



ARACAJU IN METROPOLITAN TRANSITION: GROWTH IN THE SURROUNDING AREAS, FUNCTIONAL PRESSURE, AND URBAN RECONFIGURATION IN THE ARACAJU METROPOLITAN REGION

Lucas Silva Pedrosa¹

Flávio Henrique Miranda de Araújo Freire²

Abstract: This article examines Aracaju's recent metropolitan transition, testing the hypothesis that the urban pressure perceived in the capital of Sergipe stems less from exceptional demographic growth in the core municipality than from the functional intensification of the Aracaju Metropolitan Region (Região Metropolitana de Aracaju, RMA). This exploratory, descriptive, and comparative study draws on secondary data from official sources—the Brazilian Institute of Geography and Statistics (IBGE) censuses, 2025 population estimates, metropolitan legislation, vehicle-fleet statistics, and airport passenger traffic—and recognized technical sources, including the Observatório das Metrópoles and FipeZAP indexes. The empirical strategy combines a longitudinal analysis of Aracaju, an intrametropolitan comparison between the core and surrounding municipalities, and a contextual comparison with João Pessoa, Natal, and Maceió, without directly measuring migration or commuting. The results indicate that Aracaju did not experience exceptional municipal population growth: its population increased by 5.53% between 2010 and 2022. Over the same period, the RMA grew by 11.53% and reached 981,401 inhabitants in the aggregated 2025 estimates. Growth was internally asymmetric, particularly in Barra dos Coqueiros, whose population increased by 66.20% from 2010 to 2022 and by 80.87% from 2010 to 2025. Indirect evidence of metropolitan intensification includes growth in surrounding municipalities, changes in the RMA/Aracaju ratio, motorization, residential rental-market pressure, and increased airport traffic. Aracaju should therefore be understood as the core of a formally constituted metropolitan region whose functional dynamics extend beyond municipal boundaries, although direct measurement of migration and commuting requires specific census tabulations.

Keywords: Aracaju; metropolitanization; Aracaju Metropolitan Region; urban mobility; urban demography.

ARACAJU EM TRANSIÇÃO METROPOLITANA: CRESCIMENTO DO ENTORNO, PRESSÃO FUNCIONAL E RECONFIGURAÇÃO URBANA NA RMA

Resumo: Este artigo analisa a transição metropolitana recente de Aracaju, capital de Sergipe, a partir da hipótese de que a pressão urbana percebida na capital decorre menos de crescimento demográfico excepcional do município-sede e mais da intensificação funcional da Região Metropolitana de Aracaju (RMA). A pesquisa é exploratória, descritiva e comparativa, baseada em dados secundários de fontes oficiais — Censos Demográficos do IBGE, estimativas populacionais municipais de 2025, legislação metropolitana, estatísticas de frota e movimentação aeroportuária — e em bases técnicas reconhecidas, como estudos do Observatório das Metrópoles e índices FipeZAP. A estratégia empírica combina análise longitudinal de Aracaju, comparação intrametropolitana entre núcleo e entorno e comparação regional contextual com João Pessoa, Natal e Maceió, sem medir diretamente migração ou pendularidade. Os resultados indicam que Aracaju não apresenta crescimento populacional municipal excepcional: entre 2010 e 2022, a capital cresceu 5,53%. Entretanto, a RMA cresceu 11,53% no período e alcança 981.401 habitantes na estimativa municipal agregada de 2025. O crescimento é internamente assimétrico, com destaque para Barra dos Coqueiros, cuja população aumentou 66,20% entre 2010 e 2022 e 80,87% entre 2010 e 2025. A análise utiliza evidências indiretas, ou proxies, de intensificação metropolitana: crescimento do entorno, alteração da razão RMA/Aracaju, motorização, pressão no mercado de locação residencial e aumento da circulação aeroportuária. Conclui-se que Aracaju deve ser interpretada como núcleo de uma região metropolitana formal cuja

¹PhD candidate in Demography at the Federal University of Rio Grande do Norte, through the Interinstitutional Doctoral Program between UFRN and UFS (DINTER UFRN/UFS). Holds a Master's degree in Economics from the Federal University of Sergipe. Government Manager (EPPGG) for the State of Sergipe. ORCID: <https://orcid.org/0000-0001-5739-5320>. Lattes CV: <http://lattes.cnpq.br/8491535808542925>. Email: lucas.pedrosa.servidor@gmail.com.

² PhD in Demography from the Federal University of Minas Gerais. Professor in the Graduate Program in Demography at the Federal University of Rio Grande do Norte. ORCID: <https://orcid.org/0000-0002-7416-9947>. Lattes CV: <http://lattes.cnpq.br/7623751650258443>. Email: flavio.freire@ufrn.br.



dinâmica funcional ultrapassa os limites administrativos do município, embora a mensuração direta de migração e pendularidade dependa de tabulações censitárias específicas.

Palavras-chave: Aracaju; metropolização; Região Metropolitana de Aracaju; mobilidade urbana; demografia urbana.

1 Introduction

Aracaju occupies a distinctive position in the urban system of Northeast Brazil. As the capital of a geographically small state, it serves as Sergipe's principal administrative, commercial, educational, healthcare, and specialized-services hub and as the organizing core of an urban area that extends beyond its municipal boundaries. This condition is consistent with the literature on metropolitanization, according to which contemporary urban dynamics cannot be understood solely through municipalities' political-administrative boundaries, but must also be examined through the daily flows of work, consumption, education, healthcare, leisure, and housing that connect different territories within a single functional unit (Santos, 1993; Villaça, 2001; Lencioni, 2011; Ribeiro, 2018).

Historically, Aracaju has been associated with quality-of-life advantages: relatively short trips, less urban congestion, a lower cost of living than large metropolitan areas, a well-established waterfront, and an intermediate urban scale. This image relates to the international debate on residential mobility driven by urban amenities, environmental quality, relative safety, cost of living, and less congested urban lifestyles (Williams; Hall, 2000; Benson; O'Reilly, 2009). In Brazil, midsize capitals and intermediate cities have assumed an increasingly important role in population redistribution, particularly when they combine regional centrality, service provision, and residential attractiveness (Baeninger, 2012; Cunha, 2015).

In recent years, everyday experience in Aracaju has fostered a social perception that the city has entered a new stage of urban development. Perceived increases in congestion, stronger competition for desirable locations, rising real-estate and service prices, the expansion of property developments, and growing tourist flows are commonly observed signs of urban pressure. In this article, that perception serves as a heuristic starting point rather than as sufficient empirical evidence. These signs acquire analytical value only when assessed against demographic, real-estate, tourism, and mobility data.

