

Space distribution of the population in the Metropolitan Region of the Southwest Maranhense (RMSM): analysis based on migrations

Distribuição espacial da população na Região Metropolitana do Sudoeste Maranhense (RMSM): análise a partir das migrações

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Abstract

This work aims to analyze inter-regional (long-distance), intra-regional (medium-distance) and intra-state (short-distance) migrations to and from the Southwest Maranhense Metropolitan Region (RMSM), the first metropolis created in the interior of the Northeast Region, in 2005. The main source of information is the 2010 Demographic Census Microdata. The results show the predominance of intrastate flow, while medium distance flows are the least practiced, and interregional migration shows a negative balance. At the municipal level, it points out something unusual when compared to other RMs, the metropolitan core (Imperatriz) has a negative migratory balance in the three flows under study, justified by the dismemberment in its territory. Another result is the development of Açailândia, with a positive migratory balance in short and medium distance flows, quickly gaining the status of a medium city, due to its population contingent and migratory attractiveness.

Keywords: Migrations; North East ; Maranhão; RMSM.

Resumo

Esse trabalho tem como objetivo analisar as migrações inter-regionais (longa distância), intrarregionais (média distância) e intraestaduais (curta distância) da e para a Região Metropolitana do Sudoeste Maranhense (RMSM), primeira metrópole criada no interior do Nordeste, em 2005. A principal fonte de informações são os microdados do Censo Demográfico 2010. Os resultados evidenciam a predominância do fluxo intraestadual, enquanto os de média distância são os menos praticados, e a migração inter-regional mostra saldo negativo. Em nível municipal, aponta algo incomum quando comparado a outras RMs, o núcleo metropolitano (Imperatriz) apresenta saldo migratório negativo nos três fluxos em estudo, justificado pelos desmembramentos em seu território. Outro resultado é o desenvolvimento de Açailândia, tendo saldo migratório positivo nos fluxos de curta e média distância, ganhando rapidamente o status de cidade média, devido ao seu contingente populacional e atratividade migratória.

Palavras-chave: Migrações; Nordeste; Maranhão; RMSM.

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1 Introduction

Historically, the migrants carry out many displacements, encouraged by personal projects, by the propensity and/or need to move to survive or improve their lives, due to wars, political conflicts and religious conflicts, climate change, among others. In the case of Brazil, they are men, women, children, adults and elderly people who, notably, between 1940 and 1980, displace from the Northeast and from Minas Gerais to other places, like the Amazon and the metropolitan areas of the Southeast and South (Brito, 1999). On the other hand, Maranhão, a state located in the Região Nordeste (northeast region), presents another dynamic, with the arrival of people from Nordeste the 19th century onwards, mainly in times of drought, with its attractiveness being more intense between the 1930s and 1960s (Ferreira, 2019).

In the 1960s, Maranhão received 179.210 emigrants from Ceará who were suffering from the drought in their state, in addition to the latifundium concentration. Given this, Maranhão surpasses the attractiveness, and passes the states of São Paulo and Piauí, becoming the main destination for Ceará residents, displacing the attractiveness of the state of São Paulo (Queiroz & Baeninger, 2017). For Queiroz (2013) the state of Maranhão's overcome compared to those in the Southeast has as starting point the drought that occurred in the middle of the 19th century in Ceará, worsening at the beginning of the 20th century. Between the years 1940-60, Ceará was severely punished by droughts, encouraging, thus, its population to migrate in search of better land, and Maranhão offered this, cause it suffered less with the droughts and concentration of land, attracting migrants from Ceará and from other states in the Nordeste (northeast) and Norte (north) regions.

In relation to emigration, people from Maranhão, since the 1970s, go towards the Center-South of the country, especially to the capital São Paulo, as well as several other cities in the interior of São Paulo and, therefore, have their share of contribution to development. and construction of the territories in the region. They majorly were groups of individuals looking mainly for work, and had as an incentive or reassuring factor to carry out their migrations many informations, such as the duration of the trip, and the chances of obtaining employment and residence immediately. This information was of great importance in structuring a migration network of the first citizens of Maranhão (Ribeiro da Silva, 2017).

On the other hand, from the 1980s onwards, the capital São Luís gain a population increase due to the attraction of immigrants coming mainly from the interior of the state, who were seduced by political projects related to the Grande Carajás Program, responsible for introducing the main city of the state on the route of productive capital. In this context, the attraction of labor becomes more intense, thus, the migrants are located in spaces with less urban infrastructure, resulting in an increase in the urbanization of the periphery. It is in this context that the Metropolitan Region of Large São Luís (RMGSL) develops, from the population displacement of the interior to the capital and in parallel with the economic growth of the capital of Maranhão (Pereira Junior & Trindade Júnior, 2021).

Coelho Silva (2015) indicates that in the 1990s, groups of migrants from Maranhão were attracted to the state of Minas Gerais, citing the São Gotardo city as one of the destinations. As justification, the author points out that, mainly, the lack of employment and income, are determining and motivational factors for individuals to leave their region of origin in search of better opportunities, something that the new destination could provide them. The author also points out that of the residents of São Gotardo, Maranhão is responsible for 48,14%, that is, almost half of the population.

In turn, Cabral (2020) points out that during the 2000s and 2010s, a portion of Maranhão emigrants are attracted to the Caldas Novas city, in Goiás. The author indicates that the city of Goiás routinely receives immigrants from Maranhão who are looking for a job or improving



their salaries, especially in the tourism sector, or are just looking to improve their quality of life. Another determining factor is the existence of family networks, which facilitates information about the destination, due to past immigration.

In Maranhão, according to the National Forum of Metropolitan Entities (FNEM), there are two established Metropolitan Regions, they are: Metropolitan Region of Great São Luís (RMGSL), established by Complementary Law N° 38, in 1998, and the Metropolitan Region of Southwest of Maranhão (RMSM), being the first metropolitan region established in the interior of the Northeast, in 2005, based on Complementary Law N° 89.

In view of this brief review of the literature, it is observed that there are studies that address migration in the state of Maranhão, as well as to and from the Great São Luís Metropolitan Region (RMGSL). However, little or nothing is known about migration to and from the Metropolitan Region of Southwest of Maranhão (RMSM). Therefore, this study aims to analyze migration from three flows: inter-regional (long distance), intra-regional (medium distance) and intrastate (short distance), to show its importance in relation to the attraction or loss of migrants and indicate the most prominent city in the RMSM. To achieve the proposed objectives, microdata from the 2010 Demographic Census sample, made available by the Brazilian Institute of Geography and Statistics (IBGE), will be used as the main source of data, in addition to indicators such as immigration, emigration, net migration rate, net migration rate, gross migration, migration efficiency index.

Therefore, this study is made up of five sections, including this introduction. The second section describes the methodological procedures. The third addresses the geographic, demographic and socioeconomic characteristics of the cities that are part of the RMSM. The fourth shows the results, based on the analysis of long, medium and short distance migrations. Finally, the fifth presents the final considerations of the study.

