

Characterization of Leisure Areas in Vertical Multifamily Buildings Aimed at Proposing a Leisure Index

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Abstract: Vertical multifamily buildings now offer an increasing number of leisure environments. That is possibly in response to urban violence and the demands of consumer society, whose new needs demand commodities that turn into desires. What does the real estate market offer as recreational environments in these buildings? The objective of this paper is to characterize the scope and configuration of the environments and leisure areas at vertical multifamily buildings, aiming at proposing a leisure index. A total of 31 developments were selected from six construction companies in the city of Maceió/AL/Brazil, between 2010 and 2015. The projects were divided into three groups according to the area of the apartments, based on the Sales Velocity Index (SVI); the leisure areas were grouped into four user ranges; the respective leisure rates were calculated. The study showed that the adult and shared leisure areas occurred throughout the sample; most of the leisure areas are located on the pilotis/ground floor area, some on the roof and on the mezzanine and a few in the basement. The condominiums with small apartments had lower leisure rates than those with larger apartments and isolated buildings. The proposed leisure index was adequate to express the varied offer of the local real estate market.

Key words: leisure areas; apartments buildings; real estate market; leisure index

1. Introduction

The real estate market, through advertising and marketing strategies, sells leisure items with the status of happiness in new apartment buildings, as a response to consumer society, in the face of security problems and the reduced supply of leisure in public spaces in contemporary cities, which have led to the architecture of fear.

The real estate market is responsible for the effervescence of cities (BROWN, 2015), as it makes buildings appear in uninhabited places and promotes the verticality of previously horizontal neighborhoods (LOPES, 2017; SANTOS, 2016). Real estate market agents want to create use value for others with the intention of realizing exchange value for themselves. They therefore seek flexibility, greater profitability, low production costs, immediate return and liquidity in real estate projects for sale. On the other hand, customers who buy housing units expect comfort, efficiency, image and liquidity, but they also want their property to have exchange value when it is eventually sold (VARGAS, 2014a).

Villa and Orstein (2009) observed that, in recent years, some larger companies in the construction sector have been seeking to increase their productivity rates in order to become more competitive in the market; however, the models of apartment building projects offered by these companies remain basically the same. However, Vargas (2014c) identifies that, today, the commercial ambition of the real estate sector is focused on the personalization of properties, presenting real

estate products as exclusive and unique. For Baudrillard (2009), the function of personalization is not just added value, but parasitic value. The inessential is used to promote consumption, which is taken as merit, linked to the notion of value, constituting difference by excess.

Although the production of apartments belongs to the sphere of civil construction, whose project specialist is the architect, the configuration of the real estate business has involved agents from various specialties with the aim of producing highly saleable and profitable businesses. In this way, the production chain involves sectors considered more important than the project designers, such as advertising (VILLA; ORSTEIN, 2009; MONETTI, 2014, ANITELLI; TRAMONTANO, 2011).

The advertising material, sales folders for the buildings, shows happy people using the leisure areas. Few of them show the facades of the building, and even fewer show the floor plans of the apartments. One gets the feeling that the leisure area is being sold and that along with it comes a place to live; some developments are real clubs, with more than 20 leisure areas in their common area (NASSIF, 2009; SAMPAIO, 2010; DUARTE, 2007; DUARTE; ELALI, 2011). Contemporary consumer society is always looking for objects that are fashionable, something that may be inessential (BAUDRILLARD, 2009; BAUMAN, 2008), but which personalize the buyer and make them unique.

These buildings are built for sale by the real estate market and advertising is used as a means of promoting their objects, exploiting signs that relate to the interests of their target audience, among them happiness - which can be achieved by having safe leisure environments. The consumer society, which consumes signs and not objects (EDWARDS, 2000; FOXALL, 2005; FEATHERSTONE, 1995; CAMPBELL, 2006), is open to this type of advertising and expects to be informed by the media about the fashion of the moment that leads to happiness (VARGAS, 2014b; LIPOVETSKY, 2007).

Leisure is of fundamental importance to human beings, regardless of age or social class. It encompasses both rest and the practice of something pleasurable, when there is no obligation to do so (KOSHAR, 2002; HAWORTH; VEAL, 2004). Leisure is essential for a healthy life; the lack of it leads people to physical and mental fatigue, which harms them in all their social spheres (DUMAZEDIER, 2008; VERMA; LARSON, 2003).

The Declaration of Human Rights, proclaimed by the United Nations General Assembly in 1948, established in Article 24 that every individual has "The right to rest and leisure, including reasonable limitation of working hours and periodic paid leave [...]". The United Nations Convention on the Rights of the Child (1989) established "[...] the right of the child to rest and leisure, to engage in play and recreational activities appropriate to the age of the child and to participate freely in cultural life and the arts [...]" (EDGINTON, 2009).

Over the last 100 years, the city has become a place where people think more about danger than safety. Life in cities is becoming a state of nature characterized by the rule of terror and the omnipresent fear that accompanies it. In this environment, "the architecture of fear" has emerged, such as gated communities - communities surrounded by walls and various security systems, and some equipment to inhibit the presence of the excluded (BAUMAN, 2009; ELLIN, 1997).

Vertical multi-family buildings with guardhouses, walls, cameras, 24-hour security and various entertainment options in their protected areas are part of this architecture of fear, which separates city dwellers from the excluded who occupy their marginal spaces (ELLIN, 1997; SILVA, 2016; KNEBEL, 2017).

Everyone who can afford it buys an apartment in a gated community - an isolated place that is physically inside the city, but socially and ideally outside it (BAUMAN, 2009). Violence and lack of security are pointed out as factors that prevent people from freely choosing their leisure time, helping to hold them hostage in their own homes, increasing the already high number of individuals who have their main leisure "equipment" in their homes (MARCELLINO et al., 2007).

Research completed between 2006 and 2017, carried out at universities in the Southeast (NIGRI, 2006; NASSIF, 2009;

SAMPAIO, 2010; GAVIÃO, 2012, for the cities of São Paulo and Rio de Janeiro) and South (MARTYN, 2008; ABREU, 2016; BEZ, 2017, for the cities of Florianópolis and Porto Alegre) of Brazil, investigated condominium leisure areas with different focuses and used methods that included the perception of users or the opinion of other agents involved, through post-occupancy evaluation.

All seven studies used case studies as their technical procedure, involving both individual cases and multiple cases, with up to 13 components, mostly for vertical residential condominiums of different types and apartment areas and from different economic backgrounds.

Most of the studies used vertical residential condominiums with more than two towers as their object of study, except for Abreu (2016), who included a detached vertical multi-family residential building. None of the studies delved into the areas of leisure environments and leisure areas by age group, in the composition of the total leisure area of the condominiums analyzed. Only Nigri (2006) proposed a ratio of the total leisure area in relation to the number of apartments; however, he also considered the common areas of gardens and pedestrian circulation in the calculation. In addition, the values found were very wide, making it difficult to compare the cases studied.

In an attempt to explore these issues further, this study proposes a case study of leisure areas in vertical buildings in the city of Maceió (09° 39' 57" S; 35° 44' 07" W), capital of the state of Alagoas, which is the fourth fastest growing city in terms of urban area in Brazil, with an average annual growth rate of 2.75%, behind only Belém (2.79%), Manaus (2.83%) and Brasília (2.99%), according to a report by the City Mayors Foundation - a study center dedicated to urban issues - based on statistics from international organizations published between 2006 and 2014. This growth was due both to the expansion of peripheral neighbourhoods and to the intensification of the verticalization process, as a result of the 2000 Neighbourhood Development Law (SANTOS, 2016; LOPES, 2017), even though there was no corresponding population growth.

The guarantee of leisure activity spaces is regulated by Article 2, Item XII of the Master Plan of the Municipality of Maceió. This Master Plan lists the guarantee of open spaces for leisure activities as a guideline for housing developments. In Article 426, it defines a mandatory percentage of 10% of the free area of the pilotis floor for children's recreation, designated as a safe zone, free from vehicular traffic (MACEIÓ, 2007). It also outlines constructive benefits for utilizing mezzanine and penthouse floors for the establishment of leisure areas within condominiums.