The purpose of this article is to turn this urban perception into an empirically defensible research problem. The impression that Aracaju has become "crowded" may result from different mechanisms: growth in the resident population, an expanding vehicle fleet, tourism growth, the concentration of services in the capital, commuting, residential redistribution toward neighboring municipalities, real-estate appreciation, or increased temporary population flows. The demographic challenge is to disentangle these processes, avoid automatic causal claims, and



assess whether the available indicators provide at least indirect support for the hypothesis of metropolitan intensification.

The central formulation shifts the focus from the municipality in isolation to the metropolitan scale. The Aracaju Metropolitan Region (Região Metropolitana de Aracaju, RMA) was established by Lei Complementar Estadual nº 25/1995 (State Complementary Law) and formally comprises Aracaju, Barra dos Coqueiros, Nossa Senhora do Socorro, and São Cristóvão (Sergipe, 1995). According to the Observatório das Metrópoles, this four-municipality area is Sergipe's largest urban center, concentrating population, households, and employment. Between 2010 and 2022, its population increased from 835,816 to 932,210 inhabitants—growth of approximately 11%—with Barra dos Coqueiros standing out for a population increase of 66.20% over the period (Observatório das Metrópoles, 2023a).

The argument advanced here is that Aracaju is undergoing a recent process of metropolitan intensification. This expression neither implies a population explosion in the core municipality nor demonstrates migration from outside the metropolitan region. Rather, it indicates that the relevant urban dynamics occur within the formally constituted metropolitan space—Aracaju, Barra dos Coqueiros, Nossa Senhora do Socorro, and São Cristóvão—and are functionally expressed through the daily use of the capital by residents, workers, students, consumers, tourists, and service users who do not necessarily live in the core municipality. Consequently, pressure on traffic, prices, services, and urban facilities may be greater than Aracaju's resident population alone would suggest.

The central research question is: to what extent do the available official data and technical databases support the hypothesis that Aracaju is experiencing a recent metropolitan transition characterized by growth in the surrounding municipalities, inferred functional pressure, and increasing pressure on mobility, housing, and urban services? To answer this question, the article combines three analytical approaches: a longitudinal analysis of Aracaju's population; an intrametropolitan comparison between the core municipality and the surrounding municipalities of the RMA; and a contextual regional comparison with João Pessoa, Natal, and Maceió. The regional comparison is not used to demonstrate that the RMA is statistically exceptional, but to situate the Aracaju case within a broader Northeast Brazilian pattern of metropolitanization among midsized capitals.

Direct identification of the migration component still requires specific tabulations of the migration questions from the 2022 Demographic Census. The IBGE reports that the 2022 Census release on fertility and migration includes place of birth, place of last residence, uninterrupted duration of residence at the current location, and the municipality, state, or foreign country in which the person lived five years before the reference date (IBGE, 2025b). These indicators will



be essential for distinguishing interstate migration, intrastate migration, intrametropolitan redistribution, and natural population growth.

Finally, this article adopts the interpretive hypothesis that the urban effects of Aracaju's metropolitan transition became more perceptible from 2023 onward, in the post-pandemic period, when the stronger resumption of circulation, daily travel, economic activity, tourism, and real-estate dynamics made pressures already affecting the capital more visible. This hypothesis does not imply that the process began only at that point, but rather that its recent effects became more clearly expressed in everyday urban experience and in the available indirect indicators. Because demographic censuses are conducted every ten years, direct and more precise measurement of these changes will depend on the next census and on specific tabulations concerning migration, previous residence, duration of residence, and commuting. Nevertheless, the absence of a definitive census-based measure does not preclude an exploratory analysis of the phenomenon. On the contrary, it permits the examination of official estimates, administrative series, and indirect indicators as proxies for metropolitan intensification, provided that their limitations are made explicit. The article therefore assesses whether the available body of evidence is consistent with a recent, gradual, and ongoing metropolitan transition in the Aracaju Metropolitan Region.

2 Literature review

2.1 Migration, selectivity, and spatial population redistribution

The analysis of Aracaju's metropolitan transition must be situated within the classical and contemporary debate on migration. Since Ravenstein (1885), migration has been understood as a spatially selective phenomenon associated with distance, the urban hierarchy, economic opportunities, and counterflows between areas of origin and destination. Lee (1966) broadened this formulation by proposing that migration decisions result from the combination of positive and negative factors in origin and destination areas, intervening obstacles, and individual characteristics.

The economics of migration provides another important perspective. For Sjaastad (1962), migration can be interpreted as an investment in human capital because it involves present costs and expectations of future returns. At the urban scale, these returns are not limited to income; they include access to education, healthcare, professional networks, housing, consumption, leisure, and the urban environment. In formulating the mobility transition hypothesis, Zelinsky (1971) showed that migration patterns change as societies urbanize, communications expand, and opportunities become more diverse.



In Brazil, Baeninger (2012, 2015) emphasizes that recent internal migration cannot be explained solely through older push-and-pull logics. The current setting is characterized by migratory turnover, short- and medium-distance mobility, circulation among cities, and the growing importance of regional specificities. This interpretation speaks directly to the Aracaju case: the most plausible demographic evidence is not an isolated municipal population boom, but metropolitan and regional redistribution in which the capital continues to exercise functional centrality while part of the residential expansion shifts toward neighboring municipalities.

2.2 Metropolitanization, functional area, and daily mobility

Brazilian urban scholarship shows that metropolitanization is defined not only by population size, but also by functional integration among municipalities. Santos (1993, 1994) interprets Brazilian urbanization as a process linked to the territorial division of labor and the concentration of economic, technical, and informational functions. Villaça (2001) adds that the intraurban structure of Brazilian metropolitan areas is organized through competition over locations, accessibility, and urban centralities.

Lencioni (2011, 2020) contributes to this debate by treating the metropolitanization of space as a stage of urbanization in which metropolitan forms and functions extend beyond the core municipality. The process involves territorial expansion, intensified flows, residential decentralization, selective land appreciation, and greater interdependence among municipalities. This theoretical perspective is central to the Aracaju case: the administrative city does not necessarily coincide with the metropolitan functional area.

In this article, “metropolitan functional pressure” is an interpretive category rather than a direct demographic measure. It refers to the set of urban effects associated with the daily use of the capital by residents, commuters, consumers, students, tourists, and service users who may live either within or outside Aracaju. Because these groups are not estimated directly in the empirical analysis, the category is inferred from proxies: growth in the surrounding municipalities, the RMA/Aracaju ratio, the relative shares of the core and surrounding municipalities, motorization, locational pressure, and airport passenger traffic. The formal metropolitan region corresponds to the four municipalities defined by state law; the functional area, in turn, remains an analytical hypothesis to be tested with commuting, origin-destination, and migration data. This terminological distinction is maintained throughout the article to avoid conflating the statutory boundary, functional integration, and direct measurement of flows.