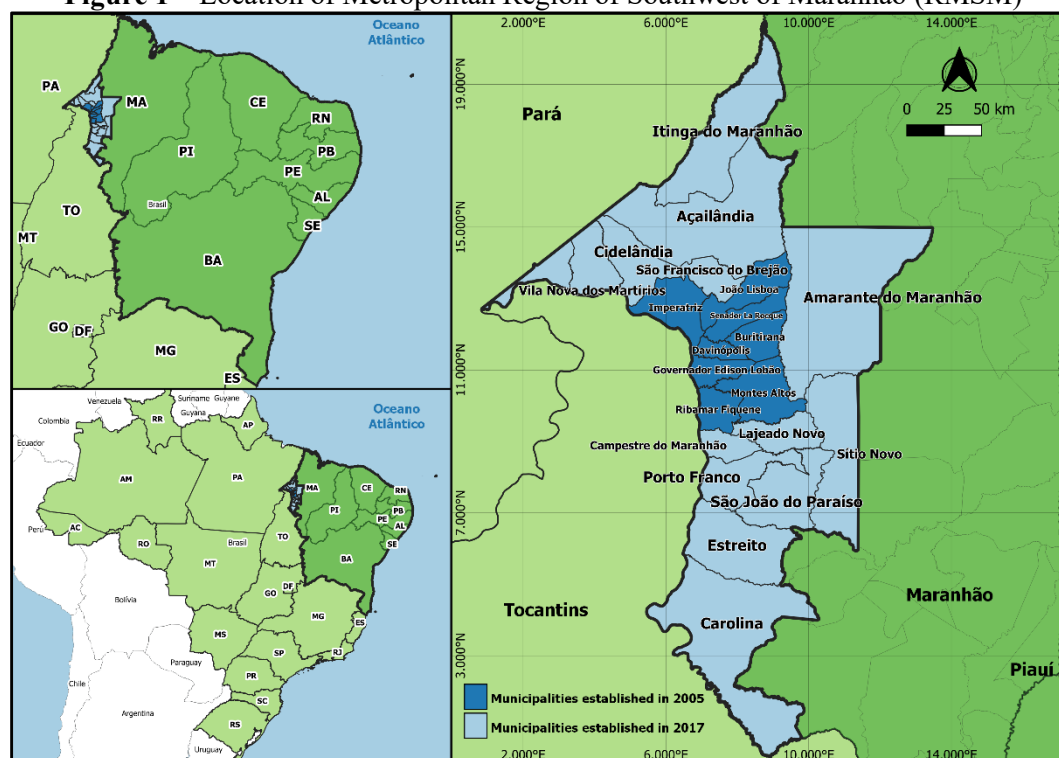
2 Methodology

2.1 Geographical coverage

The geographic space for analysis of this study is the Metropolitan Region of Southwest of Maranhão (RMSM), the first metropolitan region in the interior of the Northeast, established in 2005, initially formed by eight cities (Buritirana, Davinópolis, Governador Edson Lobão, Imperatriz, João Lisboa, Montes Altos, Ribamar Ficanne and Senador La Rocque), but in 2017 it had a further 14 (Açailândia, Amarante do Maranhão, Campestre do Maranhão, Carolina, Cidelândia, Estreito, Itinga do Maranhão, Lajeado Novo, Porto Franco, São Francisco do Brejão, São João do Paraíso, São Pedro da Água Branca, Sítio Novo and Vila Nova dos Martírios), totaling 22 cities (Map 1).



Figure 1 – Location of Metropolitan Region of Southwest of Maranhão (RMSM)



Source: Own elaboration based on IBGE digital meshes.

2.2 Time frame, data source and information processing

To achieve the proposed objectives, national accounts and notably microdata from the 2010 Demographic Census, carried out by the Brazilian Institute of Geography and Statistics (IBGE), are the main source of information. Regarding the manipulation of information and selection of the variables studied, we used the surplus of the statistical software SPSS (Statistical Package for the Social Science).

2.3 Definitions adopted in the study

As for the migratory flow, it was determined from three spatial sections:

- **Inter-regional (long distance):** involves immigration and emigration between the cities of the Metropolitan Region of Southwest of Maranhão (RMSM) and the cities of the four major regions of Brazil (North, Southeast, South and Central-West);
- **Intraregional (medium distance):** involves immigration and emigration between the cities of the Metropolitan Region of Southwest of Maranhão (RMSM) and the cities of the Northeast region (with the exception of the cities of Maranhão);
- **Intrastate (short distance):** involves immigration and emigration between the cities of the Metropolitan Region of Southwest of Maranhão (RMSM) and the other cities of the state of Maranhão.

For migration analysis, are defined:

- **Inter-regional migrant:** five years of age or older and, on the research reference date, lived in a city in the RMSM, but exactly five years before the survey lived in another city in another large region of Brazil (excluding the Northeast);

- **Intra-regional migrant:** five years of age or older and, on the research reference date, lived in a city in the RMSM, but exactly five years before the survey lived in another city in the Northeast region (excluding Maranhão);
- **Intrastate migrant:** five years of age or older and, on the research reference date, lived in a city in the RMSM, but exactly five years before the survey lived in another city in the state of Maranhão;
- **Migration balance:** represents the difference between the total number of immigrants and emigrants (Immigrant – Emigrant).

To calculate the migratory volume in inter-regional, intra-regional and intra-state flows and commuting volume between the 22 cities that are part of the RMSM, matrices were prepared, presented as follows:

$$A = \begin{bmatrix} a_{11} & \cdots & a_{1j} \\ \vdots & \ddots & \vdots \\ a_{j1} & \cdots & a_{jj} \end{bmatrix} \quad (1)$$

$A = a_{ij}$ = migrant exit from área i to área j

$\sum_{j=1}^{22} a_{1j}$: Total of people that migrate from the areas i to the areas j.

$\sum_{i=1}^{22} a_{i1}$: Total of people that migrate from the areas j to the areas i.

$$a_{11} = a_{22} = a_{33} = \dots = a_{jj} = 0$$

From the results of the matrix onwards, it is possible to calculate the volume of Immigrants (I), Emigrants (E), Migration Balance (MB), Gross Migration (GM) and Net Migration Rate (NMR) for long-term flows (inter-regional), medium (intraregional) and short distance (intrastate).

Gross Migration (GM) represents all inbound (immigration) and outbound (emigration) movements of individuals from a certain area. It is determined by the sum of the total number of immigrants and emigrants (I + E).

$$GM = I + E \quad (2)$$

The Net Migration Rate (NMR) indicates the weight of migration (immigration and emigration) on the population of an area. The TML is the result of the ratio between the Migration Balance (MB) and the population observed at the end of the period (Pn).

$$NMR = \frac{MB}{P_n} * 100 \quad (3)$$

3 Geographic, demographic and socioeconomic characterization of the cities of the RMSM

The Metropolitan Region of Southwest of Maranhão (RMSM) is located in the Brazilian Northeast, in the state of Maranhão, established based on Complementary Law N° 89 of November 17th, 2005. Initially it was composed of eight cities, but when reformulated by

Complementary Law N° 204 of December 11th, 2017, now has fourteen more, totaling twenty-two, as shown in Table 1.