Given this context, the following research questions were formulated: what is the scope and configuration of common leisure areas and environments in residential condominiums and vertical multi-family buildings in Maceió? What parameter could express the quantity and diversity of leisure environments in these condominiums and buildings? The aim of this article was to characterize the scope and configuration of leisure environments and areas located in the common areas of condominiums and vertical multi-family buildings in the city of Maceió, AL, delivered or under construction between 2010 and 2015 - which coincides with the accelerated growth and intensification of the city's verticalization process - with a view to proposing a leisure index for use by real estate agents and researchers. This article is the result of research carried out for a master's degree in architecture and urbanism (COUTINHO, 2016), the preliminary results of which were published in a national scientific event (CAVALCANTE; TOLEDO, 2016), focusing on the four proposed leisure groups.

2. Method

This is an applied study with a hybrid approach, both qualitative and quantitative, which involves basic statistical treatment of the data. In terms of objectives, it is mainly exploratory, aimed at promoting greater familiarity with the research problem, as well as descriptive, establishing relationships between the observed variables. It used documentary

research as a technical procedure, based on advertising material and technical documentation from construction companies and real estate brokers. Additionally, a comparative case study was conducted involving 31 examples of condominiums (UR4) and independent vertical multifamily buildings (UR5) with different types of apartments and construction standards.

2.1 Sample definition

The definition of the sample was non-probabilistic and accidental, since it depended on pre-established parameters and there was no distinction between the elements that passed the first screening. The existence of a leisure area was not a parameter for the initial determination of the sample; however, it was a constant in all the buildings selected from the portfolios of the six construction companies surveyed (A to F).

Due to the time limit adopted, from 2010 to 2015, and the quality of the information obtained when collecting digital data, a total of 31 components were chosen: 5 multifamily vertical building condominiums, 3 for the low-income bracket and 2 for the high-income bracket, and 26 detached multifamily vertical buildings, for the middle and upper-middle income brackets; distributed in 9 neighborhoods, 3 of which are located in the upper part (Farol, Antares and Santa Amélia) and 6 in the coastal lowlands (Ponta Verde, Cruz das Almas, Guaxuma, Jatiúca, Mangabeiras and Ponta da Terra) of the city of Maceió, AL (Table 1).

Table 1. Sample components

Construction No.	Year launched	Home works	Situation	Building/ Condominium	Neighborhood	Leisure environment	No. of bedrooms
1	A1		2010	Personal	Ponta Verde	5	3
2	A2		Delivered	Vitreo	Ponta Verde	8	4
3	A3		Delivered	Setai	Cruz das Almas	6	1 and 2
4	A4	2015		One	Ponta Verde	8	3 and 4
5	A5	2015		Gran Marine	Guaxuma	26	3 and 4
6	A6	2015		Hit	Jatiúca	10	3 + REV
7	A7	2015		Prime	Mangabeiras	7	3
8	A8	2015		Life	Jatiúca	13	3
9	A9		2011	Amalfi	Ponta da Terra	8	3
10	A10		Delivered	Atmosphere	Jatiúca	6	3
11	A11		2010	Versatile	Jatiúca	4	2 and 3
12	A12		Delivered	Vitta	Ponta Verde	5	2 + REV
13	A13			Double	Ponta Verde	7	3 and 4
14	B1	2015		Mirante Clube Estratégia	Farol	20	3
15	B2		Delivered	Dulce Tenório	Farol	6	2 and 3

Construction No.		Year launched	Home works	Situation	Building/ Condominium	Neighborhood	Leisure environment	No. of bedrooms
16	B3			Delivered	Dilma Paiva	Farol	11	2 and 3
17	C1			2013	Cádiz	Ponta Verde	3	3
18	C2	2010		2014	South Seas	Jatiúca	8	2 and 3
19	D1			2014	Alto das Alamedas Residence	Mangabeiras	29	3
20	E1			2015	Paraíso das Águas Park	Antares	7	1 and 2
21	E2		obra		Pontal das Marés Park	Antares	7	2
22	E3		obra		Mundaú Cond. Clube	Santa Amélia	6	2
23	F1			2010	Iluminatto	Jatiúca	3	2 + REV
24	F2		2015		Syrah	Jatiúca	19	3
25	F3		2011	2014	Índico	Jatiúca	3	3
26	F4		2010	2013	Luna Dorata	Ponta Verde	8	2 and 3
27	F5		2012	2015	Sangiovese	Jatiúca	11	1 and 2
28	F6		2011	2014	Chardonnay	Ponta Verde	8	3
29	F7			2012	Vitalle Space	Ponta Verde	4	1 and 2
30	F8	2008		2011	Classic	Ponta Verde	11	4
31	F9		2014		Pinot Noir	Ponta Verde	10	1 and 2
Note			Condo minium		Delivered and occupied		Uptown neighborhoods REV - reversible bedroom	

2.2 Data collection and organization

Data was first collected digitally through the websites of the construction companies that had portfolios. After that, reconnaissance visits were made to the developments that had already been delivered and occupied by residents, documenting the environments and leisure areas through photographic records. The projects were then acquired digitally using AutoCad files provided by the construction companies.

Among the components of the sample, there were 11 in the launch phase or under construction and 20 already delivered and occupied by residents during the data collection period (January to March 2016). For this reason, the possibility of involving users in the research was ruled out, since studies using post-occupancy evaluation consider at least one year of occupancy by users.

Individual data sheets were drawn up for each component of the sample, containing: identification of the building

(name, letter from A to F, according to the construction company to which it belongs, location and image of the facade), types of apartments, areas of the housing units, quantitative table and location of the leisure areas and floor plans with the leisure areas manipulated in the AutoCAD program. The location of the leisure areas was noted by color on each development's data sheet, in relation to the floor (basement, pilotis/first floor, mezzanine, penthouse and others).

2.3 Grouping of condominiums and buildings

The sales velocity index provided by the Construction Industry Union of the State of Alagoas (SINDUSCON-AL) in its February 2016 report was used as a basis (Table 2).

Table 2. Sample components

Area (m ²)	Offers	%	Sales	%	SVI
Up to 50	607	25	25	43	4.1
51 to 70	786	33	15	26	1.9
71 to 100	418	18	6	10	1.4
101 to 150	504	21	10	17	2.0
151 to 200	56	2	2	3	3.6
200 to 250	9	0	0	0	0
Above 250	5	0	0	0	0
Total	2.385	100	58	100	-

Source: Industry Union (2016).

This index is not usually used in academic research on apartment types, but it is what the local real estate market uses, especially for the Ademi Award (Association of Real Estate Market Companies of Alagoas), which selects the best real estate developments each year. The SVI expresses the percentage of sales as a function of the offers for each area of housing units considered. The higher the SVI, the better the sales performance.

The 31 components of the sample were divided into three groups with subdivisions according to the area of the apartments, guaranteeing at least one sample for each of the SVI area ranges, with the exception of the last one (over 250 m²), because the selected construction companies do not operate in this niche market. The buildings or condominiums that had apartments with different areas, which fit into more than one group, were called hybrids (Table 3).

Table 3. Groups and clusters

Groups	Clusters
A 118 buildings 3 condominiums	A1 - up to 50 m ² : Paraíso das Águas Park and Pontal das Marés Park
	A2 - hybrids: up to 50 m ² and 51 m ² to 70 m ² : Mundaú Condomínio Clube, Setai, Sangiovese, Spazio Vitale and Pinot Noir
	A3 - 51 m ² to 70 m ² : Amalfi, Versatile, Dilma Paiva and Mares do Sul
B	B1 - hybrids: 51 m ² to 70 m ² and 71 m ² to 100 m ² : Dulce Tenório and Luna Dorata

Groups	Clusters
98 buildings 1 condominium	B2 - 71 m ² to 100 m ² : Life, Vitta, Índico, Personale and Iluminatto
	B3 - hybrids: 71 m ² to 100 m ² and 101 m ² to 150 m ² : Mirante Clube Estratégia and Residencial Alto das Alamedas
C 10 buildings 1 condominium	C1 - 101 m ² to 150 m ² : One, Gran Marine, Hit, Atmosfhera, Cádiz, Prime, Syrah, Chardonnay and Classic
	C2 - 151 m ² to 200 m ² and 201 m ² to 250 m ² : Double and Vitreo

2.4 Definition of leisure groups

The manipulation of the primary data obtained, which presented 35 different types of leisure environments aimed at certain groups of users, led to the formation of four leisure groups (Table 4), similar to those adopted by Nigri (2006), replacing "adolescents" with youth leisure and "all" with shared leisure (CAVALCANTE; TOLEDO, 2016).

