal and appropriate. This can be achieved through site planning involving the integration of hazard risk reduction, zoning and service integration (Shelter Centre, 2012; UNHCR, 2015). In the urban area of Boa Vista, interviewee P3 points out that site selection was based on a technical, economic and environmental feasibility study conducted by a Brazilian Army professional to analyze selected alternatives and choose the most viable one. Interviewee P2 highlight that preference was given to the installation of temporary settlements in open and empty areas rather than existing buildings, since the adaptation of them to the new needs was being more laborious, both in assembly and in demobilization. It was observed that the further away from the city center, the more difficult the access to infrastructure, services and subsistence and the worse the conditions of streets, sidewalks and buildings. Settlement 3 is the worst case, located in a region of difficult accessibility.

Access: all settlements have at least two separate accesses, one for pedestrians and one for vehicles. In most cases, these accesses are located on the same road for control and security reasons. In some cases, there is a second vehicle access (settlements 1, 4 e 5) for logistical reasons related to waste removal and product delivery/collection.

Universal accessibility: despite this item is considered as important by both reference literature and interviewees, no accessible facilities and accommodations were provided in the settlements. Only settlement 5 had an accessible health facility located in a pre-existing building, although there were disable people in many other settlements. In addition, the unpaved areas of the settlements were covered with gravel to minimize dirt in the tents and to help drain rainwater. This creates a problem for some residents, as there were wheelchair users and people with reduced mobility in some places.

Layout: according to interviewee P1, in most temporary settlements, the administrative facilities used as NGO and/or army offices, army lodging and healthcare are concentrated near pedestrian access, mainly for logistics and security reasons. This access is usually covered with pyramidal tents, creating a weather-protected space, which is used for reception and screening (Figure 4). Warehouses and dumpsters are often placed near accesses of vehicles to facilitate solid waste removal, which is done five to seven times a week, and product collection/delivery.

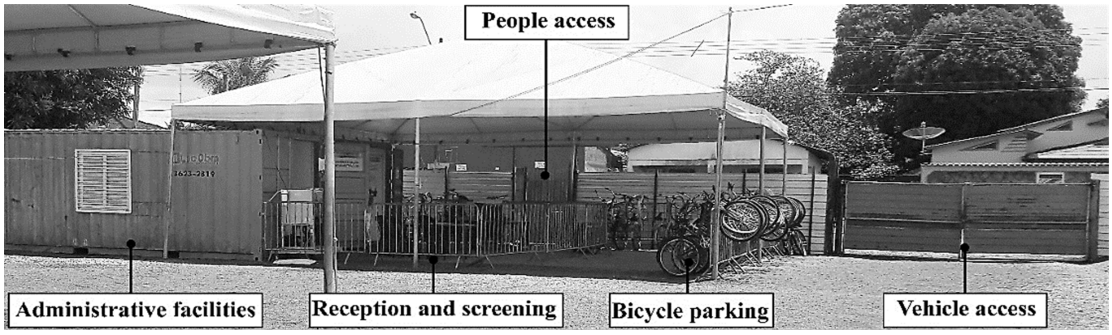


Figure 4 – Administrative facilities and reception/screening area (settlement 1).
Source: authors.

The layout of settlement 6 differs from the others regarding the accommodation area, which is divided into six zones. All zones contain a central space, covered by a tent, which should serve as a common area for coexistence, rest and leisure. However, these places are barely used, as they lack furniture (tables, chairs, *etc*.) and other attractions (Figure 5).