Table 1 – Year of incorporation and legislation of the cities that make up the Metropolitan Region of Southwest of Maranhão (RMSM)

County	Year of incorporation	Legislation
Buritirana	November / 2005	CL 89/2005
Davinópolis	November / 2005	CL 89/2005
Governador Edson Lobão	November / 2005	CL 89/2005
Imperatriz	November / 2005	CL 89/2005
João Lisboa	November / 2005	CL 89/2005
Montes Altos	November / 2005	CL 89/2005
Ribamar Fiquene	November / 2005	CL 89/2005
Senador La Rocque	November / 2005	CL 89/2005
Açailândia	December / 2017	CL 204/2017
Amarante do Maranhão	December / 2017	CL 204/2017
Campestre do Maranhão	December / 2017	CL 204/2017
Carolina	December / 2017	CL 204/2017
Cidelândia	December / 2017	CL 204/2017
Estreito	December / 2017	CL 204/2017
Itinga do Maranhão	December / 2017	CL 204/2017
Lajeado Novo	December / 2017	CL 204/2017
Porto Franco	December / 2017	CL 204/2017
São Francisco do Brejão	December / 2017	CL 204/2017
São João do Paraíso	December / 2017	CL 204/2017
São Pedro da Água Branca	December / 2017	CL 204/2017
Sítio Novo	December / 2017	CL 204/2017
Vila Nova dos Martírios	December / 2017	CL 204/2017

Source: Legislative Assembly of the state of Maranhão. Own elaboration.

Regarding to territorial area, Table 2 shows that the twenty-two cities form a territorial extension of 45,606.775 km², where Amarante do Maranhão (16.31%), Carolina (14.12%) and Açailândia (12.73%) have the largest geographic space in the RMSM. On the contrary, Governador Edison Lobão (1.35%), Campestre do Maranhão (1.35%) and Davinópolis (0.74%) are the cities with the smallest territory, while Imperatriz holds 3%.

Regarding to population, in 2010, the volume was 689,375 thousand habitants in the 22 cities of the RMSM, where 74.14% were located in urban areas and 25.86% in rural areas. It is observed that at the municipal level, several cities are more rural, mainly Buritirana (71.96%) and Sítio Novo (69.77%), in addition to seven other cities that have more habitants living in rural areas. In this sense, they do not corroborate França and Furtado (2013), who point out some criteria to define a metropolitan region, among them, that it is an urbanized and relevant space. In turn, Fulgêncio (2014) indicates that there is a lack of clarity in the criteria for creating a metropolitan region. Furthermore, some RMs may have been created without adopting criteria, based solely on political interests.

Table 2 – Territorial area, total urban and rural population, and demographic density of the RMSM cities - 2010

County	Territorial area 2010	Total population 2010	% Urban population 2010	% Rural population 2010	Dem. density 2010 inhabitants/km ²
Açailândia	5,806.44	104,047	75.19	24.81	17.92
Amarante do Maranhão	7,438.153	37,932	40.36	59.64	5.10
Buritirana	818.424	14,784	28.04	71.96	18.06



County	Territorial area 2010	Total population 2010	% Urban population 2010	% Rural population 2010	Dem. density 2010 inhabitants/km ²
Campestre do MA	615.384	13,369	79.44	20.56	21.72
Carolina	6,441.603	23,959	67.77	32.23	3.72
Cidelândia	1,464.033	13,681	44.12	55.88	9.34
Davinópolis	335,776	12,579	83.37	16.63	37.46
Estreito	2,718.978	35,835	71.94	28.06	13.18
Gov. Edison Lobão	615,852	15,895	43.77	56.23	21.81
Imperatriz	1,368.987	247,505	94.76	5.24	180.79
Itinga do Maranhão	3,581.723	24,863	70.95	29.05	6.94
João Lisboa	636,891	20,381	75.25	24.75	32.00
Lajeado Novo	1,047.733	6,923	46.14	53.86	6.61
Montes Altos	1,488.336	9,413	54.46	45.54	6.32
Porto Franco	1,417.493	21,530	78.34	21.66	15.19
Ribamar Fiquene	750,553	7,318	50.25	49.75	9.75
São F. do Brejão	745,606	10,261	47.13	52.87	13.76
São João do Paraíso	2,053.843	10,814	48.79	51.21	5.27
São P. da Água Branca	720,452	12,028	89.06	10.94	16.70
Senador La Rocque	1,236.868	17,998	48.56	51.44	14.55
Sítio Novo	3,114.871	17,002	30.23	69.77	5.46
Vila N. dos Martírios	1,188.776	11,258	54.97	45.03	9.47
Total RMSM	45,606.775	689,375	74.14	25.86	471.120

Source: IBGE. Own elaboration.

The main city of the RMSM is Imperatriz, as it accounts for 35.9% of the metropolis' residents, in addition to other economic characteristics, Martins and Santos (2012) justify that its population is related to public and private investments, made mainly in the 1990s, resulting in economic growth and attraction of individuals from different regions of Brazil. Another city to stand out is Açailândia, which holds 15.09% of the population. Regarding demographic density, with 180.79 inhabitants/km², Imperatriz leads, while Carolina has only 3.72 inhabitants/km².

With regard to demographic indices, Table 3 shows the Human Development Index (HDI), also manifested in three dimensions: income, longevity and education, in addition to per capita income,

Regarding to the income dimension, the RMSM is in the low range (0.585). In the other hand, regarding cities, Imperatriz is in the average range (0.697), followed by Estreito (0.666) and Porto Franco (0.664). Contrary to this, Buritirana (0.540), Montes Altos (0.534) and Sítio Novo (0.509) have low indices. Babilônia and Wander (2018) highlight that there is an economic concentration in the state, and based on IBGE data, it finds out that in 2010 Maranhão was the fourth richest state in the Northeast region and the sixteenth in Brazil, but occupied the penultimate position in the HDI ranking. Regarding the economy, there is a concentration in its capital São Luís, holding 38% of the state's GDP, while Imperatriz is in second place with 4.3%. The authors indicate that there is a social liability that could be mitigated through a better distribution of wealth, making municipal economies more egalitarian,

Table 3 – MHDI and per capita income of RMSM cities - 2010

County	MHDI 2010	Income MHDI 2010	Longevity MHDI 2010	Education MHDI 2010	Per capita income 2010
Açailândia	0.672	0.643	0.785	0.602	438.56