Table 4. Leisure groups by users

Group	Users
Children's leisure	Small children who need adult supervision. This group has 6 leisure areas: a children's pool, playground, playroom, nursery, mini golf and giant chess/chess.
Youth leisure	Older children and teenagers who don't need supervision in the leisure areas. This group has 5 leisure areas: study room, art studio, lan house, teen space and garage band.
Adult leisure	Older children and teenagers who don't need supervision in the leisure areas. This group has 5 leisure areas: study room, art studio, lan house, teen space and garage band.
Shared leisure	Children, teenagers and adults together. This group has 10 leisure areas: outdoor terrace, barbecue area, gourmet space, closed party room, open party room, square, games room, sports court, beach court and "home cine".

The user groups were chosen in preference to the five dimensions of leisure highlighted by Nigri (2006), which in a way correspond to each other: living and socializing spaces, spaces for sports and contemplative leisure spaces with the shared leisure group; children's leisure spaces with the children's leisure and youth leisure groups; relaxation spaces with the adult leisure group.

Table 5. Distribution of leisure areas by floor

Room location		Coverage (quant.)	Mezanine (quant.)	Pilot room (quant.)	Subsolo (quant.)	Other (quant.)
Children's leisure	Children's pool; Playground	Playroom; Nursery	Mini golf; Giant chess/chess			
Youth leisure			Study room; Art studio; Lan house	Teen space; Garage band		
Adult leisure	Adult swimming pool; Indoor swimming pool	Relaxing pool; Sena dinho	Sauna; Zen spa	Fitness area; Gymnastics; Home office	Beach lounge; Women's space; Bar	Jogging track; Redá rio
Shared leisure	Terrace uncovered; Barbecue;	Gourmet space; Sal. party closed	Sal. open parties; Square	Games room; Multisport; Beach volleyball	Home cine	

In this article, by way of illustration, we present the floor plans of the most significant cases, and the summary sheets of the distribution of leisure groups on the floors of the buildings and condominiums. All the data sheets and floor plans for the 31 examples are detailed in Coutinho (2016).

2.5 Calculating the leisure index

The calculation of the leisure index was based on the ratio between the total leisure area - which comprises the sum of the areas of the four leisure groups - and the probable number of inhabitants of each condominium or detached building. This was estimated at 2 people for each bedroom in the intimate sector for 1 and 2 bedroom apartments, 5 people for 3 bedrooms, and 6 people for 4 bedrooms, including reversible bedrooms. These estimates were based on NBR-5665/1983 (elevator traffic calculation), disregarding domestic workers and building employees."

Using this new proposed parameter, internal cross-analyses were carried out on the groups (1, 2 and 3) of each of the three groups (A, B and C), taking into account the sizes and types of apartments.

3. Results and Discussions

3.1 Characterization of leisure areas: group A

Group A, with 11 developments divided into 3 groups (A1, A2 and A3), showed many similarities: children's and youth leisure areas were only found on the pilotis/ground floor, with a higher frequency for the playground and a lower frequency for youth leisure areas. The adult and shared leisure areas were found on the pilotis/ground floor and penthouse floors in the detached buildings, with a higher frequency for the adult swimming pool and fitness area in the adult leisure area, and the party room or gourmet area and square in the shared leisure area.

Group A1 (UH up to 50m², made up of 2 condominiums, with 1 and 2 bedroom apartments, produced by the same construction company) showed many similarities. The portfolios of the two are intertwined and show similar leisure areas and apartment blocks, with apartments also on the first floor for the lower income bracket.

All the leisure areas are on the first floor, with no pilotis (Table 7). In the children's leisure group, the playground and children's pool are the most common. There are no rooms in the youth leisure group. The adult leisure group includes the swimming pool and fitness area. And in shared leisure, the party room and the gourmet space, which functions as a bar with a barbecue (Figure 1).

Table 6. Distribution of leisure areas - group A

Group	Condominium /Building	Leisure group								Total
		Children		Youth		Adult		Shared		
		m ²	%	m ²	%	m ²	%	m ²	%	m ²
A1	Cond. P. P. das Águas	89.54	27.34	0	0	160.97	49.14	77.05	23.52	327.56
	Cond. P. P. das Marés	115.5	25.57	0	0	229.10	50.71	107.18	23.72	451.78
A2	Mundaú Cond. Club	86.60	20.08	0	0	237.52	55.07	107.18	24.85	431.30
	Setai	0	0	0	0	215.46	53.07	190.46	46.92	405.92
	Sangiovese	12.59	5.99	6.7	3.19	89.01	42.35	101.89	48.48	210.59
	Spazio Vitale	21.11	20.39	0	0	21.80	21.05	60.63	58.56	103.54
	Pinot Noir	51.41	22.45	9.61	4.20	115.63	50.50	52.33	22.85	228.98

Group	Condominium /Building	Leisure group								Total
		Children		Youth		Adult		Shared		
		m ²	%	m ²	%	m ²	%	m ²	%	m ²
A3	Amalfi	109.95	21.63	122.74	24.15	61.05	12.01	214.43	42.19	508.17
	Versatile	0	0	0	0	36.47	16.62	182.85	83.37	219.32
	Dilma Paiva	236.92	16.95	0	0	213.91	15.30	946.89	67.74	1.397.72
	South Seas	30.77	10.28	0	0	107.62	35.95	160.93	53.77	299.32

Table 7. Distribution of leisure groups by A1 group floors

	I	J	A	C	I	J	A	C		
COB										
MEZ										
Pil/Ter	2		2	3	3		2	2		
SUB										
OUT										
	Cond. P. P. das Águas			7		Cond. P. P. das Marés			7	

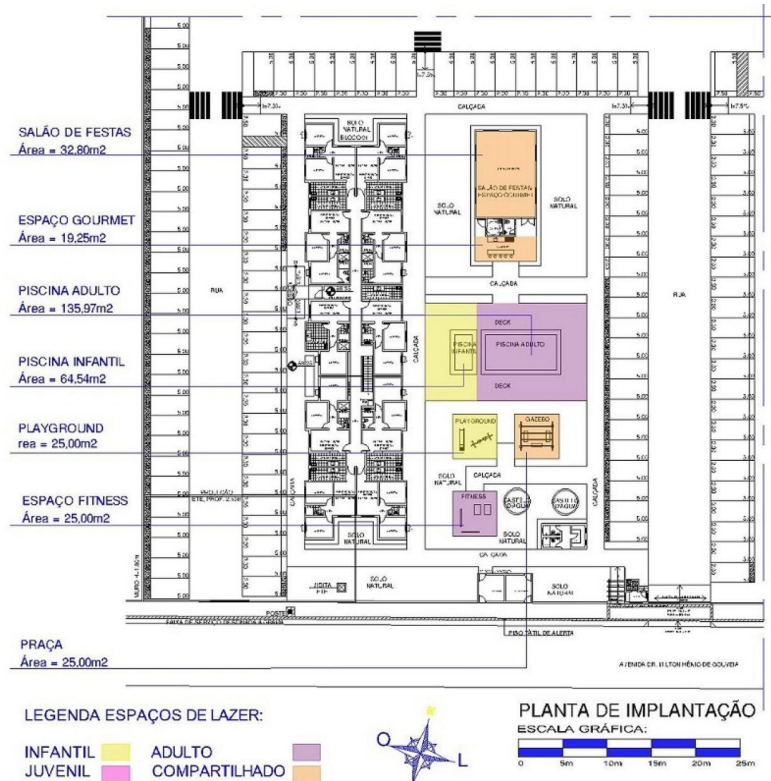


Figure 1. Leisure area of Cond. P. das Águas - group A1.

The two condominiums have the minimum leisure areas observed by Martyn (2008) and Bez (2017) in condominiums in Florianópolis. The adult leisure group has the largest built area in both condominiums, around 50% of the total leisure area (Table 6). All the leisure areas in the two condominiums are grouped together to form a single leisure area close to the carriageways and next to one of the apartment blocks. The areas are interconnected and there is no sectorization of the leisure areas by user group. The Parque Pontal das Marés Condominium has twice as much leisure space per resident (0.47 m²/resident) as the Parque Paraíso das Águas Condominium (0.23m²/resident).