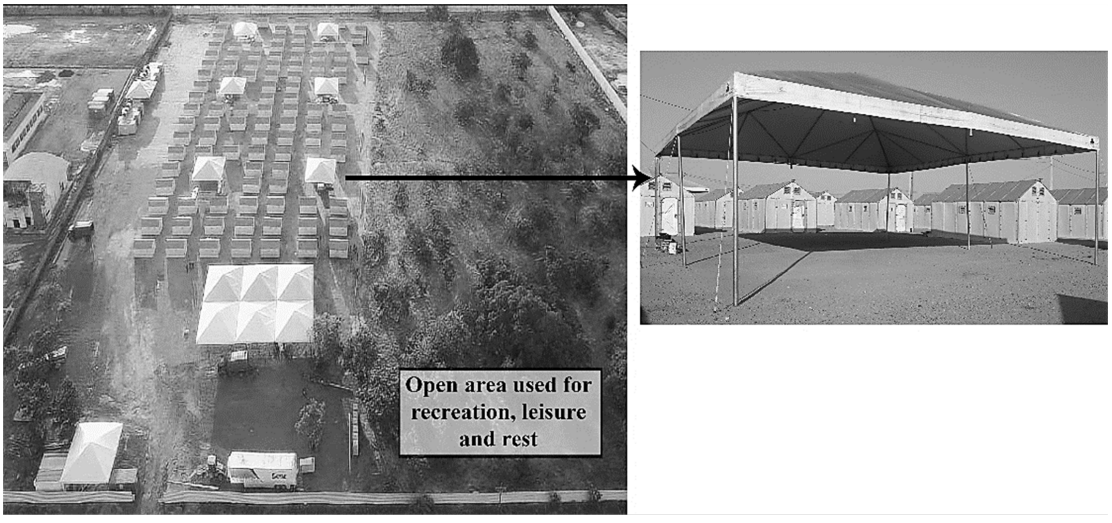


Figure 5 – Common area in the accommodation zones (settlement 6).
Source: authors.

According to Corsellis and Vitale (2005, 2007), layouts that create common spaces used by only a few families encourage ownership and maintenance of facilities and reduce opportunities for crime. The open and common areas and transition spaces, which go beyond the living space units, are essential due to the reduced internal space of the accommodations. They can also create better privacy conditions, providing spaces for leisure, rest and social interaction. However, Kikano, Labbé and Lizarralde (2017) highlight the importance of the physical components of these places to instigate a significant space appropriation, which can lead to living environments that are more adapted, and adaptable to lifestyle, socio-cultural aspirations, and frequently protracted situations of refugees.

Main spaces and facilities: the reference literature indicates that it is important to use temporary, versatile and reusable solutions focusing on site preservation. This was observed in most temporary settlements, where semi-permanent facilities were set up, mainly using tents and containers. Besides being easy to handle and transport, they also allow flexibility in use, and can

be reused for other purposes and have a low impact on the site. Pre-existing buildings were also used for various purposes, especially for healthcare, educational activities, offices and as warehouse areas. The only exception is settlement 6, which was organized in an open area without any pre-existing constructions. The UNHCR (2015) highlights that the choice of materials and technical solutions adopted should also consider the operational phase of settlements, as what is adequate during an emergency may not be adequate in a situation of prolonged displacement. It is important to make improvements and adaptations to meet people's needs over time.

According to interviewee P2, at first, the main facilities are set up, such as healthcare, administrative area, health facilities, laundry, community areas and accommodations. Over time, improvements and adaptations are being made, such as the installation of covers to protect the tents from the weather, the organization of educational and recreational spaces, the arrangement of the tents on wooden boards floor to avoid direct contact with the ground, among other improvements.

According to the reference literature, recreational areas and places for the practice of sport are essential in settlements with the presence of many children, as in the cases of Boa Vista, where the percentage of children varied between 30 and 40% of total residents (REACH; UNHCR, 2018). When there is little space available, a smaller recreational area can be organized, as was done in settlement 1 in a room inside a pre-existing building, and in settlement 3, where a sand volleyball court was set up. In settlements 2 and 6, which had a large open area, soccer fields were organized. Care International (2016) highlights that is important to locate child spaces in a safe central location near the accommodation area, where children can be supervised. This was observed in all settlements that had a child space.

The spaces used for washing and drying clothes require a large area, with good ventilation and insolation, especially in warm cities as Boa Vista. Except for settlement 5, all the others concentrate the laundry area and health facilities in the same place for functional and logistic reasons.

According to the reference literature, it is important to have a place for educational activities in temporary settlements, preferably with good ventilation and allowing multiple uses (Corsellis; Vitale, 2005, 2007). In Boa Vista, most of the settlements had a facility for this purpose, and the place is barely used because it is too small and hot, lacking natural lighting and ventilation. Except for settlement 3, where a multipurpose, spacious and airy facility was set up, also used for healthcare, distribution of non-food items, etc.

The places used for the distribution of food and non-food items, refectory and social space are usually located close by and in an intermediate zone between the administrative area and the accommodations. It is very important to provide in these spaces' seats and tables, drinking fountains, places to wash hands and, if possible, television and sockets for charging cell phones and other electronic devices.

The need for some spaces that were not foreseen in the literature research was identified, such as a parking lot for the staff, a delimited area for bicycle parking near the main access (Figure 4) and a smoking area far from the accommodations.