The concept of daily mobility, as discussed by Pereira and Herrero (2009), makes it possible to interpret congestion and pressure on services as expressions of metropolitan flows rather than solely as consequences of an increase in residents within the central municipality.



The article's hypothesis becomes stronger when the question “Has Aracaju grown substantially?” is replaced by “Has the Aracaju metropolitan region grown and begun to place greater pressure on the capital?”

2.3 Tourism, urban amenities, and residential mobility

The relationship between tourism and residential mobility must be approached cautiously, but it cannot be ignored. Williams and Hall (2000) show that tourism and migration are connected through several channels: employment, return migration, entrepreneurship, second-home ownership, retirement, and the conversion of tourism experiences into plans for residential relocation. Benson and O'Reilly (2009) use the term “lifestyle migration” for moves motivated by the pursuit of a better quality of life, a more pleasant urban environment, safety, leisure, and personal fulfillment.

In this sense, tourism may serve as an indirect driver of attractiveness. It does not prove migration, but it increases a city's visibility, expands its symbolic circulation, and may turn repeat visitors into prospective residents or investors. For Aracaju, the most cautious hypothesis is that tourism-promotion policies, a highly valued waterfront, an intermediate urban scale, and a historically lower cost of living than major capitals may have strengthened the city's image as a desirable place to live. This attractiveness, however, must be confirmed through demographic indicators and specific research on motivations for moving.

2.4 Metropolitanization in Northeast Brazil: from large metropolises to midsized capitals

Metropolitanization in Northeast Brazil can be understood in two broad stages. The first corresponds to the institutionalization of Brazil's largest metropolitan regions during the 1970s, when Lei Complementar Federal nº 14, de 8 de junho de 1973 (Federal Complementary Law) established, among others, the metropolitan regions of Recife, Salvador, and Fortaleza (Brasil, 1973). This first cycle was associated with the formal recognition of the country's largest urban agglomerations amid accelerated urbanization, industrial concentration, service-sector expansion, and the strengthening of capital cities as centers of political, economic, and administrative command (Santos, 1993; Villaça, 2001; Ribeiro, 2018).

A second stage began after the 1988 Federal Constitution assigned the states authority to establish metropolitan regions, urban agglomerations, and microregions. Under this new federal arrangement, metropolitan regions centered on midsized and smaller capitals in Northeast Brazil began to be formally established through state legislation. This cycle includes Aracaju, Natal, Maceió, and João Pessoa: the Aracaju Metropolitan Region was created by Lei Complementar Estadual nº 25/1995; the Natal Metropolitan Region by Lei Complementar Estadual nº 152/1997; the Maceió Metropolitan Region by Lei Complementar Estadual nº 18/1998, later reorganized;



and the João Pessoa Metropolitan Region by Lei Complementar Estadual nº 59/2003 (Sergipe, 1995; Rio Grande do Norte, 1997; Alagoas, 1998; Paraíba, 2003; Alagoas, 2019).

In mid-sized capitals, metropolitanization tends to emerge through a combination of administrative centrality, the concentration of specialized services, real-estate expansion, commuting, tourism, the growing value placed on urban amenities, and residential redistribution toward neighboring municipalities. In such cases, the core municipality does not always experience explosive population growth, but it begins to exert functional pressure across a broader territory (Lencioni, 2011; Ribeiro, 2018).

Aracaju belongs to this second cycle of metropolitanization in Northeast Brazil, but with its own timing. Despite institutional recognition in the 1990s, the most visible signs of metropolitan intensification gained momentum between 2010 and 2025, particularly through the growth of Barra dos Coqueiros, residential expansion in neighboring municipalities, and the functional pressure exerted on the capital.

2.5 Real-estate market, urban prices, and residential use

Metropolitan expansion is also expressed in the real-estate market. Harvey (1982, 2005) interprets urban space as a central dimension of capitalist accumulation: capital becomes fixed in the built environment, producing infrastructure, housing, land appreciation, and new development frontiers. In Brazil, Villaça (2001) demonstrates that land appreciation and intraurban structuring depend on accessibility and competition for locations.

For Aracaju, construction costs, sale prices, and rental prices must be distinguished. Construction costs measure production expenses at the building site but do not directly capture land value, developers' margins, locational rent, or demand pressure for residential use. Sale and rental prices, although often based on listings, provide a closer approximation of competition for housing and location. Indicators such as FipeZAP should therefore be used as proxies with their limitations made explicit: they represent asking prices rather than necessarily the prices of completed transactions; moreover, they reflect the market covered by property portals and the cities monitored, not the entire housing stock (FIPE, 2026a; FIPE, 2026b).

3 Methodology

This exploratory, descriptive, and comparative study is based on secondary data. Aracaju is the main empirical unit, while the formal metropolitan unit used for interpretation is the RMA, comprising Aracaju, Barra dos Coqueiros, Nossa Senhora do Socorro, and São Cristóvão. The methodological design was adjusted so as not to claim measurements that the data do not yet support: the main quantitative test is intrametropolitan and compares the core with the surrounding municipalities; the comparison with João Pessoa, Natal, and Maceió is contextual



and qualitative, intended to situate Aracaju within the regional pattern of metropolitanization among midsized capitals.

The sources were classified into three groups. The first consists of official sources: IBGE demographic censuses, 2025 municipal population estimates, state legislation establishing metropolitan regions, vehicle-fleet databases from the Secretaria Nacional de Trânsito (SENATRAN; National Traffic Secretariat) and the Ministry of Transport, and airport passenger-traffic data released by public agencies. The second consists of technical and academic sources: studies by the Observatório das Metrópoles and specialized literature on migration, metropolitanization, daily mobility, and the real-estate market. The third group consists of private technical databases used for comparison, especially the FipeZAP Residential Sale and Rental indexes, which are treated as proxies for asking prices rather than as official public sources or measures of actual transaction prices.

The main demographic variables are census population, municipal population estimates, absolute change, percentage change, compound annual growth rate (CAGR), the relative shares of the core and surrounding municipalities, and the RMA/Aracaju ratio. The 2025 estimate is used as an official post-census indicator with a reference date of July 1, 2025. It does not replace the Census, does not identify migrants' origins, and should be read only as an indicative sign of demographic continuity subject to revision.

Migration is treated as a hypothesis to be tested rather than as a directly measured outcome. The article uses a first, indirect level of evidence: differentiated growth among metropolitan municipalities, pressure in the rental market, increased motorization, and intensified airport passenger traffic. The second, direct level remains a necessary stage of the research: tabulating the 2022 Census migration questions, including place of birth, municipality of previous residence, uninterrupted duration of residence in the municipality, and residence five years before the reference date. In the absence of these tabulations, the article does not claim to measure migration, net migration, or commuting; it identifies signs consistent with metropolitan intensification.