Group A2 (HU up to 50 m² and from 51 m² to 70 m², with hybrid buildings, made up of 1 condominium and 4 detached buildings, with 1 and 2 bedrooms) has leisure areas made up of different leisure areas, but organized in a similar way.

The children's and young people's leisure areas only occur on the first floor. The most common children's area was the playground, located in an open and uncovered area in three buildings, and on the pilotis in one of them. The youth leisure group only occurred in two buildings, with the lan house leisure environment. The environments in the adult and shared leisure groups were located on the pilotis/ground floor and penthouse (Table 8), unlike those found in the condominiums in the four cities surveyed: Rio de Janeiro, São Paulo, Florianópolis and Porto Alegre.

Table 8. Distribution of leisure groups by A2 group floors

	I	J	A	C	I	J	A	C	I	J	A	C	I	J	A	C	I	J	A	C	
COB							3	2													
MEZ																					
Pil/Ter	2		2	2				1	2	1	6	2	1		1	2	2	1	5	2	
SUB																					
OUT																					
	Mundaú Cond. Club		6		Setai		6		Sangiovese		11		Vitale Space		4		Pinot Noir		10		

Note: COB: coverage; MEZ: mezanine; Pil/Ter: pilot room; SUB: subsolo; OUT: others

The adult swimming pool was found in all the buildings in the group and was inserted in a similar way, at the end of the leisure areas and on the ground floor. The party room was the most common shared leisure area, present in four of the developments. Ed. Setai does not have a party room, but the gourmet space is larger than three of the party rooms found in this group, fulfilling the function of the party room (Figure 2).

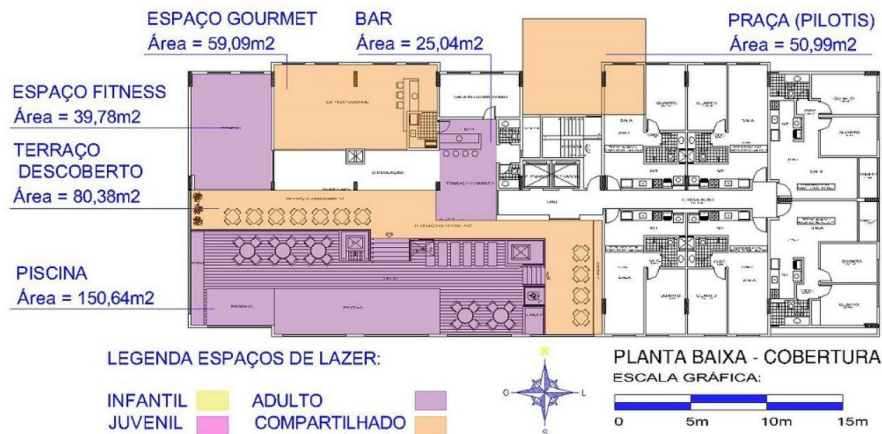


Figure 2. Setai Building leisure area - group A2.

The adult leisure group has the largest built area, followed by the shared leisure group (Table 6). The leisure areas are grouped together to one side of the guardhouse, on the pilotis. The swimming pool of the adult leisure group occupies the end of the leisure area, followed by the other areas, first those of the shared group and then those of the children's and youth groups. Ed. Setai has the highest leisure area per resident (1.84 m²/resident) and Mundaú Cond. Clube the lowest (0.44 m²/resident), similar to the condominiums in group A1.

Group A3 (from 51 to 70 m² units, made up of 4 detached buildings with hybrid 2 and 3-bedroom typologies) has different leisure areas, but several similarities. The children's and young people's leisure areas only occur on the first floor. The most common children's area is the playground. There is a youth leisure area in only one of the buildings. The environments in the adult and shared leisure groups occur on the pilotis/ground floor and roof (Table 8). The most common adult environment is the fitness area. The shared leisure group has the most environments, 8 different ones, and the environment with the highest occurrence is the square, present in 3 buildings in the group, as in the Amalfi building (Figure 3).

Table 8. Distribution of leisure groups by floor in group A3

	I	J	A	C	I	J	A	C	I	J	A	C	I	J	A	C
COB							1	2							2	2
MEZ																
Pil/Ter	2	2	1	3				1	2		3	6	2		1	1
SUB																
OUT																
	Amalfi			8	Versatile			4	Dilma Paiva			11	South Seas			8

Note: COB: coverage; MEZ: mezanine; Pil/Ter: pilot room; SUB: subsolo; OUT: others



Figure 3. Amalfi Building leisure areas - group A3.

The shared leisure group had the largest built area of group A3 (Table 6). The building with the highest leisure index was Dilma Paiva (1.74 m²/resident), due to the large built area that includes the outdoor multi-sports court - this had a decisive impact on the group average; and the smallest was Versatile (0.65 m²/resident).

In group A, most of the leisure areas were on the pilotis/ground floor. The leisure areas with an adult swimming pool have the other leisure areas organized around it, first those in the shared leisure group and then the others, including those in the adult leisure group. The largest built area in group A is in the adult leisure group, with shared leisure in second place. The youth leisure group is negligible or non-existent (Figure 4).

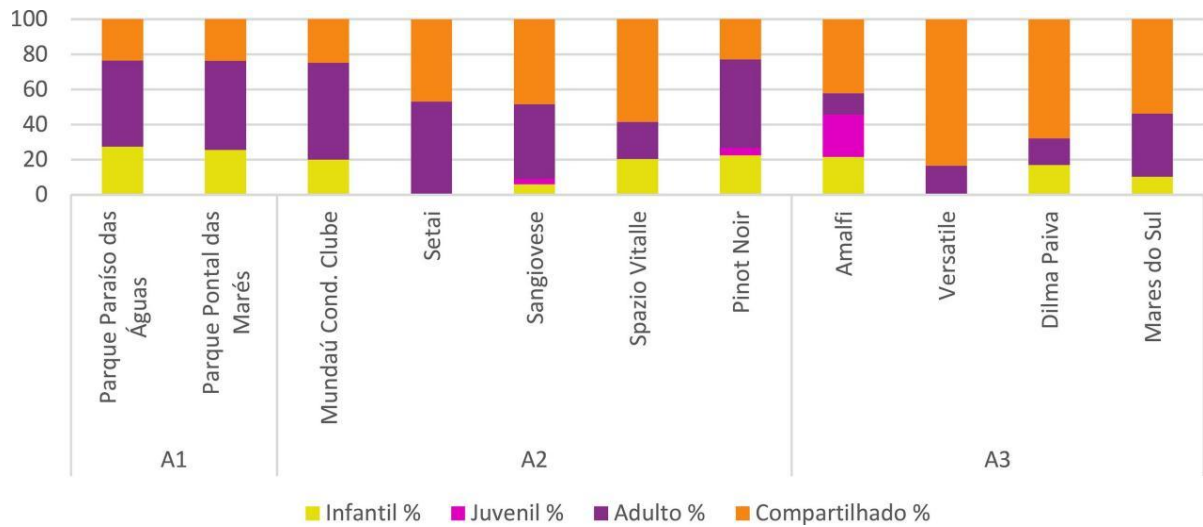


Figure 4. Distribution of leisure areas in group A.

The highest leisure index was in Ed. Setai (1.84 m²/resident), followed by Ed. Dilma Paiva (1.74 m²/resident), and the lowest in Cond. Parque Paraíso das Águas (0.23 m²/resident). It was found that the average of this index per group was very low in group A1, made up of smaller apartment complexes with 1 and 2 bedrooms; and similar in groups A2 and A3, made up of isolated apartment buildings with medium-sized areas, with the exception of the Setai and Dilma Paiva buildings (Table 9). The final average leisure index for group A was the lowest of the three groups (0.90 m²/resident).