Accommodation: settlements 1 and 5 used tents provided by UNHCR of approximately 26 square meters for about ten people. In settlement 3, were used donated tents of approximately nine square meters for about five people. In settlement 6, were used accommodations named "Better Shelters" with approximately 19 square meters for about eight people. In settlements 2 and 4, some particularities stand out. In settlement 2, due to cultural issues of the indigenous

people, a hammock area was installed inside a gymnasium. Over time, to expand the number of residents, tents provided by the Civil Defense of approximately 29 square meters, for about ten people, were added in the external area. These tents were organized in two distant locations, with the objective of avoiding conflicts between the two different indigenous groups. In settlement 4, due to the profile of the target public, smaller tents, ceded by the Brazilian Army, were set up inside a gymnasium for childless couples. In the external area of the site, were installed tents from the Civil Defense of approximately 29 square meters for about ten single men each.

Expansion area: the Sphere Association (2018) indicates the need to foresee an area for settlement expansion, but none of the places had a planned area for this purpose, although they were constantly overcrowded. Settlement 6 had an area of approximately 10,000 m² that was being used only for recreation, leisure and rest (see Figure 5). This space could be better utilized, in a planned way, to increase the number of vacancies and infrastructure.

Safety, security and privacy: all settlements are surrounded by walls or fences and, for security reasons, have a single pedestrian entrance. According to interviewee P2, in most cases, residents receive an identification card made by the UNHCR, which is used by the military to access and exit control. Around the settlements, security is done by Federal Police patrols, and in the internal area, by the military. In settlement 3, was highlighted, during an interview with a resident (P4), discomfort due to lack of privacy, because the fence is very permeable and allows outside people to have visibility of the internal space.

According to Care International (2016), the design of the settlements should avoid isolated dark spaces where safety may be compromised and security provisions should be discussed with the community, especially with vulnerable people. In Boa Vista, the temporary settlements were well lit internally and had a relatively small area, which reduces security problems. However, it was observed that the location of some of them in the city constituted a risk to people. For instance, settlement 4 is in an area of great social vulnerability, with problems of prostitution and trafficking.

Social vulnerability in the face of disasters has received increasing academic attention, but little is known about how that knowledge is reflected in practice by institutions involved in disaster management (Orru *et al.*, 2022; Williams; Webb, 2021). The analysis performed by Williams and Webb (2021) identified four primary perspectives on social vulnerability: (i) culture and poverty; (ii) a moral imperative; (iii) a lack of security; and (iv) a lack of knowledge and awareness. These themes are not necessarily mutually exclusive, and local emergency management should perform a needs assessment to determine which demographics are more vulnerable in their respective jurisdictions. Mazurana, Benelli and Walker (2013) argues that humanitarian actors can best determine and respond to vulnerabilities and needs if they use sex- and age-disaggregated data (SADD) and gender and generational analyses to help shape their assessments of crises-affected populations.

Cultural adequacy: the reference literature emphasizes the importance of considering issues related to flexibility and adaptability to different cultures and contexts. According to the Norwegian Refugee Council (2010), cultural adequacy entails that construction, materials and policies should enable the expression of cultural identity. In Boa Vista, cultural suitability aspects were perceived especially in settlement 2, which has some particularities related to daily activities, concerning the way of cooking, sleeping and dressing of the indigenous population. According to interviewee P5, they did not accept the meals provided by the army to the other settlements. Because of this, an area covered with tents was set up for them to cook their food according to their customs. Another particularity is the hammock area installed inside the gymnasium, where different groups organize themselves with their community. Regarding the "dressing", interviewee

P5 said that mainly children do not wear shoes, which is a problem due to the gravel placed on the ground, which hurts their feet.

Environmental comfort: according to interviewee P2, there is not much concern about shelter comfort, which are usually tents, so that people stay as little as possible in these spaces. Priority is given to basic infrastructure, security and the quality of community and recreational areas. Vegetation and trees are essential for this because they soften the heat and improve the quality of the spaces. This could be seen especially in settlement 3, which has a large and pleasant shaded area, with seats and chairs. According to interviewees P4 e P6, this is the place where residents most enjoy being at this settlement.