County	MHDI 2010	Income MHDI 2010	Longevity MHDI 2010	Education MHDI 2010	Per capita income 2010
Amarante do Maranhão	0.555	0.541	0.716	0.441	231.79
Buritirana	0.583	0.54	0.725	0.505	230.11
Campestre do Maranhão	0.652	0.611	0.774	0.586	358.00
Carolina	0.634	0.6	0.802	0.529	334.51
Cidelândia	0.600	0.562	0.728	0.529	263.53
Davinópolis	0.607	0.561	0.747	0.535	263.12
Estreito	0.659	0.666	0.800	0.536	503.29
Gov, Edison Lobão	0.629	0.589	0.764	0.552	312.56
Imperatriz	0.731	0.697	0.803	0.698	613.87
Itinga do Maranhão	0.630	0.601	0.764	0.545	336.91
João Lisboa	0.641	0.585	0.785	0.573	303.91
Lajeado Novo	0.589	0.561	0.738	0.494	263.2
Montes Altos	0.575	0.534	0.732	0.486	221.57
Porto Franco	0.684	0.664	0.796	0.606	497.56
Ribamar Fiquene	0.615	0.592	0.744	0.527	317.75
São Francisco do Brejão	0.584	0.556	0.748	0.479	253.78
São João do Paraíso	0.609	0.554	0.753	0.542	251.04
São P, da Água Branca	0.605	0.577	0.735	0.523	289.7
Senador La Rocque	0.602	0.57	0.743	0.515	277.19
Sítio Novo	0.564	0.509	0.774	0.456	190.06
Vila Nova dos Martírios	0.581	0.555	0.718	0.491	252.89
Total RMSM	0.618	0.585	0.758	0.534	318.405

Source: IBGE. Own elaboration.

Of the three dimensions analyzed, longevity shows the highest index, with the RMSM being in the average range (0.758). In turn, Imperatriz (0.803), Carolina (0.802) and Estreito (0.800) have very high indicators. The cities with the lowest rates are Buritirana (0.725), Vila Nova dos Martírios (0.718) and Amarante do Maranhão (0.716).

Regarding education, the RMSM points to a low rate, showing that it is a lack in the region. Imperatriz (0.698), Porto Franco (0.606) and Açailândia (0.602) showed average indicators. On the other hand, São Francisco do Brejão (0.479), Sítio Novo (0.456) and Amarante do Maranhão (0.441) have very low indicators. Bernat et al. (2019) indicate that Maranhão is a rural state, as shown in Table 02, and that its population suffers from the cutting of part of their basic rights, one of which is literacy, one of the parameters that most highlights social inequality of state. Corroborating Bernat et al., Moreno and Bezerra (2021), based on the 2010 IBGE Census, point out that, due to the denial of rights to education and schooling in rural Maranhão, 72.2% of this population has less than one year of study or no education, and 40.3% of these illiterates have lived in the countryside for at least 15 years, the second worst rate in the country.

Regarding per capita income, in 2010, it was R\$318.405 in the group of cities in the RMSM. In municipal terms, Imperatriz holds the largest (R\$ 613.87), almost double that of RMSM. Followed by Estreito (R\$ 503.29) and Porto Franco (R\$ 497.56). On the other hand, the cities with the lowest are Buritirana (R\$ 230.11), Montes Altos (R\$ 221.57) and Sítio Novo (R\$ 190.06).

Pacifico Filho et al. (2020) indicate that Imperatriz's per capita income is the result of the increase in exports, mainly from the installation of Suzano Celulose onwards, in addition to the increase in the number of people registered in CadÚnico. In turn, regarding Estreito's income, Santos et al. (2019) attribute it to investments from 2005 onwards, in which it became a reference in the production of electrical energy. Finally, regarding Porto Franco, Chaves (2012) indicates that income stood out shortly after the installation of the Algar Agro group, in



2004. which built a unit for storing and crushing soybeans. in addition to public policies and entrepreneurial actions.

With regard to economic characteristics. Table 4 shows that. in 2010. RMSM's GDP was R\$5.398.562. and the most important sector is services (50.94%). followed by public administration (20.37%). On the other hand. industry and agriculture have a smaller share. with 19.10% and 9.58%. respectively.

That said. it is necessary to highlight the role of the public administration. especially in smaller cities. cause nine cities have more than 40% of their GDP concentrated in this activity. Silva (2020) points out that there is inequality between cities in Maranhão. and those with population less than 50 thousand habitants are more dependent on federal resources. but he still points out the fragility of the productive forces. In view of this. he highlights the importance of public spending. the main buyer and employer of labor. for local economic development.

At municipal level. Imperatriz. alone. concentrates 48.48% of GDP. that is. almost half. in which 68.70% of this value comes from the services sector. 15.22% from public administration. 14.80% from industry and only 1.28% of agriculture. Silva. Santos and Vieira (2017) indicate that Imperatriz is the second largest city in Maranhão and stands out especially for its commercial activity. with an emphasis on wholesale and retail trade. but also in the services sector. due to its dynamism. going beyond the limits of RMSM and having ties with the regions of Norte do Tocantins (North of Tocantins) and Sudeste do Pará (Southeast of Pará).

Another prominent city is Açailândia that. despite being distant. has the second highest GDP in the RMSM. with 16.77%. The services sector (49.32%) is the most important. followed by industry (23.56%). public administration (16.79%) and agriculture (10.33%). Vieira and Oliveira (2020) credit the economic increase to commercial and service areas from the North-South Railway on. boosting local and regional development. The authors also highlight the city's industry. mainly due to the export of pig iron. produced by five industries located in the Pequiá industrial district. It is in this context that Imperatriz and Açailândia concentrate 65.65% of RMSM's GDP. Finally. the remainder of the GDP is divided among the other cities. where the majority contribute less than 2%.

Sousa (2015) indicates that there is carelessness on the part of economic and political agents based in the South of Maranhão region. causing socioeconomic centralization in a few cities. Therefore. with regard to RMSM. Açailândia and Imperatriz demonstrate this protagonism. reflecting little participation from the others. A similar case to the RMSM occurs in the Metropolitan Region of Feira de Santana (RMFS). in which Carvalho and Queiroz (2021). when studying commuting for work and study reasons. criticize the centralization of economic activities in Feira de Santana city. The authors point out that one of the main characteristics of an RM is decentralization. development and more equitable growth between cities.