The economic and functional dimension is operationalized through available but limited indicators. For the residential market, the analysis uses FipeZAP residential sale and rental reports, which track asking prices for completed apartments in monitored cities. Compound growth in sale and rental prices was calculated as follows: $\text{Cumulative change} = [(1 + v_{2022}) \times (1 + v_{2023}) \times (1 + v_{2024}) \times (1 + v_{2025}) \times (1 + v_{2026*}) - 1] \times 100$, where each v is the annual change expressed as a decimal and 2026* is the year-to-date change through April. This compound cumulative change is neither an annualized rate nor a 12-month change; it is the sequential accumulation of the reported annual changes and the partial 2026 change.

Calculations were performed in a spreadsheet, preserving the absolute values reported by the sources and rounding rates to two decimal places. Motorization is measured using municipal vehicle-fleet data from the former Departamento Nacional de Trânsito (DENATRAN; National Traffic Department) for December 2010 and from SENATRAN for December 2024, expressed as vehicles per 100 inhabitants. Tourism is assessed using airport passenger-traffic data released by public sources and by the Municipality of Aracaju based on information from the concessionaire Aena Brasil. None of these indicators, in isolation, measures migration, congestion, the floating population, or the conversion of tourists into residents.

The methodological matrix below summarizes this analytical choice. It distinguishes the indicators actually used from those that remain part of a future research stage. This distinction is essential to the article's scientific consistency: the results support a hypothesis of metropolitan intensification through indirect evidence, but they do not justify claims about net migration, commuting, or the functional population without specific tabulations.

Table 1 - Adjusted methodological matrix for the metropolitan intensification hypothesis.

Dimension analyzed	Indicators used in the article	Main source	Analytical function and inferential limitation
Population growth and asymmetry between the core and surrounding municipalities	census population; 2025 estimates; absolute and percentage change; CAGR; shares of the core and surrounding municipalities; RMA/Aracaju ratio	IBGE; Observatório das Metrópoles	measures municipal and metropolitan growth; 2025 is indicative and does not identify migration
Metropolitan functional pressure	RMA/Aracaju ratio; share of surrounding municipalities; qualitative centrality of the core; relationship between place of residence and use of the capital	IBGE; urban literature; Observatório das Metrópoles	interpretive category inferred from proxies; does not estimate the functional or commuting population
Residential market	asking prices for sales and rentals; compound cumulative change; average price per m²; rental yield	FipeZAP Residential Sale and Rental Index	assesses market pressure through listings for completed apartments; does not measure actual transactions or the entire housing stock
Potential road pressure	total municipal vehicle fleet; vehicles per 100 inhabitants	former DENATRAN; SENATRAN municipal database for December 2024; IBGE	measures registered motorization; does not measure congestion, origin-destination flows, or actual circulation
Tourism and circulation	airport passengers; change in airport passenger traffic	ANAC/Ministry of Ports and Airports; Aena Brasil/Municipality of Aracaju	assesses circulation and visibility; does not measure the conversion of visitors into residents
Direct migration and commuting	place of birth; previous residence; residence at a fixed prior date; duration of residence; commuting for work/education	2022 Census and migration/commuting microdata and questions	necessary stage for direct testing; treated as a limitation and future research agenda

Source: Prepared by the authors. Note: The matrix was revised to distinguish indicators actually used from variables that remain part of a future research stage.



4 Empirical context and comparative scope

4.1 Analytical scope: the issue is not exceptional aggregate growth, but metropolitan transition

The comparison with other metropolitan regions in Northeast Brazil is used with methodological rigor and for contextual purposes. It does not confirm that the Aracaju Metropolitan Region is an exceptional case of aggregate growth. On the contrary, the available data suggest that Aracaju is part of a broader regional pattern of metropolitan processes involving mid-sized and smaller capitals in Northeast Brazil. This finding does not weaken the article; it makes the analysis more precise. The phenomenon is not unique to Aracaju, but a local manifestation of a broader regional process.

A more scientifically robust question is different: the RMA appears to participate in a regional pattern of metropolitanization among mid-sized capitals, while expressing that pattern in a specific way. The empirical distinctiveness of the Aracaju case lies not in an exceptional aggregate growth rate, but in the internal asymmetry between the core and its surrounding municipalities: Aracaju grows moderately as a municipality, whereas Barra dos Coqueiros, São Cristóvão, and Nossa Senhora do Socorro grow proportionally faster while remaining functionally connected to the capital.

This distinction is crucial for avoiding unwarranted inferences. Aggregate population growth, by itself, does not prove migration from outside the metropolitan region. Likewise, moderate municipal growth does not disprove urban transformation. What the data cautiously support is that the municipality of Aracaju, considered alone, has become insufficient as the sole unit of analysis. The relevant phenomenon lies in the relationship between the formal RMA and the functional use of the capital, although the functional area itself still requires direct measurement through commuting flows, origin-destination data, and migration data.

4.2 Aracaju over time: accelerated urbanization, slowing core growth, and a change of scale

Aracaju's census trajectory reveals two main phases. The first corresponds to accelerated urbanization in the central municipality, especially between 1960 and 1991. Between 1960 and 1980, Aracaju more than doubled its population, from 115,713 to 299,422 inhabitants. By 1991, it had reached 401,676 inhabitants. This period reflects the consolidation of the capital as Sergipe's main urban, administrative, and service center.

The second phase corresponds to the relative slowdown of growth in the municipal core and the emergence of the metropolitan scale as an indispensable analytical dimension. Between 2000 and 2010, Aracaju still recorded substantial growth of 23.87%, with a compound annual growth rate (CAGR) of 2.16% per year. Between 2010 and 2022, however, municipal growth fell to 5.53%, with a CAGR of 0.45% per year. This slowdown does not indicate an absence of

urban transformation; rather, it indicates that population expansion was no longer concentrated primarily in the core municipality.

The 2025 population estimate suggests continued municipal growth, with Aracaju reaching 630,932 inhabitants. Between 2022 and 2025, the estimated change was 4.67%, equivalent to a CAGR of 1.53% per year. This result should be interpreted cautiously because municipal estimates do not replace a census count or provide the census migration variables. Even so, the figure signals moderate continuity in the core.

Table 2 - Aracaju: census trajectory and 2025 population estimate.

Year	Population	Absolute change	Change (%)	CAGR (% p.a.)
1960	115,713	-	-	-
1970	186,838	71,125	61.47	4.91
1980	299,422	112,584	60.26	4.83
1991	401,676	102,254	34.15	2.71
2000	461,083	59,407	14.79	1.54
2010	571,149	110,066	23.87	2.16
2022	602,757	31,608	5.53	0.45
2025*	630,932	28,175	4.67	1.53

Source: Prepared by the authors based on the IBGE Demographic Censuses, 1960-2022, and the 2025 Population Estimates. Note: 2025* is the official municipal estimate and should be interpreted as indicative rather than census data. Methodological note: CAGR denotes the compound annual growth rate and was calculated using the formula $CAGR = [(P_{final} / P_{initial})^{(1/n)} - 1] \times 100$, where P_{final} is the population at the end of the period, $P_{initial}$ is the population at the beginning of the period, and n is the number of years in the interval. The indicator makes it possible to compare periods of different lengths using a compound annual rate.