It was observed that it is very important to protect the accommodations with additional covers, avoiding direct sunlight on the tents and protecting them from rain. This also helps to protect electrical installations, avoiding accidents such as in settlement 4, where a tent caught fire due to a short circuit. In most places, the tents were covered by semi-permanent structures or arranged under existing buildings, except for settlement 6, where more resistant shelters were used, named Better Shelters. Even so, tests were being done to enlarge their windows, to obtain greater natural ventilation and reduce the heat inside.

b) Services and infrastructure

Reception and screening: the reception and screening of refugees is done at their first access to the settlements. To this end, a space covered by pyramidal tents was delimited in the pedestrian access, near the administrative area (Figure 4). According to Care International (2016), during reception, the different groups that will occupy the settlement should be considered; for instance, extended family groups or existing communities may prefer to be grouped together to maintain existing social support networks. This was observed mainly in settlement 2, where indigenous people from two different ethnic groups were sheltered. In layout planning, two external tent spaces were defined, located in distant areas to avoid conflicts and maintain social ties.

Administrative area: in this area, are located the army and NGO(s) offices and the army accommodation. For logistical and security reasons, in many cases, there are also a mixed-use toilet and warehouses. Most of these facilities are arranged in 20-foot containers. In settlement 6, a tent was installed to serve as kitchen and refectory. According to interviewee P2, this place is used by the staff during the meals and for socialization and rest.

Healthcare: in all temporary settlements, refugees are immunized and receive weekly medical visits. According to interviewee P2, healthcare is provided by general practitioners of the army who, in more serious situations, refer patients to a hospital. In the cases where healthcare is provided inside 20-foot containers, problems related mainly to lack of space and natural ventilation were observed and reported by most interviewees. In settlement 3, there is no specific facility for this purpose. According to interviewees P4 e P6, they use the army office and other improvised spaces for doctor visits and medical procedures, hindering the development of other activities. Another problem with this settlement is the difficulty for ambulances to access the site, caused mainly by the roads' poor condition.

Psychosocial attention: during the interviews, it was reported that no psychosocial care of refugees was carried out in any settlement. Médecins Sans Frontière (2009) points out that it is essential to consider the affected population's psychological distress and to take care of psychological traumatisms, which add to the precariousness of the situation. The staff's mental

healthcare is also important, since there are many emotional difficulties encountered during the work. This was confirmed by the interviewees P2, P5, P6 and P7. "Often, we feel powerless, it is very bad to see these people on the street and not be able to do anything but knowing that it depends on us to install the next settlement, this affects our mind, takes away sleep" (P2, our translation).

Water supply: water supply and consumption was reported by interviewees as one of the greatest problems. According to interviewee P3, the approximate consumption per person was 100 liters per day, not counting the water used for preparing meals and drinking. This quantity is almost double that recommended by Secretaria de Estado da Defesa Civil do Rio de Janeiro (2006). This high-water consumption is due to the heat in the city, which in August 2018 was around 104 ºF, and other problems, mainly related to lack of care by residents. "They often use the showers and sinks and don't turn off the taps, actions are needed to raise awareness of water consumption" (P3, our translation). In most settlements, water supply comes from the public network, but due to the high consumption, in many cases, artesian wells were made to expand supply.

Food supply: daily meals are prepared by the Brazilian Army and distributed three times a day for almost all settlements, being in accordance with the Secretaria de Estado da Defesa Civil do Rio de Janeiro (2006) recommendations, which highlights that this minimum does not consider people with special dietary needs. Settlements 2 and 3 are exceptions to this procedure, as they receive the food and prepare the meals on community kitchens. According to interviewees P4 and P6, the participation of the residents in the preparation of meals and cleaning tasks promotes social interaction, provides daily activities and delegates responsibilities.

Even with the meals being delivered ready, a cooking and lactation space is needed, mainly due to cultural issues, special food needs and the presence of many babies and children in the settlements (REACH; UNHCR, 2018). In settlement 1, a small kitchen was set up to prepare food for children from six months to two years, because, according to interviewee P7, they did not eat the ready meals. Together with the residents, were defined the opening hours and the mothers in charge of food preparation and cleaning tasks.

Health facilities: these facilities must be separate for men and women and should be in a well-lit and visible place. The use of 20-foot containers for this purpose, employed in some settlements, is a solution that allows agility in assembly/disassembly and flexibility in the layout. In some cases, pre-existing health facilities were also used. However, interviewees P2 and P3 highlight the problems of using these installations, as they are borrowed or rented spaces, and must be returned under the same initial conditions.