Table 4 – Economic characteristics of the RMSM cities – 2010 (R\$ in Thousands)

County	Agricultural GDP		Industrial GDP		Services GDP		Public Adm, GDP		Total GDP		Per capitaGDP
	Abs,	%	Abs,	%	Abs,	%	Abs,	%	Abs,	%	Abs,
Açailândia	93,558	10.33	213,269	23.56	446,503	49.32	151,977	16.79	905,307	16.77	9,730
Amarante do Maranhão	40,214	31.74	4,746	3.75	26,177	20.66	55,554	43.85	126,691	2.35	3,419
Buritirana	13,412	30.30	1,613	3.64	7,932	17.92	21,313	48.14	44,270	0.82	3,173
Campestre do Maranhão	14,428	26.54	3,710	6.83	14,127	25.99	22,092	40.64	54,357	1.01	4,285
Carolina	31,214	24.80	10,154	8.07	48,463	38.51	36,010	28.62	125,841	2.33	6,017
Cidelândia	20,715	31.73	6,861	10.51	15,858	24.29	21,843	33.46	65,277	1.21	5,041
Davinópolis	10,351	19.63	11,417	21.65	10,628	20.15	20,338	38.57	52,734	0.98	4,387
Estreito	31,084	7.53	205,673	49.85	122,144	29.60	53,707	13.02	412,608	7.64	12,417
Governador E Lobão	6,887	5.14	64,978	48.46	37,218	27.76	25,002	18.65	134,085	2.48	8,885
Imperatriz	33,572	1.28	387,341	14.80	1,798.033	68.70	398,301	15.22	2,617.247	48.48	11,861
Itinga do Maranhão	38,086	29.25	8,749	6.72	40,209	30.88	43,148	33.14	130,192	2.41	5,466
João Lisboa	17,588	17.33	19,292	19.00	27,314	26.91	37,322	36.76	101,516	1.88	5,177
Lajeado Novo	10,804	36.26	1,172	3.93	5,882	19.74	11,937	40.06	29,795	0.55	4,431
Montes Altos	10,326	31.86	1,185	3.66	7,022	21.67	13,878	42.82	32,411	0.60	3,518
Porto Franco	19,382	9.47	76,154	37.21	69,806	34.11	39,318	19.21	204,660	3.79	10,451
Ribamar Fiquene	16,199	43.97	1,948	5.29	6,834	18.55	11,861	32.19	36,842	0.68	5,193
São Francisco do Brejão	17,447	40.73	1,380	3.22	8,248	19.25	15,763	36.80	42,838	0.79	4,298
São João do Paraíso	21,507	42.10	1,773	3.47	9,174	17.96	18,635	36.48	51,089	0.95	4,813
São P da Água Branca	6,726	15.30	2,509	5.71	15,289	34.79	19,425	44.20	43,949	0.81	3,908
Senador La Rocque	29,684	34.29	3,677	4.25	16,802	19.41	36,413	42.06	86,576	1.60	4,893
Sítio Novo	19,237	32.00	2,154	3.58	9,519	15.84	29,202	48.58	60,112	1.11	3,609
Vila Nova dos Martírios	14,669	36.52	1,626	4.05	7,109	17.70	16,761	41.73	40,165	0.74	3,680
Total RMSM	517,090	9.58	1,031.381	19.10	2,750.291	50.94	1,099.800	20.37	5,398.562	100	5,848

Source: IBGE. Own elaboration.



In regard to the GDP per capita, the RMSM indicates an average value of R\$ 5,848, with Estreito (R\$ 12,417), Imperatriz (R\$ 11,861) and Porto Franco (R\$ 10,451) being the biggest highlights, Açailândia, Governador Edison Lobão and Carolina also stand out, being above average, while the others show values below the RM average.

In summary, this section shows that the RMSM had its twenty-two cities incorporated in two moments, eight at its institutionalization in 2005, and with the addition of fourteen in 2017.

Therefore, there is a concentration of economic activity, infrastructure and better indicators in just two cities, making the others just “extras”. Thus, there is a divergence with the thinking of Cordeiro (2019) who, based on the Statute of the Metropolis, indicates definitions and criteria to be met by a metropolis and metropolitan region, The main characteristics are that it is an urban space with territorial continuity, with a significant population, political and socioeconomic relevance, and an area of influence for the surrounding cities, The author criticizes the trivialization of RM institutions and, in the specific case of the state of Maranhão, points out that political agents territorialize spaces to achieve their own objectives.

4 Results analysis

This section seeks to identify the significance of short, medium and long distance migrations to and from the Metropolitan Region of Southwest of Maranhão (RMSM), in the 2005/2010 interregnum, in order to identify their potential and relevance in relation to the attraction or loss of migrants and, from this, their role in relocating individuals to other territories.

Table 5 shows that 166.623 individuals migrated to and from the RMSM where, of this volume, 76,642 (46%) were immigrants and 89,981 (54%) emigrants, resulting in a negative migration balance of 13,339 people, between 2005/2010, characterizing as an area of population loss. Gross Migration (GM) shows that intrastate migration (59.21%) is the strongest, highlighting the importance of this flow between the RMSM and the cities of Maranhão, followed by inter-regional (36,96%) and intra-regional migration (3.83%).

Table 5 – Interregional, intraregional and intrastate migrations to and from the Metropolitan Region of Southwest of Maranhão (RMSM) – 2005/2010

Fluxo	Immigrant	Emigrant	MB	GM	NMR
Inter-regional	20,149	41,437	-21,288	61,586	-3.09
Intrarregional	3,866	2,514	1,352	6,380	0.20
Intraestadual	52,627	46,030	6,597	98,657	0.96
RMSM Total	76,642	89,981	-13,339	166,623	-1.93

Label: MB – Migration Balance; GM – Gross Migration; NMR – Net Migration Rate.

Source: Microdata from the 2010 Demographic Census (IBGE). Own elaboration.

The RMSM has a negative migration balance in the inter-regional flow, but positive in the intra-regional and, mainly, in the intra-state. Therefore, it is clear that there are still traditional population losses for distant states and regions. The NMR confirms this result, showing that if there were no losses in long-distance migration, the population of the RMSM would be 3.09% higher, that is, the RMSM had a lower growth of 3.09% due to the balance negative migration in interstate flow. On the other hand, short and medium distance migrations,

in a certain extent, compensate for these losses, given that with a positive migration balance, population growth is higher at 1.16%.

In regard to the inter-regional flow, with a Gross Migration (GM) of 61.586 migrants, 20.149 (32.72%) immigrants and 41.437 (67.28%) emigrants, it results in the only one of the three flows analyzed with a negative migration balance, of 21.288. Fusco (2014) points out that the Região Nordeste (northeast region) is characterized as an area of populational loss, justified by natural factors, such as droughts, or low quality of life indicators. The narrative for choosing destinations is mainly due to the job offer.

Among the three flows analyzed, the intra-regional one, practiced in the Região Nordeste (northeast region), is the one that involves the fewest people (6.380), and from this total, 3.866 (60.6%) are immigrants and 2.514 (39.4%) emigrants, granting balance positive migration of 1.352 people. Baeninger (2012) indicates that from the 1990s onwards, medium-distance migrations became a new phenomenon, due to the attraction or retention of individuals who could potentially practice long- or short-distance migrations, a dynamic that is related to the relative relaxation of economic activity and job opportunities in the birth region.