Table 9. Leisure index of condominiums and buildings in group A

Group	Condominium/Building	Leisure area (m ²)	No. of residents (Probable)	Leisure index (m ² /resident)	Average leisure index (m ² /resident)
A1	Cond. P. P. das Águas	327.56	1.386	0.23	0.35
	Cond. P. P. das Marés	451.78	960	0.47	
A2	Mundaú Cond. Clube	431.30	960	0.44	1.04
	Setai	405.92	220	1.84	
	Sangiovese	210.59	252	0.83	
	Spazio Vitale	103.54	98	1.05	
	Pinot Noir	228.98	220	1.04	
A3	Amalfi	508.17	576	0.88	1.01

Group	Condominium/Building	Leisure area (m ²)	No. of residents (Probable)	Leisure index (m ² /resident)	Average leisure index (m ² /resident)
	Versatile	219.32	336	0.65	
	Dilma Paiva	1,397.72	800	1.74	
	Mares do Sul	299.32	388	0.77	
Group A final average					0.9

3.2 Characterization of leisure areas: group B

Group B, with 9 developments divided into 3 groups (B1, B2 and B3), can be divided into 2 subgroups with more similarities, according to the location of the leisure areas. The first sub-group includes developments with leisure areas on the ground floor/pilotis and roof, containing 4 buildings, and the second sub-group with leisure areas only on the ground floor/pilotis, containing 4 buildings and 1 condominium (Residencial Alto das Alamedas).

Group B1 (HU from 51 m² to 70 m² and 71 m² to 100 m², hybrid with 2 buildings, with hybrid 2- and 3-bedroom apartments) showed many differences in the leisure areas, mainly because one of the buildings has all the leisure areas on the ground floor/pilotis and the other between the ground floor/pilotis and the penthouse floor.

The rooms in the children's and young people's leisure groups were on the first floor. The adult leisure and shared leisure groups were on both floors (Table 11). Access to two of the adult leisure areas in the Luna Dorata building is hampered because it is through the ballroom (Figure 5).

Table 10. Distribution of leisure areas - group B

Group	Condominium/ Building	Leisure group								Total m ²
		Children		Youth		Adult		Shared		
		m ²	%	m ²	%	m ²	%	m ²	%	
B1	Dulce Tenório	18.87	9.50	16.10	8.10	78.97	39.78	84.59	42.60	198.53
	Luna Dorata	18.28	7.39	0	0	48.94	19.77	180.27	72.84	247.49
B2	Life	26.70	6.40	11.11	2.66	124.20	29.79	254.85	61.13	416.86
	Vitta	0	0	0	0	57.50	23.76	184.42	76.23	241.92
	Índico	51.40	39.49	0	0	25.11	19.29	53.65	41.22	130.16
	Personale	0	0	0	0	47.35	20.22	186.71	79.77	234.06
	Iluminatto	18.24	29.65	0	0	19.09	31.03	24.19	39.32	61.52
B3	Mirante C. Estratégia	248.36	13.19	26.76	1.42	645.26	34.27	962.02	51.10	1,882.40
	Res. Alto das Alamedas	350.51	14.39	86.87	3.57	921.94	37.85	1,076.43	44.19	2,435.75

Table 11. Distribution of leisure groups by B1 group floors

	I	J	A	C	I	J	A	C
COB							3	3
MEZ								
Pil/Ter	1	1	2	2	1			1
SUB								
OUT								
	Dulce Tenório			6	Luna Dorata			8

Note: COB: coverage; MEZ: mezanine; Pil/Ter: pilot room; SUB: subsolo; OUT: others

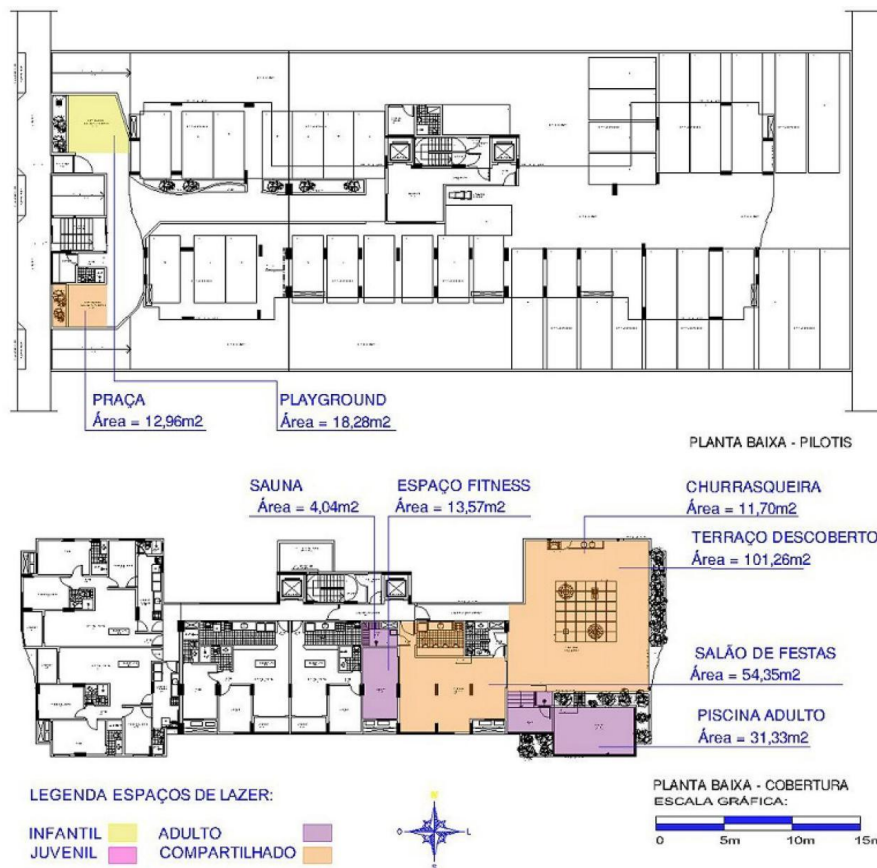


Figure 5. Luna Dorata Building leisure areas - group B1.

The largest area of leisure spaces is in the shared leisure group, followed by adult leisure (Table 10). The leisure indices for group B1 are similar: 0.60 m²/resident and 0.65 m²/resident.

Group B2 (HU from 71 m² to 100 m², with 5 buildings and 2-bedroom plus reversible and 3-bedroom apartments) can be subdivided into 2 groups, according to their many similarities. The first group with 3 buildings and leisure areas divided between the ground floor/loft and roof and the second with 2 buildings with leisure areas only on the ground floor/loft.

Children's leisure takes place in all the buildings with the playground environment. Youth recreation only takes place in one of them, with the study room. The children's and youth leisure groups only take place on the ground floor/loft. Adult leisure takes place in the second group, on the penthouse floor (Table 12).

Table 12. Distribution of leisure groups by B2 group floors

	I	J	A	C	I	J	A	C	I	J	A	C	I	J	A	C	I	J	A	C	
COB			6	2			1	3							1	3					
MEZ																					
Pil/Ter	2	1		2				1	1		1	1				1	1		1	1	
SUB																					
OUT																					
	Life		13		Vitta			5		Índico			3		Personale		5		Iluminatto		3

Note: COB: coverage; MEZ: mezanine; Pil/Ter: pilot room; SUB: subsolo; OUT: others

The swimming pool in the adult leisure group is found in all the buildings, and has larger areas when located on the roof. The shared leisure area that occurs most frequently in the buildings in the first group is the party room and in the second, the square, the outdoor terrace and the gourmet space (Figure 6).



Figure 6. Leisure areas of the Iluminatto Building: group B2.

The largest built area in all the buildings is in the shared leisure group, followed by the adult leisure group. Youth leisure appears in only one of them, and children's leisure is absent in two others (Table 10). The highest rate of leisure space per resident is in the Personale building (1.02 m²/resident), and the lowest in the Iluminatto building (0.42 m²/resident).

Group B3 (UH from 71 m² to 100 m² and 101 m² to 150 m², a hybrid with 1 building and 1 condominium, with 3-bedroom apartments) showed many similarities in their leisure areas, mainly because they both take place on the ground floor/pilotis, with a large number of leisure areas and an extensive area, more than 1.500 m², in which these areas are located.

The children's leisure areas were the same in both developments: children's pool, playground and toy room. The playground, in both cases, was the largest in the entire sample. Youth leisure had more than one environment. Adult leisure had 9 types of environment, with swimming pools over 250 m², and new environments such as: senadinho pool, jogging track, zen spa and redário, as observed by Nigri (2006) and Sampaio (2010), in Rio de Janeiro and São Paulo, respectively. There were 7 types of shared leisure environment, some of which were repeated in the same development, such as the square, which occurred 4 times in Mirante Clube Estratégia and 10 times in Res. Alto das Alamedas (Table 13). In the latter, there was a concern to provide a view of the outside environment for users of almost all the leisure areas (Figure 7).