Sanitation: this is a very important issue in temporary settlements, as it is strictly related to the proliferation of vectors and diseases. Preferably, the local excreta collection network should be used. It is very important to establish collection, transport, treatment and disposal systems that align with local systems, by working with the authorities in charge of excreta management. According to interviewee P2, sanitation is one of the first things to do when setting up a temporary settlement and each case must be analyzed individually. Regardless of the solution adopted, the impact on the environment must be minimized. Whenever possible, should be analyzed the feasibility of reusing grey water, collecting rainwater or other sources for the general cleaning of settlements, washing clothes and dishes, among other uses.

Economic aspects: in Boa Vista, refugees found it very difficult to find a job in the local market, mainly due to the difficulty of integration into the context and social acceptance. This can be related to differences in language and culture, prejudice due to the status of refugees and the crisis that devastated the city with the arrival of so many Venezuelans. However, some particularities

can be highlighted: during the set up of settlement 6, several Venezuelans were hired to install the "Better Shelters", which helped their livelihoods. In settlement 2, most of men were agricultural workers and women were artisans. For this reason, a tent was installed for the production and sale of handicrafts and a place for community gardening was organized inside the settlement. In settlement 3, due to the experience of some people with carpentry, a place was set-up for this purpose, where some residents teach others. They produce artefacts and sell in the city. According to interviewee P4, after the installation of this space, the residents felt more motivated and useful, and the exchange of experiences led to closer social relations.

c) Minimum indicators

To verify the adequacy of temporary settlements to the minimum indicators, some quantitative data were collected from them (see Table 3). The last column of this table contains reference values based on information from the reference literature. Data that are not in accordance with the minimum indicators are highlighted in grey.

Table 3 – Quantitative indicators of temporary settlements.

Indicators	Temporary settlements						Reference values
	(1)	(2)	(3)	(4)	(5)	(6)	
Surface area/person	16/p	16/p	17/p	15/p	20/p	32/p	30-45 sqm/person
Living area/person	3.3/p	3.1/p	2.4/p	2.4/p	3.5/p	3.9/p	3.5 sqm/person
Screening area	50	200	100	100	100	200	20 sqm
Recreational area	0.67/c	0.83/c	no info	-	-	2.89/c	1.5 sqm/child
Common eating area	0.45/p	-	0.70/p	0.29/p	0.30/p	0.96/p	1.5 sqm/person
N° of tanks	1/37p	1/54	1/48	1/57	1/95p	1/89p	1 tank/40-100 people
N° of toilets	1/40p 1F:1.8M	1/63p 1F:1M	1/28 1F/1M	1/11p 1F:1.7M	1/28p, 1F:5M	1/10p, 1F:1M	1/20 people 3 female:1 male
N° of functional toilets	1/89p 1F:4M	1/69p 1.2F:1M	1/28 1F/1M	1/12p 1F:1.8M	1/39p, 1F:16M	1/30p, 1F:2.5M	
N° of showers	1/44p	1/63p	1/28	1/26p	1/21p	1/16p	1/20 people
N° of functional showers	1/44p	1/251p	1/28	1/29p	1/28p	1/18p	
Distance between SF and accommodations	< 70m	< 80m	< 65m	< 75m	< 120m	< 114m	< 50 m
Fire safety	> 2.5m	> 1.0m	> 1.0m	> 2.5m	> 2.5m	> 2.5m	> 2m between shelters
Terrain slope	OK	OK	OK	OK	OK	OK	1 to 5%

Source: authors, based on REACH and UNHCR (2018), Secretaria de Estado da Defesa Civil do Rio de Janeiro (2006), Sphere Association (2018), UNHCR (2015), Médecins Sans Frontière (2009), International Organization for Migration, Norwegian Refugee Council and UNHCR (2015).

From the data in Table 3, it is possible to verify that, except for settlement 6, all the other settlements have a surface area per person lower than indicated by literature. This may be related to the installation of these places in an urban area, where the availability of large plots of land is lower, associated with the great demand for shelter in the city. Another factor is the overcrowding of all settlements in August 2018 (Table 2), which also led to a reduction in the living space area per person, due to limited space for the addition of several accommodations on sites. Due to overcrowding, many tents were installed on an impromptu basis, interfering negatively with the layout and overloading the facilities and infrastructure, especially the health ones. This highlights the importance of foreseeing an area for settlement expansion during layout planning, considering the need to expand the site infrastructure according to the increase in the number of residents.