With regard to intrastate flow, that is, short-distance migration, this concentrates the largest volume of migrants, 98.657, of which 52.627 (53.34%) are immigrants and 46.030 (46.66%) are emigrants, resulting in the largest balance positive migration (6.597 people) among the flows studied. Brito (1999) points out that the migration balance in the Nordeste region started to decrease from the 1980s onwards due to a reduction in emigration and a significant increase in immigrants, mainly return, short-distance, short-term or temporary immigrants.

Analyzing in detail to find out the cities that most attract or expel population in the RMSM, Table 6 shows inter-regional migration (long distance), showing that the majority of cities presents populational losses similar to what happens in several studies on migration in the metropolitan regions in the interior of the Nordeste (NUNES; SILVA; QUEIROZ, 2017; SILVA; NUNES; QUEIROZ, 2018; QUEIROZ et al., 2020). The northeastern states, mainly Bahia and Maranhão, have emigration characteristics to other regions of the country, justified mainly by “work migration”. The individuals most likely to emigrate are those who are looking for their first job and whose preferred destination flow is the state of São Paulo (MOURA, 1999).

At municipal level, it is clear that several cities present losses. Imperatriz concentrates 42.81% of gross migration in this flow, where 37.71% are immigrants and 45.29% emigrants, resulting in a negative migration balance of 11,166 people, the city with the greatest population loss. However, it draws attention, given that this is the most developed city in the RMSM, having the largest population and by far the largest GDP. Queiroz et al. (2020), in their study of medium-sized cities in the interior of Nordeste, shows that it is the most dynamic, largely due to the Belém-Brasília federal highway, where more long-distance migrants pass through, highlighting that the emigration volume is greater than the immigration volume. The study also points out that among medium-sized cities, Imperatriz is one of those that loses the most population, confirming the traditional northeastern population losses to other regions.

Tabela 6 – Inter-regional migrations to and from the Metropolitan Region of Southwest of Maranhão (RMSM) – 2005/2010

Flow	Imigrante (%)	Emigrant (%)	Migration Balance	Gross Migration (%)
Açailândia	15,65	15,96	-3,458	15,86
Amarante do Maranhão	1,24	2,96	-977	2,40
Buritirana	0,74	0,65	-120	0,68

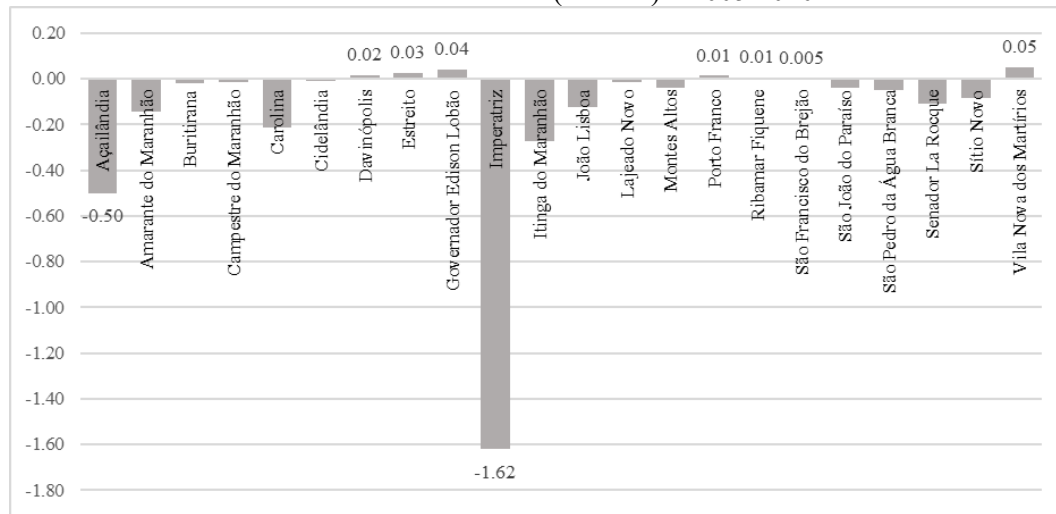
Campestre do Maranhão	2,00	1,17	-84	1,44
Carolina	3,50	5,22	-1,456	4,66
Cidelândia	2,51	1,37	-62	1,74
Davinópolis	1,22	0,32	113	0,62
Estreito	10,49	4,65	187	6,56
Governador Edison Lobão	2,34	0,47	278	1,08
Imperatriz	37,71	45,29	-11,166	42,81
Itinga do Maranhão	3,86	6,41	-1,880	5,58
João Lisboa	1,42	2,77	-860	2,33
Lajeado Novo	0,47	0,49	-110	0,49
Montes Altos	0,36	0,82	-267	0,67
Porto Franco	6,06	2,73	89	3,82
Ribamar Fiquene	0,73	0,23	53	0,39
São Francisco do Brejão	1,06	0,43	34	0,64
São João do Paraíso	0,74	1,05	-288	0,95
São Pedro da Água Branca	2,65	2,08	-330	2,27
Senador La Rocque	1,00	2,29	-746	1,87
Sítio Novo	0,53	1,68	-590	1,30
Vila Nova dos Martírios	3,71	0,95	352	1,85
RMSM Total	20,149	41,437	-21,288	61,586

Source: Microdata from the 2010 Demographic Census (IBGE). Own elaboration.

Another city that stands out in relation to populational losses is Açailândia, holding 15.86% of gross migration, 15.65% of immigration and 15.96% of emigration, generating a negative migration balance of 3.458 people. Dota and Queiroz (2019) point to the existence of intense migratory flows from northeastern cities to the Sudeste Brasileiro (Brazilian southeast), mainly to São Paulo. This confirms the data in Table 6, in which the majority of cities lose population and only seven have a positive migration balance, they are: Vila Nova dos Martírios, Governador Edison Lobão, Estreito, Davinópolis, Porto Franco, Ribamar Fiquene and São Francisco do Brejão.

The Net Migration Rate (NMR) ratifies the data in Table 6, showing that regarding the inter-regional flow, Imperatriz and Açailândia lost more population, resulting in the highest negative NMR rates, meaning that, if there were no loss of individuals, their populations would be larger by 1.62% and 0.5%, or better, due to emigrations/negative migration balance, they had a population decrease of -1.62 and -0.5, respectively. In turn, Vila Nova dos Martírios, Governador Edison Lobão and Estreito have a positive NMR of 0.05%, 0.04% and 0.03%, respectively.

Graph 1 – Inter-regional Net Migration Rate (RMN) to and from the Metropolitan Region of Southwest of Maranhão (RMSM) – 2005/2010



Source: Microdata from the 2010 Demographic Census (IBGE) Own elaboration.

In regard to medium-distance migrations, those that occur between the RMSM and the other states in Nordeste, at municipal level, of the twenty-two cities, sixteen have a positive migration balance. Imperatriz holds 44.01% of all gross migration, but from the total number of migrants, 35.57% arrive in the city, while 57% leave, resulting in a negative migration balance of 58 individuals, being classified as an area of migratory turnover.