4.3 The RMA as the decisive empirical unit: growth in the surrounding municipalities and pressure on the core

Analyzing the Aracaju Metropolitan Region substantially changes the diagnosis. Between 2010 and 2022, the RMA grew from 835,816 to 932,210 inhabitants, an increase of 96,394 people, or 11.53%. In 2025, the sum of the official IBGE municipal estimates for Aracaju, Barra dos Coqueiros, Nossa Senhora do Socorro, and São Cristóvão reached 981,401 inhabitants. The RMA is therefore approaching one million residents, a relevant threshold for planning transportation, housing, sanitation, urban services, and metropolitan governance.

The most consistently measured evidence is not only the RMA's growth, but also its internal distribution. While Aracaju grew by 5.53% between 2010 and 2022, Barra dos Coqueiros grew by 66.20%, São Cristóvão by 21.24%, and Nossa Senhora do Socorro by 19.59%. Between 2010 and 2025, Barra dos Coqueiros grew by 80.87%, São Cristóvão by 28.34%, and Nossa Senhora do Socorro by 26.89%, compared with 10.47% in Aracaju.

This pattern is consistent with a process of relative residential decentralization. The core municipality maintains functional centrality but loses relative population share within the metropolitan region. In 2010, Aracaju accounted for 68.33% of the RMA's population; this share fell to 64.66% in 2022 and to 64.29% in 2025. Conversely, the surrounding municipalities

increased their share from 31.67% to 35.71% of the metropolitan population over the same interval.

Between 2010 and 2022, the surrounding municipalities accounted for 67.21% of the RMA's population increase. This indicator shows that most of the absolute growth during the intercensal period occurred not in the core, but in neighboring municipalities. The most defensible argument, therefore, is not that Aracaju is growing rapidly as a municipality, but that the formal metropolitan region is growing and redistributing population toward its surroundings while the capital remains the main center of daily activity.

Table 3 - Aracaju Metropolitan Region: population, growth, and 2025 estimate.

Municipality/area	2010 (Census)	2022 (Census)	2025* (estimate)	% 2010-2022	CAGR 2010-2022	% 2022-2025*	CAGR 2022-2025*	% 2010-2025*
Aracaju	571,149	602,757	630,932	5.53	0.45	4.67	1.53	10.47
Barra dos Coqueiros	24,976	41,511	45,175	66.20	4.32	8.83	2.86	80.87
Nossa Senhora do Socorro	160,827	192,330	204,081	19.59	1.50	6.11	2.00	26.89
São Cristóvão	78,864	95,612	101,213	21.24	1.62	5.86	1.92	28.34
RMA	835,816	932,210	981,401	11.53	0.91	5.28	1.73	17.42

Source: Prepared by the authors based on the IBGE Demographic Censuses of 2010 and 2022; IBGE 2025 Population Estimates; and Observatório das Metrôpoles (2023a). Note: 2025* = IBGE estimate; 2010/2022 = Census.

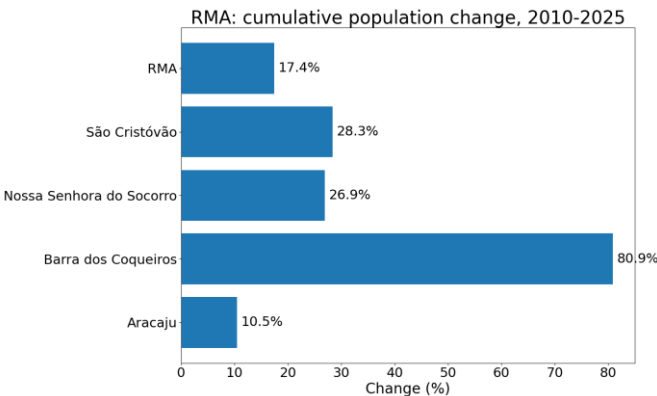


Figure 1 - RMA: cumulative population change, 2010-2025.

Source: Prepared by the authors based on IBGE and Observatório das Metrôpoles. Note: 2025 is an estimate.

Table 4 - Indicators of asymmetry between the core and surrounding municipalities in the RMA.

Indicator	2010	2022	2025*	Revised interpretation
Aracaju's share of the RMA	68.33%	64.66%	64.29%	decline in the core's relative share
Surrounding municipalities' share of the RMA	31.67%	35.34%	35.71%	increase in the residential share of neighboring municipalities
RMA/Aracaju ratio	1.46	1.55	1.56	the formal metropolitan area grows relative to the core
Population of surrounding municipalities	264,667	329,453	350,469	growth of 32.42% between 2010 and 2025*

Indicator	2010	2022	2025*	Revised interpretation
Surrounding municipalities' contribution to RMA growth	-	67.21% of the 2010-2022 increase	42.72% of the 2022-2025* increase	predominance of the surrounding municipalities in the census period; 2022-2025* is only indicative

Source: Prepared by the authors based on IBGE and Observatório das Metrópoles. Note: The share of the increase in 2022-2025 should be interpreted cautiously because it is based on annual population estimates.

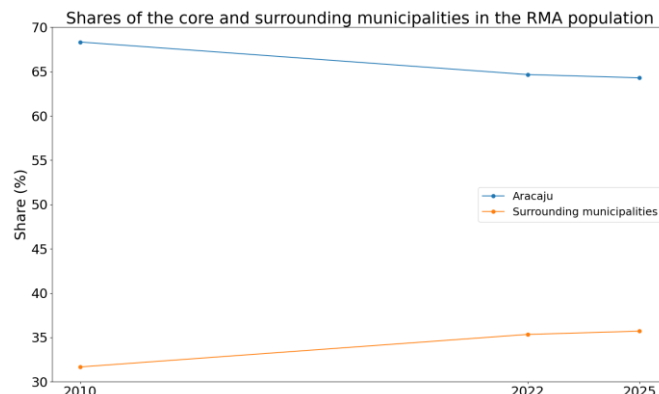


Figure 2 - Shares of the core and surrounding municipalities in the RMA population.

Source: Prepared by the authors based on IBGE and Observatório das Metrópoles.