Another relevant aspect is the large number of non-functional and deactivated toilets and showers due to misuse and lack of maintenance, mainly in the female ones. In addition to this, the proportion of toilets indicated by the literature, of three females to one male, is not

followed. Interviewee P7 noted that, due to these factors, many women and children use male facilities. This can lead to problems related to privacy and safety (Care International, 2016; Sphere Association, 2018). To minimize it, it is necessary to promote awareness actions with residents and the organization of cleaning and maintenance groups.

Recreational and common eating areas are below the minimum reference values in almost all settlements and, in some cases, there was no area for recreational use. Both are very important places in temporary settlements because they promote leisure and socialization and can reduce psychosocial problems, so they must be properly sized.

It was observed that some distances between accommodation and health facilities are larger than fifty meters. This minimum value was established to avoid long routes to these facilities, which can be dangerous, especially at night. Although this factor was not identified as a problem during the interviews, it is recommended to assess this aspect in layout planning to facilitate access to these facilities and minimize safety-related problems.

Except for the tents located inside gymnasiums, there is a concern about spacing, in accordance with the minimum distance indicated by the literature to promote fire safety. However, other precautions should be taken, especially regarding the protection of electrical installations, which are often used irregularly, especially in accommodation areas.

Discussions and Guidelines

An emerging issue from this study, which proved necessary and insufficient in Boa Vista, is "the importance of participation and engagement of the affected population". This can also be observed in research conducted by the Global Shelter Cluster (2019) in several case studies, where the most reported theme was the importance of community involvement to stronger social cohesion. The ANLAP (2003) highlights that the use of participation strategies in the implementation of temporary settlements should improve accountability and the quality of humanitarian assistance and can favor the inclusion and empowerment of marginalized groups, in addition to creating linkages between relief, rehabilitation and development. The UNHCR (2008) points out that, by placing the people of concern at the center of operational decision-making, they will be better protected, their capacities to identify, develop and sustain solutions will be strengthened, and the resources available will be used more effectively. According to International Organization for Migration, Norwegian Refugee Council and UNHCR (2015), some strategies to involve the affected populations are: (1) engage them in site planning from the beginning; (2) ask about their roles and responsibilities and what they can provide to the settlement; (3) include different ethnicities, people of different ages and different genders in coordination forums, meetings, activities and elections; (4) implement forms of participation and governance already used by the community in the pre-crisis period.

Furthermore, based on the results of this study, some guidelines were established for planning and designing temporary settlements:

i) Site planning must take into account the number and profile of the population that will occupy the site and the presence of different ethnic groups, paying attention to the various socio-cultural aspects, in order to guide the design and administrative strategies;

ii) Initially, the most essential and vital services and infrastructure should be provided, with a focus on the basic needs of those being sheltered (physiological and safety and security),

assessing over time the need to provide others and to make adaptations and improvements to facilities, infrastructure and accommodation;

iii) The rules and routines must be valid for everyone and posted in an easily visible place as well as the rights and duties of the sheltered population;

iv) The administrative, reception and sorting areas, healthcare and others should be located close to pedestrian access;

v) The space for waste deposits and parking spaces for vehicles should be located close to access for light and heavy vehicles;

vi) The distribution point, communal kitchen, cafeteria, food storage, educational space and social and recreational facilities should be centralized;

vii) Each area of accommodation should preferably have access to a common covered social space, with infrastructure such as artificial lighting, urban furniture (tables, benches, chairs), garbage collectors, a water point, among other things that may be necessary;

viii) Over time, changes in accommodation use during the day, aspects of space comfort and the needs of those being housed should be assessed to make improvements and adaptations;

ix) A covered area should be set aside at the main access for the reception and registration of people;

x) There must be an administrative area, with facilities for the organizations and institutions working at the site, a meeting room and space for serving the public and with accommodation for those responsible for settlement security;

xi) The administrative area must have health facilities for men and women, when it helps the movement of people and organizational and functional logistics;

xii) There must be sufficient, high-quality multi-purpose spaces for educational, training and capacity activities for all ages, in order to create a study routine, keep the mind occupied, promote socialization and develop skills and knowledge;

xiii) The settlement should have community spaces for leisure, rest and socializing such as green areas, TV and games rooms, reading spaces;

xiv) Social spaces should have plug sockets for charging electronic devices and household appliances;

xv) The smoking area must be marked, located in a well-ventilated place, at an adequate distance from the living quarters and not pose a risk to people;