Table 13. Distribution of leisure groups by floors in group B3

	I	J	A	C	I	J	A	C
COB								
MEZ								
Pil/Ter	3	2	6	9	3	2	7	16
SUB								
OUT							1	
	Mirante C. Strategy			20	Res. Alto das Alamedas			29

Note: COB: coverage; MEZ: mezanine; Pil/Ter: pilot room; SUB: subsolo; OUT: others

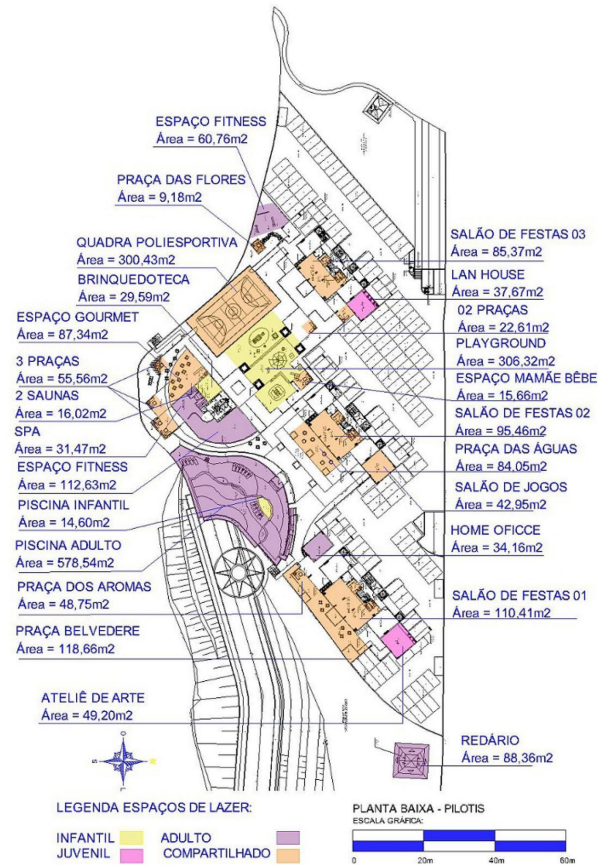


Figure 7. Leisure areas of Res. Alto das Alamedas: group B3.

The four leisure groups were found in the two developments and their built areas were similar, which shows that there is no difference between condominiums and detached buildings in terms of leisure items. The leisure areas occupy half of the first floor area. The largest built area in group B was in the shared leisure group, with the adult leisure group in second place. The youth leisure group was negligible or non-existent (Table 10 and Figure 8).

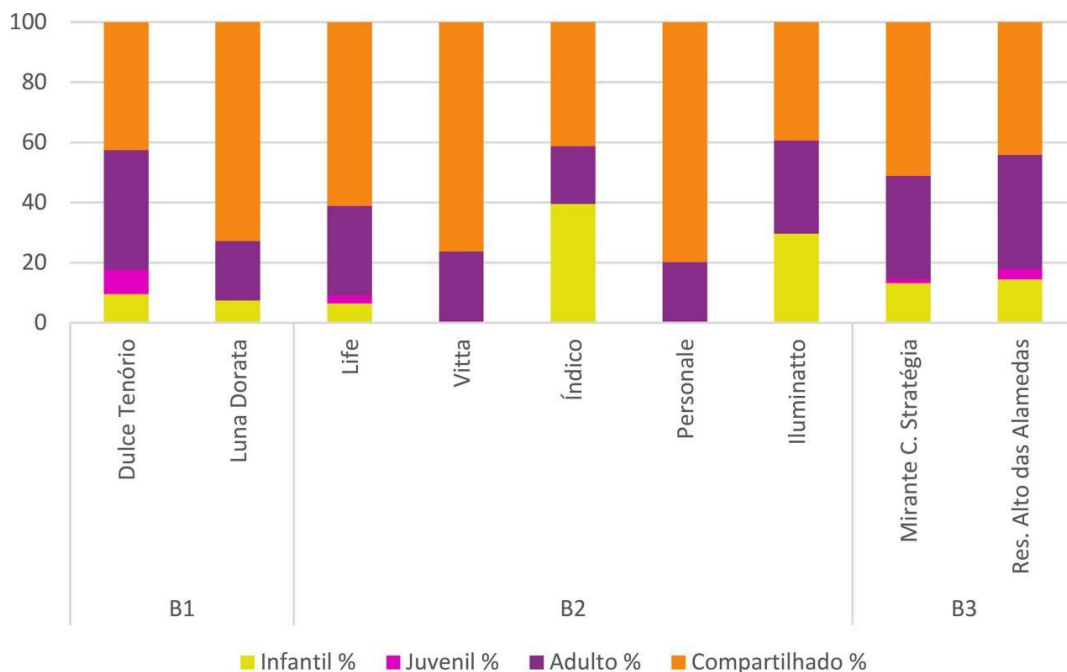


Figure 8. Distribution of leisure areas in group B.

The leisure area indices in group B were very variable, the highest being in Edif. Mirante Clube Estratégia (1.96 m²/resident), followed by Condomínio Residencial Alto das Alamedas (1.69 m²/resident) and the lowest in Edif. Illuminatto (0.42 m²/resident), followed by Edif. Índico (0.54 m²/resident).

The average leisure index of groups B1 and B2 was low, and that of group B3 was quite high, both in the isolated building and in the three-tower condominium, possibly due to the high construction standard of both (Table 14). The final average for group B was 1.06 m²/resident.

Table 14. Leisure index of buildings and condominiums in group B

Group	Condominium/Building	Leisure area (m ²)	No. of residents (Probable)	Leisure index (m ² /resident)	Average leisure index (m ² /resident)
B1	Dulce Tenório	198.53	330	0.60	0.625
	Luna Dorata	247.49	378	0.65	
B2	Life	416.86	456	0.91	0.76
	Vitta	241.92	260	0.93	
	Índico	130.16	240	0.54	
	Personale	234.06	228	1.02	
	Illuminatto	61.52	145	0.42	
B3	Mirante Clube Estratégia	1,882.40	960	1.96	1.82
	Res. Alto das Alamedas	2,435.75	1.440	1.69	
Group B final measure					1.06

3.3 Characterization of leisure areas: group C

Group C, with 11 developments divided into 2 groups (C1 and C2), showed many similarities, both in terms of the configuration of the leisure areas and the four leisure groups.

The children's leisure areas were on the ground floor/pilotis in all the components of this grouping, with the most frequent being the playroom. Youth leisure areas took place on the first floor or mezzanine in 8 components of the group, most frequently in the study room. Among all the components of the group, adult and shared leisure areas were found on different floors, with the highest frequency in the fitness area, adult leisure area, and shared leisure area in the square and food area.

There were 5 different types of leisure area location: on the ground floor/pilotis with the adult pool environment, in 3 components of the sample; on the ground floor/pilotis without pool, in another 3 components; on the ground floor/pilotis and mezzanine, in 3 other components; on the ground floor/pilotis and roof, in 1 component; and on the ground floor/pilotis, basement 1, basement 2 and others, in 1 other component. According to the location of the leisure areas, they had between 1 and 3 blocks with leisure areas.

Group C1 (UH from 101 m² to 150 m², with 8 buildings and 1 condominium, with 3-bedroom, 3-bedroom plus reversible, 3 and 4-bedroom and 4-bedroom apartments) can be divided into 5 types, according to the location of the leisure areas, and within each of these types, we saw some similarities between the components. The Gran Marine Condominium had the largest number of rooms in the sample (Figure 9) and the Syrah Building had the largest number of rooms of the isolated buildings.