4.4 Comparison with João Pessoa, Natal, and Maceió: a common regional pattern and statistical caution

In this section, the regional comparison is used as analytical context rather than as a test of the RMA's statistical superiority. Its purpose is to situate Aracaju among mid-sized and smaller capitals in Northeast Brazil that combine formal metropolitan status, residential expansion at the urban fringe, service centrality, and real-estate or mobility pressures. The comparison should therefore be read at two levels: first, as a qualitative approximation among metropolitan trajectories; and second, as a limited quantitative exercise restricted to available harmonized indicators for the core municipalities and, where possible, the metropolitan boundaries reported by technical sources.

The João Pessoa Metropolitan Region represents a process of metropolitanization driven by residential, coastal, and service-sector attractiveness. According to the Observatório das Metrópoles, the João Pessoa Metropolitan Region had 1,304,266 inhabitants in 2022, making it the most populous metropolitan region in Paraíba. Natal reflects a more mature stage of metropolitanization, with population loss in the core municipality and growth in peripheral areas. Maceió, in turn, requires greater caution because its recent dynamics combine metropolitanization, institutional reorganization, and forced displacement related to the socioenvironmental disaster caused by rock-salt mining.

Because of differences in legal composition, data-series availability, and institutional changes, this version treats comparisons among metropolitan regions as contextual and cautious. The comparison is not used to claim that the RMA has the highest growth or to rank

metropolitan regions statistically. Its function is to situate Aracaju within a regional pattern of metropolitan transition among mid-sized capitals and to identify similarities in their trajectories, without replacing the main quantitative analysis, which focuses on the RMA. To add demographic depth to the comparison, the following summary box presents harmonized indicators for the core municipalities and the 2022 metropolitan population where technical or official sources report comparable figures.

Table 5 - Selected metropolitan regions in Northeast Brazil: qualitative comparison.

Case	Institutionalization	Qualitative comparative interpretation	Methodological use in the article
RMA - Aracaju	1995	moderate core growth, proportionally faster growth in surrounding municipalities, and a formal four-municipality area approaching 1 million inhabitants	case analyzed with its own indicators and a stable composition
João Pessoa Metropolitan Region	2003	growth in the core and in peripheral/coastal municipalities, with more visible residential and tourism attractiveness	regional counterpoint; not used to claim that the RMA is exceptional
Natal Metropolitan Region	1997	more mature stage, with population loss in the core and growth in surrounding municipalities	reference for a possible future trajectory of population deconcentration from the core
Maceió Metropolitan Region	1998; restructured in 2019	cautious comparison because of institutional reorganization and a territorial shock associated with the rock-salt mining disaster	contextual example; not used for direct statistical comparison

Source: Prepared by the authors based on IBGE, Observatório das Metrópoles, and state legislation. Note: The table does not compare harmonized rates; it presents a qualitative analytical interpretation because of differences in statutory composition and data availability.

Box 1 - Harmonized quantitative indicators for selected core capital cities and metropolitan regions.

Case	Core population, 2010	Core population, 2022	Change in core population, 2010-2022	Metropolitan population, 2022	Comparative interpretation
Aracaju/RMA	571,149	602,757	+5.53%	932,210	the core grows slowly; surrounding municipalities account for most metropolitan growth
João Pessoa/RMJP	723,515	833,932	+15.26%	1,304,266	the core and surrounding municipalities grow, with more visible residential and coastal attractiveness
Natal/RMN	803,739	751,300	-6.52%	approx. 1.52 million	the core loses population while surrounding municipalities reinforce decentralization
Maceió/RMM	932,748	957,916	+2.70%	approx. 1.28 million	the core grows slowly; the case requires caution because of institutional reorganization and



Case	Core population, 2010	Core population, 2022	Change in core population, 2010- 2022	Metropolitan population, 2022	Comparative interpretation
					territorial shock

Source: Prepared by the authors based on the IBGE Demographic Censuses of 2010 and 2022; Observatório das Metrópoles (2023a, 2023b, 2023c); and BNB (2023). Note: Data for the core municipalities are directly comparable between 2010 and 2022. The 2022 metropolitan populations follow the boundaries reported by the technical sources and should be interpreted cautiously because of differences in statutory composition and institutional reconfigurations among the metropolitan regions.

5 Results and discussion

5.1 From municipal growth to metropolitan intensification

The main empirical result is the need to reformulate the initial question. If the phenomenon is understood as an exceptional increase in the resident population within Aracaju's administrative boundaries, the data do not support a strong conclusion. The municipality grew by 5.53% between 2010 and 2022—a positive but moderate rate. The evidence becomes more consistent when the analytical unit is expanded from the municipality alone to the formal Aracaju Metropolitan Region, comprising Aracaju, Barra dos Coqueiros, Nossa Senhora do Socorro, and São Cristóvão.

Within this formal metropolitan area, which is functionally connected to the capital, growth exceeds that of the core. The RMA grew by 11.53% between 2010 and 2022 and reached 981,401 inhabitants according to the aggregated 2025 municipal estimates. The central point is not to demonstrate that the RMA grew exceptionally compared with every other metropolitan region in Northeast Brazil, but to show that Aracaju participates in a regional pattern of metropolitanization among midsize capitals with a local specificity: the surrounding municipalities grow proportionally faster than the capital, while the capital continues to concentrate services, commerce, employment, healthcare, education, leisure, public administration, and tourism.

The pressure perceived in Aracaju may therefore be greater than its resident population would indicate. A person may live in Barra dos Coqueiros, São Cristóvão, or Nossa Senhora do Socorro while using Aracaju for work, education, consumption, medical care, access to public facilities, or leisure. This interpretation remains inferential because the commuting population and the population that uses the city daily have not yet been measured directly.

5.2 The role of Barra dos Coqueiros in Aracaju's emerging metropolitanization

Barra dos Coqueiros provides the strongest measured evidence of recent metropolitan residential redistribution. The municipality had 24,976 inhabitants in 2010, 41,511 in 2022, and an estimated 45,175 in 2025. This represents growth of 66.20% between 2010 and 2022 and



80.87% between 2010 and 2025. No indicator for the municipality of Aracaju alone captures the transformation more clearly than this growth in its immediate surroundings.

This growth may be interpreted in connection with the Ponte Construtor João Alves (Construtor João Alves Bridge), the appreciation of the northern coast, the expansion of gated communities, and functional proximity to Aracaju. Because these relationships would require specific local sources for direct confirmation, they are treated here as an interpretive hypothesis consistent with the metropolitanization literature and the observed growth pattern in the surrounding area. The mechanism is metropolitan: when land in the core becomes more expensive or scarce, part of residential demand may shift to contiguous areas without severing daily ties to the core. Growth in Barra dos Coqueiros should therefore not be read as a phenomenon separate from Aracaju, but as one of the territorial expressions of the metropolitanization of Sergipe's capital.