xvi) In cases where meals are delivered ready-made, care must be taken to ensure that they meet the needs of people with dietary restrictions. Even in these cases, a kitchen area is needed to cater for special needs and prepare baby bottles;

xvii) The cafeteria should be located close to the collective kitchen, in accordance with the cultural context;

xviii) Food items should be made available in the lactarium, and people with special dietary needs should be given differentiated attention and treated on a case-by-case basis;

xix) Educational activities must be carried out for the residents about the correct use of health facilities;

xx) There should be ample clothesline space for drying clothes, close to where the clothes are washed, with a covered option for rainy days;

xxi) Consider the use of alternative energy sources in the settlement and a power generator, with adequate capacity for the demand;

xxii) Include a common space for disposing of solid waste in a place accessible to collection trucks at any time of the year.

The research also highlighted some problems and issues that need to be rethought, such as: accessibility for people with reduced mobility in a terrain covered in gravel; the thermal comfort of accommodation designed for other climates and realities; the need for indigenous people to prepare their own food or sleep in hammocks; the very rational organization of space following a rigid layout that does not reflect the social organization of refugees, among other issues that need to be taken into consideration.

According to the UNHRC (2021a) report, during the COVID-19 pandemic, some measures were adopted and developed in all settlements to mitigate the risks of contamination. These measures included educational activities, daily cleaning of sites, actions to avoid crowding, implementation of hand washers at the entrance of the settlements and in the cafeteria area, distribution of hygiene kits and cleaning materials, among others.

On 8 April 2021, a federal judge in Roraima ordered the mayor of Boa Vista to provide equal access to healthcare services to foreigners, preventing local authorities from discriminating based on nationality or migration status. The decision determined that all municipal health centers must publicly display information about refugees' and migrants' access to healthcare in both Portuguese and Spanish. This decision comes after a controversial 2020 municipal law that established that only 50% of healthcare service capacity would be available for foreigners (UNHCR, 2021c).

In December 2023, the population sheltered in Boa Vista settlements was of 7,559 people. Two installations presented in this paper are still in operation (Jardim Floresta and Rondon 1), with the addition of three new settlements: Rondon 5; Pricuma; and Waraotuma a Tuaranoko. Currently, the largest shelter in Boa Vista is Rondon 1, which has a capacity to accommodate 2,242 people, and is sheltering 2,084 people (UNHCR, 2023c).

This study is limited to the field research conducted in August 2018 in the city of Boa Vista-RR, at the height of the Venezuelan refugee crisis, and when most of the temporary settlements had been newly installed. Further studies are needed, assessing the conditions of the settlements that have remained active since the field research was conducted, in addition to the survey and analysis of the physical, spatial, and functional characteristics of the new settlements that have been installed in subsequent years.

Final Considerations

This study showed that there is a similarity in the physical-spatial and functional characteristics of the temporary settlements installed in the city of Boa Vista related largely to organizational, logistical and security aspects. In all the settlements, refugees receive food, healthcare, household items and other services. However, some particularities were observed in the layout, facilities, infrastructure and accommodations of each case. These particularities are largely related to residents' socio-cultural aspects, the adequacy to people's needs, the availability of resources and pre-existing conditions of the sites. It was noted that, considering the temporary nature of the settlements, it is important to use technical solutions of materials and structures that are versatile, flexible, reusable and easy to handle, focusing on site preservation.

It was found that universal accessibility, shaded areas, psychosocial care, privacy, cultural adequacy and refugee awareness actions are essential to improve quality of life in settlements and were considered important by all participants. In addition, over time, it is necessary to make improvements in the sites, especially in open and common areas, to promote settlement urbanization, spatial appropriation by residents and provide better spaces for leisure, rest and social interaction. It is also important to encourage the empowerment of the affected population to improve their economic conditions, self-help and social participation.

It was observed that overcrowding problems are recurrent in temporary settlements. Therefore, it is important to foresee areas for settlement expansion in advance and provide more accommodations and basic infrastructure in an organized manner, according to residents' profile and needs. It is also important to plan and project temporary settlements to be adaptable over time to meet the needs that arise initially, when it is not known exactly who will occupy the settlement, and later, when the community can express its needs more precisely or to deal with a possible refugee turnover.

These findings help to consolidate a reference framework for planning, design and decision-making regarding temporary settlements for emergency scenarios to reduce the impact of disasters on the affected population and improve their resilience.

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