Table 7 – Intraregional migrations to and from the Metropolitan Region of Southwest of Maranhão (RMSM) – 2005/2010

Flow	Imigrante (%)	Emigrant (%)	Migration Balance	Gross Migration (%)
Açailândia	16.99	13.84	309	15.75
Amarante do Maranhão	0.78	0.52	17	0.67
Buritirana	0.57	1.43	-14	0.91
Campestre do Maranhão	1.94	0.95	51	1.55
Carolina	1.29	0.12	47	0.83
Cidelândia	1.45	2.43	-5	1.83
Davinópolis	0.57	0.16	18	0.41
Estreito	22.12	4.49	742	15.17
Governador Edison Lobão	1.50	0.84	37	1.24
Imperatriz	35.57	57.00	-58	44.01
Itinga do Maranhão	2.90	8.11	-92	4.95
João Lisboa	1.40	2.39	-6	1.79
Lajeado Novo	0.23	0.88	-13	0.49
Montes Altos	0.26	0.00	10	0.16
Porto Franco	3.34	4.10	26	3.64
Ribamar Fiquene	1.35	0.00	52	0.82
São Francisco do Brejão	1.42	0.00	55	0.86
São João do Paraíso	0.00	0.00	0	0.00
São Pedro da Água Branca	1.63	0.00	63	0.99
Senador La Rocque	1.71	2.15	12	1.88
Sítio Novo	0.44	0.60	2	0.50
Vila Nova dos Martírios	2.56	0.00	99	1.55
TOTAL RMSM	3,866	2,514	1,352	6,380

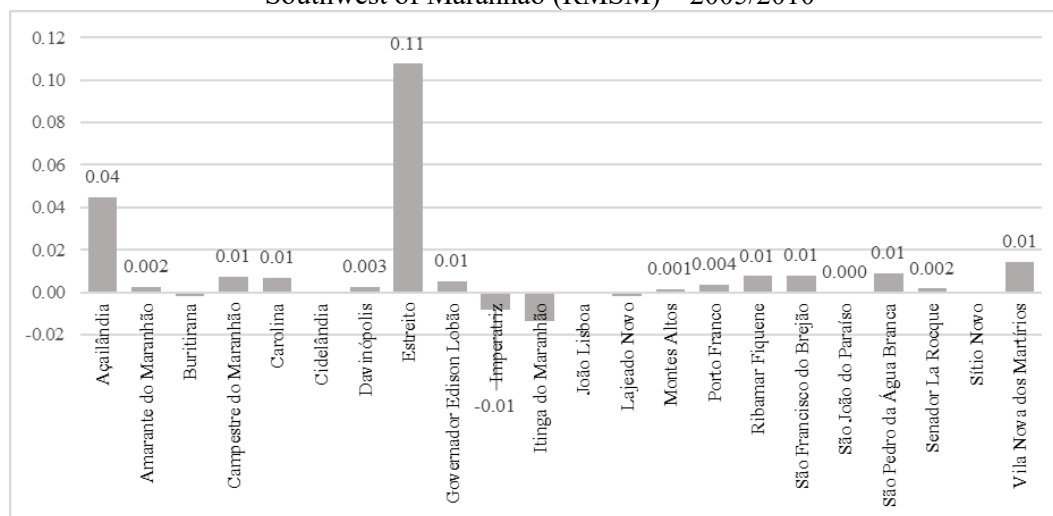
Source: Microdata from the 2010 Demographic Census (IBGE). Own elaboration.

In turn, Açailândia has 15.75% of gross migration, but unlike Imperatriz, the volume of immigrants is greater than emigrants, reflecting a positive migration balance of 309 people. For Sousa (2015), Açailândia has a strong migratory attraction for individuals from the Nordeste and is directly linked to the activities of agro-industrial hubs installed in the Brazilian Amazon since the 1960s, in addition to mineral exploration in the Southeast of Pará. The author also indicates that the creation of the industrial hub in the south of Maranhão is a determining factor for its development, both state and regional.

Another city that stands out in gross migration is Estreito, responsible for 15.17%. From this volume, 22.12% are immigrants, while 4.49% are emigrants, leaving a positive migration balance of 742 people. Silva, Queiroz and Ojima (2021) indicate that due to strong investment in the public and private sectors, there is a growth in cities in the interior of the Nordeste Brasileiro (Brazilian northeast), strengthening migration in the territory and reducing long-distance migration. Furthermore, there is a balance between the other cities, and in general, they have a positive migration balance. It is worth noting that São João do Paraíso did not present any migration data.

Graph 2 shows the NMR for medium-distance migrations, reinforcing the data in Table 7, showing that Estreito and Açailândia grew by 0.11% and 0.04%, respectively, due to migrations. On the contrary, Imperatriz and Itinga do Maranhão had their populations smaller by 0.01%.

Graph 2 – Intra-regional Net Migration Rate (RMN) to and from the Metropolitan Region of Southwest of Maranhão (RMSM) – 2005/2010



Source: Microdata from the 2010 Demographic Census (IBGE). Own elaboration.

Figure 2 presents the TML for medium-distance migrations, pointing out that for this flow the RMSM results in an area of population retention, given that twelve of the twenty-two municipalities attract more than they expel population.

In turn, short-distance migrations (intrastate), that is, those that occur between RMSM and other cities in Maranhão, have a gross migration of 98.657 individuals, being by far the largest volume. At municipal level, Imperatriz concentrates 30.73% of this volume, where 28.06% are immigrants and 33.79% emigrants, leaving a negative migration balance of 787 people.

Carvalho (2016) indicates that Imperatriz has a rapid population evolution, but that, from 1981 onwards, it reduced, mainly due to the emancipation of its most significant district,

Açailândia, reducing its territory by half and soon after, the dismemberment of six more districts that resulted in the creation of the cities of Cidelândia, Davinópolis, Governador Edison Lobão, São Francisco do Brejão, São Pedro da Água Branca and Vila Nova dos Martírios, helping to make up the RMSM.