5.3 Recent real-estate appreciation: residential sales and rentals according to the FipeZAP Index

To test the hypothesis of real-estate pressure empirically, the FipeZAP Residential Sale and Rental Index is a more appropriate proxy than construction costs. SINAPI measures the production cost per square meter at the construction site; it does not measure the market price of completed properties, land value, rent, developers' margins, or competition for location. Although FipeZAP also has limitations, it more closely approximates the phenomenon experienced by urban users because it tracks asking prices for completed apartments offered for sale and rent in cities monitored by Fipe.

The methodological limitation must be explicit: FipeZAP uses asking prices posted on the OLX Group's real-estate portals—Zap, Viva Real, and OLX—rather than necessarily the prices of completed transactions. It also tracks completed apartments in monitored cities, not the entire housing market. Even so, because it provides comparable series across capitals and distinguishes sales from rentals, the index is a useful proxy for assessing whether Aracaju's residential market has experienced recent pressure relative to comparable capitals in Northeast Brazil (FIPE, 2026a; FIPE, 2026b).

Data for April 2026 indicate that Aracaju's residential sales market is not exceptional relative to the other capitals compared. Between 2022 and April 2026, the compound cumulative appreciation of sale prices was 35.27% in Aracaju, above the FipeZAP average for the period (30.03%) and the approximate cumulative increase in the Extended National Consumer Price Index (IPCA; 24.39%), but below João Pessoa (63.02%), Maceió (58.50%), and Natal (42.71%). In April 2026, the average sale price in Aracaju was R\$ 5,529/m², lower than in João Pessoa, Natal, and Maceió. Residential sales therefore do not support a claim of exceptional real-estate

appreciation in Aracaju; they indicate positive appreciation while absolute prices remain relatively competitive.

Table 6 - Residential sales: annual and cumulative changes and average price.

Area	2022	2023	2024	2025	2026*	Cumulative change, 2022-Apr. 2026	Average price, Apr. 2026
Aracaju	6.98%	5.89%	13.79%	2.23%	2.65%	35.27%	R\$5,529/m²
João Pessoa	10.26%	9.82%	15.54%	15.15%	1.19%	63.02%	R\$8,081/m²
Natal	8.28%	7.28%	8.51%	9.26%	3.62%	42.71%	R\$6,334/m²
Maceió	13.22%	16.00%	10.50%	6.18%	2.86%	58.50%	R\$9,908/m²
FipeZAP Index	6.16%	5.13%	7.73%	6.52%	1.53%	30.03%	R\$9,769/m²
IPCA	5.79%	4.62%	4.83%	4.26%	2.83%	24.39%	-

Source: Prepared by the authors based on the April 2026 FipeZAP Residential Sale Index report. Note: 2026* denotes the year-to-date change through April 2026; the cumulative change from 2022 to April 2026 was calculated on a compound basis.

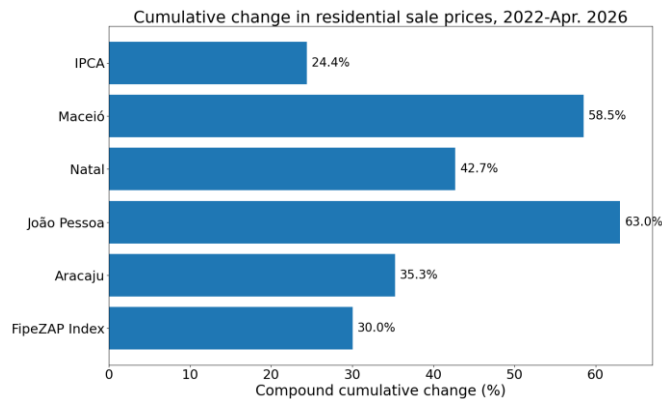


Figure 3 - Cumulative appreciation in residential sale prices, 2022-April 2026.

Source: Prepared by the authors based on the FipeZAP Residential Sale Index.

The strongest evidence for the hypothesis of recent urban pressure appears in the rental market. Between 2022 and April 2026, residential rents in Aracaju rose by a compound cumulative 92.03%, above the FipeZAP rental average for the same period (74.07%), Natal (72.62%), Maceió (71.28%), and far above the approximate cumulative increase in the IPCA (24.11%). Aracaju's cumulative increase was also close to João Pessoa's (87.70%) and, over the 12 months ending in April 2026, Aracaju recorded the highest increase among the monitored capitals, at 17.71%. In addition, from January through April 2026, rents in Aracaju rose by 11.26%, compared with 5.85% in João Pessoa, 5.09% in Maceió, and 2.38% in Natal.

This result is central to the article, but it must be interpreted precisely. Residential sales reflect an asset stock and expectations of appreciation; rentals reflect the immediate use of housing. When rents rise faster than sale prices, the evidence is consistent with demand pressure for housing and access to urban locations, which may be associated with several mechanisms—residential mobility, students, workers, temporary stays, medium-term tourism, or households undergoing housing transitions—all of which still require direct testing. In Aracaju, this pattern is consistent with the hypothesis of increased functional pressure and stronger competition for

urban locations, although it does not by itself prove migration from outside the metropolitan region.

Table 7 - Residential rentals: annual and cumulative changes, average price, and rental yield.

Area	2022	2023	2024	2025	2026*	Cumulative change, 2022-Apr. 2026	Average price, Apr. 2026	Rental yield, Apr. 2026
Aracaju	6.26%	25.64%	10.75%	16.73%	11.26%	92.03%	R\$35.36/m²	6.58% p.a.
João Pessoa	16.16%	20.19%	10.15%	15.31%	5.85%	87.70%	R\$51.36/m²	6.92% p.a.
Natal	26.63%	8.88%	11.04%	10.13%	2.38%	72.62%	R\$40.92/m²	7.38% p.a.
Maceió	24.46%	12.91%	3.35%	12.22%	5.09%	71.28%	R\$57.64/m²	6.88% p.a.
FipeZAP Index	16.55%	16.16%	13.50%	9.44%	3.51%	74.07%	R\$52.89/m²	6.08% p.a.
IPCA	5.79%	4.62%	4.83%	4.26%	2.60%	24.11%	-	-

Source: Prepared by the authors based on the April 2026 FipeZAP Residential Rental Index report. Note: 2026* denotes the year-to-date change through April 2026; the cumulative change from 2022 to April 2026 was calculated on a compound basis.