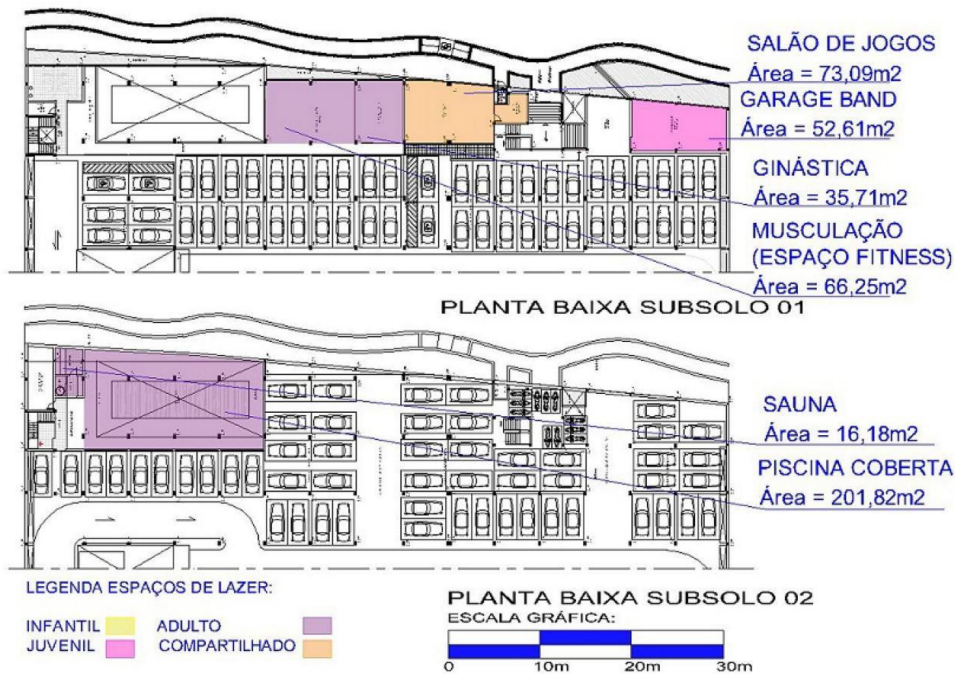


Figure 9. Leisure areas at Cond. Gran Marine: group C1.

The environments in the children's leisure group were found in all the components of the group, on the ground floor/pilotis, most frequently in the playground and the toy library. The youth leisure group took place in 6 components of the group, most frequently in the study room. The adult and shared leisure areas were found in all the components, with a higher frequency for the fitness area, in the adult group, and the party room, in the shared group (Table 16). It should be noted, however, that the buildings without party rooms had gourmet spaces.

Table 15. Distribution of leisure areas: group C

Group	Condominium/Building	Leisure group								Total
		Children		Youth		Adult		Shared		
		m ²	%	m ²	%	m ²	%	m ²	%	m ²
C1	One	42.26	14.15	25.92	8.68	49.40	16.54	180.98	60.61	298.56
	Gran Marine	201.19	9.08	113.95	5.14	974.58	43.99	925.76	41.79	2.215.48
	Hit	36.52	13.56	13.26	4.91	87.12	32.29	132.88	49.25	269.78
	Atmosfhera	89.23	31.15	52.48	18.32	28.74	10.03	115.96	40.48	286.41
	Cádiz	33.36	12.12	0	0	65.46	23.79	176.36	64.09	275.18
	Prime	27.20	14.30	0	0	21.35	11.23	141.56	74.46	190.11
	Syrah	143.53	26.08	7.38	1.34	196.78	35.75	202.71	36.83	550.40
	Chardonnay	11.48	10.45	3.38	3.08	56.59	51.53	38.36	34.93	109.81
	Classic	42.63	21.57	0	0	80.65	40.81	74.33	37.61	197.61
C2	Double	17.20	9.10	11.80	6.24	36.29	19.21	123.60	65.43	188.89
	Vitreo	47.46	11.51	6.89	1.67	54.64	13.25	303.29	73.56	412.28

Table 16. Distribution of leisure groups by C1 group floors

	I	J	A	C	I	J	A	C	I	J	A	C	I	J	A	C	I	J	A	C
COB											2	4								
MEZ		1	2	2																1
Pil/Ter	2			1	3	3	5	7	2	1	1		2	1	1	2	1		1	
SUB						1	4	1												
OUT							1	1												
	One			8	Gran Marine			26	Hit			10	Atmosfhera			6	Cádiz			3
	I	J	A	C	I	J	A	C	I	J	A	C	I	J	A	C				
COB																				
MEZ																				
Pil/Ter	2		1	4	4	1	8	6	1	1	5	1	2		5	4				
SUB																				
OUT																				
	Prime			7	Syrah			19	Chardonnay			8	Classic			11				

Note: COB: coverage; MEZ: mezanine; Pil/Ter: pilot room; SUB: subsolo; OUT: others

The largest area of leisure spaces was in the shared leisure group, followed by adult leisure. Three buildings had no areas in the youth leisure group (Table 15).

There were 5 different types of leisure area location: on the ground floor/pilotis with an adult pool; on the ground floor/pilotis without a pool; on the ground floor/pilotis and mezzanine; on the ground floor/pilotis and penthouse; and on the ground floor/pilotis, basement 1, basement 2 and other floors. Leisure areas on the mezzanine floor were a novelty in this group, not observed in the four cities surveyed by other authors.

The highest rate of leisure space per resident was in the Cádiz building (1.58 m²/resident) and the lowest in the Prime building (0.54 m²/resident).

Group C2 (HU from 151 m² to 250 m², with 2 buildings of 3 and 4 apartments and 4 apartments), had children's leisure areas on the ground floor/loft (Figure 10), with the most frequent being the playroom. The youth, adult and shared leisure areas were found in both buildings, with the study room, fitness space, home office, plaza and gourmet space on the ground floor/loft of the Vitreo building and on the mezzanine of the Double building, with the exception of the plaza, which was on the first floor (Table 17).

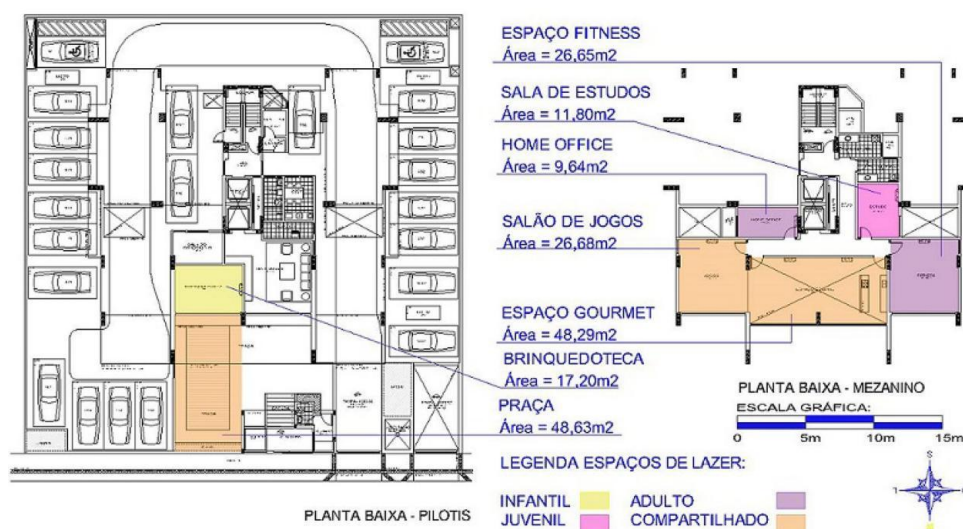


Figure 10. Double Building leisure areas: group C2.

Table 17. Distribution of leisure groups by floor in group C2

	I	J	A	C	I	J	A	C
COB								
MEZ		1	2	2				
Pil/Ter	1			1	2	1	2	3
SUB								
OUT								
	Double			7	Vitreo			8

Note: COB: coverage; MEZ: mezzanine; Pil/Ter: pilot room; SUB: subsolo; OUT: others

The largest leisure areas were in the shared leisure group, followed by adult leisure (Table 15). The Double building had a leisure area divided between the ground floor/loft and the mezzanine, while the Vitreo building occupied only the ground floor/loft. The first divided the leisure area into two blocks, with the children's play area only on the first floor. The second in three blocks, one on each side of the guardhouse and the third between the elevator halls.

The largest built area in group C was in the shared leisure group, with adult leisure in second place. The youth leisure group was negligible or non-existent (Figure 11).