Table 8 – Tabela 8 – Intrastate migration to and from the Metropolitan Region of Southwest of Maranhão (RMSM) – 2005/2010

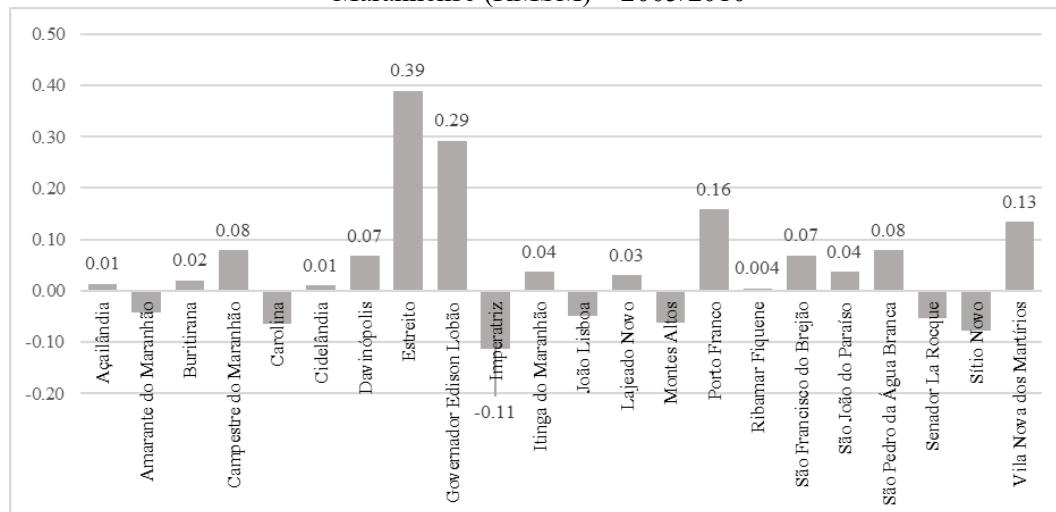
Flow	Imigrante (%)	Emigrant (%)	Migration Balance	Gross Migration (%)
Açailândia	14,21	16,04	95	15,07
Amarante do Maranhão	3,87	5,07	-293	4,43
Buritirana	2,00	1,99	137	2,00
Campestre do Maranhão	2,79	2,00	545	2,42
Carolina	1,86	3,10	-446	2,44
Cidelândia	2,44	2,63	73	2,53
Davinópolis	2,35	1,67	468	2,03
Estreito	8,53	3,93	2,682	6,38
Governador Edison Lobão	5,69	2,12	2,017	4,02
Imperatriz	28,06	33,79	-787	30,73
Itinga do Maranhão	3,86	3,85	257	3,85
João Lisboa	2,57	3,67	-335	3,08
Lajeado Novo	1,72	1,51	209	1,62
Montes Altos	1,16	2,25	-426	1,67
Porto Franco	5,21	3,59	1,090	4,46
Ribamar Fiquene	1,42	1,56	30	1,48
São Francisco do Brejão	2,17	1,45	476	1,83
São João do Paraíso	1,89	1,62	250	1,76
São Pedro da Água Branca	2,22	1,36	544	1,82
Senador La Rocque	1,49	2,51	-371	1,97
Sítio Novo	1,66	3,08	-541	2,32
Vila Nova dos Martírios	2,82	1,22	923	2,08
TOTAL RMSM	52,627	46,030	6,597	98,657

Source: Microdata from the 2010 Demographic Census (IBGE). Own elaboration.

In turn, Açailândia has 15.07% of the gross migration, and repeating what happens in medium-distance migrations (intra-regional), immigrations (7.479) are greater than emigrations (7.384), resulting in a migration balance positive of 95. The city has the second highest GDP in the RMSM and is one of the most developed in the interior of Nordeste, reaching a population of over one hundred thousand habitants and moving to the status of a medium-sized city, being one of the most influential, dynamic and attractive, due to the large investments made by the federal, state and private sector, providing educational institutions, highways, shopping centers, entrepreneurship, along with a better quality of life and job opportunities. In this sense, it is an attractive area for migrants, helping to absorb the population and decentralize the metropolis, resulting in development in its surroundings (Queiroz et al., 2020).



Graph 3 – Intrastate Net Migration Rate (NMR) to and from the Metropolitan Region of Southwest Maranhense (RMSM) – 2005/2010



Source: Microdata from the 2010 Demographic Census (IBGE). Own elaboration.

The NMR confirms the data in Table 8, in relation to Imperatriz it indicates that if there was no population loss, it would be greater by 0.11%, that is, due to emigrations and negative migration balance, there was a population decrease of 0.11%. In turn, the Açailândia population grew by 0.01%, justified by immigration and positive migration balance.

5 Final considerations

The state of Maranhão has two established metropolitan regions, the Metropolitan Region of Greater São Luís (RMGSL), with studies on the topic under analysis, and the Metropolitan Region of Southwest of Maranhão (RMSM), the first RM established in the interior of Nordeste, formed in two moments. The first, in its year of creation, 2005, from eight cities, and the second in 2017, with the introduction of another fourteen, totaling twenty-two. In the literature, a little is known about its migratory dynamics, therefore, this article aimed to analyze inter-regional (long-distance), intra-regional (medium-distance) and intra-state (short-distance) migrations to and from the RMSM, in order to identify the flow that most attracts and/or expel migrants, in addition to the dynamics that occur between the municipalities that make up the metropolis.

The results show that migration in the RMSM, between 2005/2010, is notably short-distance, or rather, intrastate, reinforcing the literature that indicates that since the 1990s people have been willing to make closer trips. In relation to inter-regional flow or long-distance migration, it is clear that there are still population losses to more distant regions, mainly to the Southeast, but they are being mitigated over time. In turn, medium-distance (intraregional) migrations are the least practiced.

Regarding to the destination of migrants, in relation to the inter-regional flow, the persistence of historic population losses is confirmed, mainly due to the expulsion of people from Imperatriz and Açailândia. In turn, Governador Edison Lobão, Estreito and Cidelândia are the most attractive. In terms of medium-distance migration, the cities of Estreito, Açailândia and Vila Nova dos Martírios are the most attractive, while Itinga do Maranhão and Imperatriz have the highest negative migration balance. Finally, the intrastate flow shows that Estreito, Governador Edison Lobão and Porto Franco are the ones that attract the most individuals, while

Carolina and Montes Altos are the ones that lose the most. Population gains and losses are ratified based on the TML.

However, it is necessary to observe the specificities of the municipalities of Imperatriz, which, despite being the second largest in the state of Maranhão and main in the RMSM, by having the largest population and the best socioeconomic indexes, presents population losses in the three flows under analysis. Açailândia, the second largest municipality in population and economic terms in the RMSM, is undergoing significant development processes, with a positive migration balance in short and medium distance flows, gaining status as a medium city, and negative in long distance flows, with historical trends remaining, but proving to be an attractive municipality on a regional and state scale. Imperatriz and Açailândia concentrate economic activity and have greater capacity to offer employment opportunities, mainly in the commercial sector, but also by providing greater/better infrastructure, health, leisure and other factors that encourage the arrival or departure of migrants. As for the other municipalities, there is a diversification in terms of attraction or repulsion, indicating that they are highly dependent on the main cities.

In general terms, this study points out that gross migration (input and output volume), in the three flows, is concentrated in Imperatriz. However, this result differs from most studies, as the metropolitan core of the RMSM presents a negative migration balance in the three flows under analysis, which is not what was expected. This can be justified mainly by the various dismemberment processes that the city went through, in which, in a certain way, it contributed to the development of others. But, with the exception of Açailândia, which was successful in its development, the others are significantly dependent on Imperatriz, as they do not offer the same capacity to generate employment and income, in addition to other indicators.

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