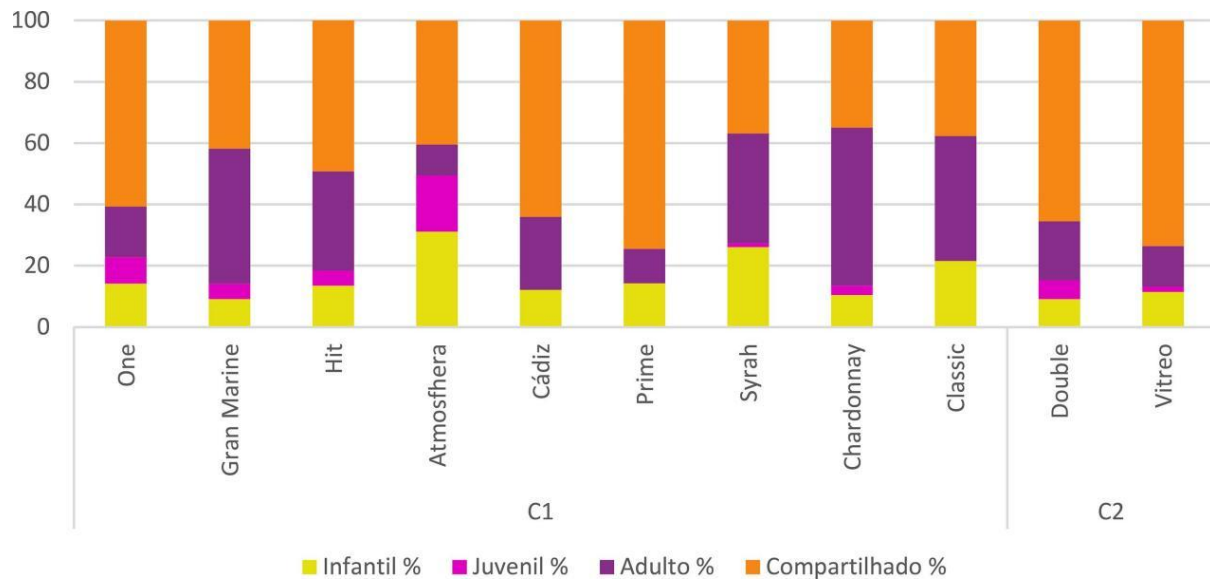


Figure 11. Distribution of leisure areas in group C.

The leisure index values were very variable in group C1, which had the highest value (Ed. Cádiz - 1.58 m²/resident) and the lowest value (Ed. Prime - 0.54 m²/resident), and similar in group C2. The average leisure index for group C was 1.11 m²/resident, very close to group B (Table 18).

Table 18. Leisure index of buildings and condominiums in group C

Group	Condominium/ Building	Leisure area (m ²)	No. of residents (probable)	Leisure index (m ² /resident)	Average leisure index (m ² /resident)
C1	One	298.56	286	1.04	0.87
	Gran Marine	2215.48	1520	1.45	
	Hit	269.78	266	1.01	
	Atmosfhera	286.41	324	0.88	
	Cádiz	275.18	174	1.58	
	Prime	190.11	348	0.54	
	Syrah	550.40	528	1.04	
	Chardonnay	109.81	156	0.70	
	Classic	197.61	304	0.65	
C2	Double	188.89	136	1.38	1.36
	Vitreo	412.28	304	1.35	
Group C final measure					1.11

3.4 Summary of results

Group A (UH up to 70 m²) was more likely to have a playground, for children's leisure; an adult swimming pool and a fitness area, for adults; and a gourmet area and a closed party room, for shared leisure. Most of the leisure areas are located on the ground floor/pilotis and the largest built area is for adult leisure. The average leisure index for group A was 0.54 m²/resident - the lowest of the three groups.

Group B (HU from 51 m² to 150 m²) also had the most playground areas in the children's leisure group; only the swimming pool in the adult leisure group; and a closed party room and square in the shared leisure group. Most of the leisure areas were located on the ground floor/pilotis and the largest built area was in the shared leisure group. The average leisure area per resident in group B was 1.06 m²/resident.

Youth leisure areas were found in less than half of the developments in groups A and B. Only the detached buildings had leisure areas on the mezzanine floor, both in group B3 and group C1.

Group C (UH over 101 m²) most often featured a playroom in the children's leisure group; a study room in the youth leisure group; a fitness area in the adult leisure group; and a gourmet area and square in the shared leisure group. Most of the leisure areas were located on the ground floor/pilotis and the largest built area was for shared leisure. The average leisure area per resident in group C was 1.11 m²/resident - very close to group B (Figure 12).

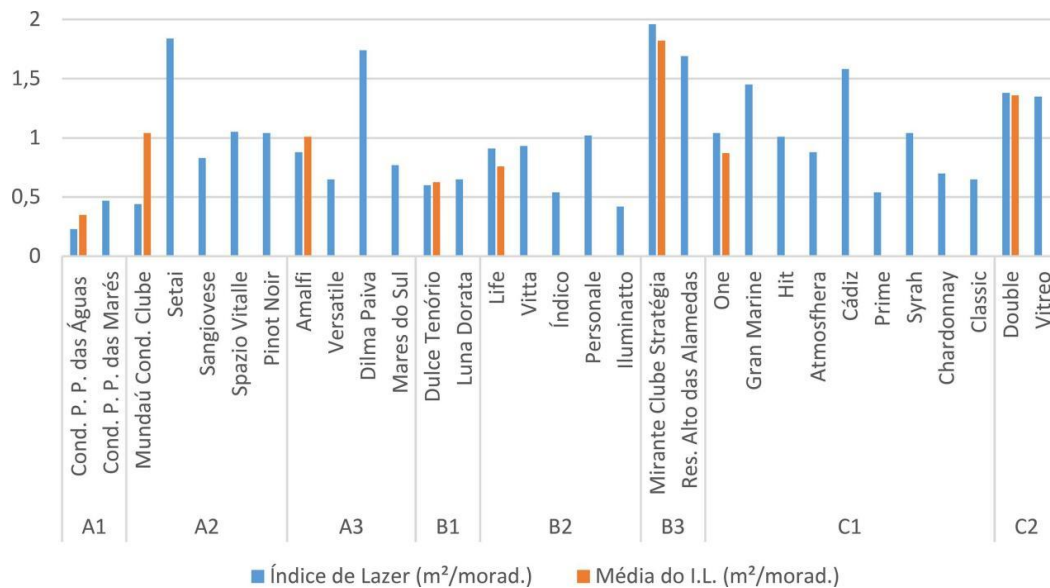


Figure 12. Leisure indices by group

4. Final Considerations

To characterize the configuration of leisure areas and environments in vertical buildings and condominiums, with a view to proposing a leisure index, we used 31 developments launched between 2010 and 2015 in the city of Maceió, AL, which were separated into three groups: A, B and C, according to the size of the apartments, and the sales velocity index (SVI) for the year 2016.

The fact that all 31 components of the sample have leisure areas points to a contemporary trend for this typology, meeting the calls of consumer society, since leisure is necessary for human life, and a focus of interest for new consumers. However, the time frame considered restricted the sample to a capital city in full urban growth and to the study of the contemporary production of this segment; broader research, focused on more homogeneous groups, could better survey the trajectory of leisure areas in this typology in the city.

The analysis could have considered condominiums and detached buildings separately, although in both the number of leisure areas was significant, especially in detached buildings with more apartments and for higher income groups. The detached buildings also had leisure areas on other floors, such as the mezzanine and rooftop, which were not found in similar studies carried out in the South and Southeast; while the condominiums had leisure areas mainly on the first floor or pilotis and, rarely, in the basement. The fact that only in Maceió were leisure areas found on the mezzanine and penthouse floors points to the need for further research in other northeastern capitals, in order to see if this is an expression of regional architecture.

The use of the SVI to divide the sample into groups seemed more appropriate than the usual division by apartment typologies; however, the grouping of condominiums and isolated buildings could be better evaluated in future studies, since it had an impact on the leisure indices obtained, especially in the lower-income ones.

It can be concluded that the leisure index proposed is an adequate tool for expressing the relationship between leisure areas and the number of likely residents in the developments; however, it could be further developed to express other variables, such as the total area of the plots, the proportion between leisure groups, the number of leisure areas per group, etc.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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