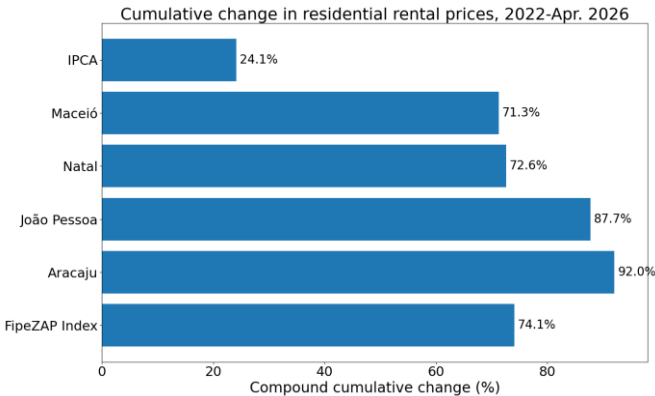


Figure 4 - Cumulative appreciation in residential rental prices, 2022-April 2026.

Source: Prepared by the authors based on the FipeZAP Residential Rental Index.

The comparative reading supports a more refined conclusion. Aracaju does not stand out as the most expensive sales market or as the capital with the greatest asset appreciation since 2022. It does, however, show measured evidence of recent locational pressure: cumulative rent growth above the FipeZAP average, a substantial increase in 2025, and the highest 12-month increase among the monitored capitals through April 2026. The metropolitan-intensification hypothesis therefore receives its strongest support from the market for immediate residential use, rather than from construction costs or sale prices considered in isolation.

5.4 Traffic, the vehicle fleet, and potential road pressure on Aracaju

The perception of congestion is not direct evidence of migration or commuting. The public proxy used here is the motorization rate, calculated as the total vehicle fleet divided by the resident population and expressed as vehicles per 100 inhabitants. This measure does not replace origin-destination data, public-transport ticketing data, bridge traffic counts, or commuting data, but it allows the potential road pressure associated with greater availability of registered vehicles to be assessed.

For Aracaju, the fleet reported by the former DENATRAN in December 2010 was 206,616 vehicles, equivalent to approximately 36.2 vehicles per 100 inhabitants based on the census population of 571,149. In December 2024, SENATRAN's municipal fleet database recorded 356,375 vehicles in Aracaju; using the 2025 population estimate, the rate was approximately 56.5 vehicles per 100 inhabitants. Across the four-municipality RMA, the combined fleet of 467,967 vehicles represented about 47.7 vehicles per 100 inhabitants. This proxy indicates intensified motorization, but it does not prove that these vehicles circulate in Aracaju, cause congestion, or originate in the surrounding municipalities. The municipality in which a vehicle is registered may differ from where it is actually driven, used for work, or used on a daily basis.

The best measure for directly testing the hypothesis would be commuting for work and education, preferably using census microdata. Until these tabulations are incorporated into the article, vehicles per capita should be read as a proxy for potential road pressure. It becomes more informative when analyzed together with growth in the surrounding municipalities and the continuing concentration of services in the capital.

Table 8 - Proxy for potential road pressure: vehicle fleet, population, and motorization rate.

Area	Reference year	Population used	Total vehicle fleet	Vehicles per 100 inhabitants
Aracaju	2010	571,149	206,616	36.2
Aracaju	Dec. 2024 and 2025*	630,932	356,375	56.5
Immediate RMA (four municipalities)	Dec. 2024 and 2025*	981,401	467,967	47.7

Source: Prepared by the authors based on the former DENATRAN, SENATRAN/Ministry of Transport municipal vehicle-fleet database for December 2024, and IBGE. Note: For 2024, the ratio uses the 2025 population estimate because it is the most recent municipal population figure available; the indicator does not measure congestion, origin-destination flows, actual circulation, or commuting.

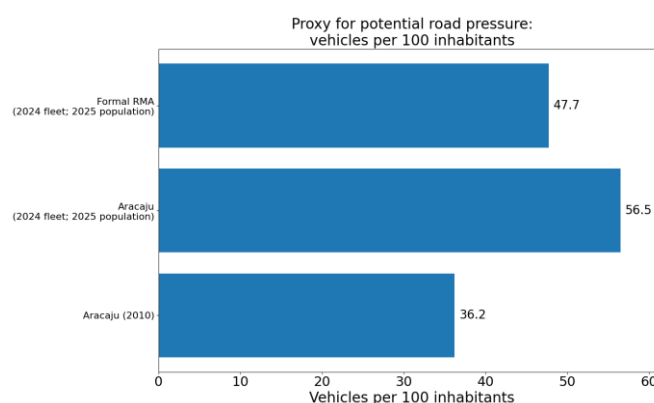


Figure 5 - Proxy for potential road pressure: vehicles per 100 inhabitants.

Source: Prepared by the authors based on SENATRAN and IBGE.

5.5 Tourism, the airport, and residential attractiveness

Tourism should be treated as an indirect driver, not as proof. An increase in visitors does not automatically mean that new residents are arriving. In midsized coastal capitals, however, the



tourism experience may serve as a residential showcase: individuals visit the city, compare its quality of life and relative cost with those of other capitals, and may begin to consider permanent relocation or property purchases.

In Aracaju, airport passenger traffic increased after the pandemic. Data released by the Ministry of Ports and Airports, based on figures from the Agência Nacional de Aviação Civil (ANAC; National Civil Aviation Agency), indicate a 23% increase in passenger traffic at Aracaju International Airport between 2022 and 2023, from 935,000 to 1,150,000 passengers (Brasil, 2024). In 2025, the Municipality of Aracaju reported, using Aena Brasil data, that the airport handled 1,377,686 passengers, an increase of 7.1% over 2024 (Aracaju, 2026). This growth supports an interpretation of increased circulation and visibility, but it does not prove migration.

The appropriate interpretation is causally restrained: tourism and promotional policies may have increased the visibility of Aracaju and Sergipe, which may in turn strengthen residential attractiveness. However, no conversion of tourists into residents is inferred without specific research. Confirming this mechanism would require combining 2022 Census migration data with qualitative research on motivations for moving and time series from the real-estate market.

5.6 Comparative chronology of metropolitan transition in mid-sized capitals of Northeast Brazil

The regional comparison shows that metropolitan transition is not a single event, but a sequence of phases: legal recognition, peripheral residential expansion, increased commuting, appreciation of land in the core, growth in peripheral municipalities, and the need for shared governance. In Natal, legal recognition occurred in 1997, and the empirical transition was already observable in the 1990s and 2000s, with growth in Parnamirim and subsequent expansion toward Extremoz and other municipalities along the metropolitan arc. In João Pessoa, institutionalization in 2003 coincided with growth in the core and in coastal and peripheral municipalities over the following decades. In Maceió, the 1998 institutional arrangement was reconfigured in 2019, and recent dynamics have been combined with forced displacement caused by the rock-salt mining disaster.

Aracaju received legal recognition in 1995, but its current phase appears to involve delayed intensification. The RMA had existed institutionally for decades; what changed during the 2010-2025 cycle was the relative strength of the surrounding municipalities, the metropolitan region's approach to one million inhabitants, the expansion of Barra dos Coqueiros, increasing motorization, and the everyday perception that the capital had become more congested. Aracaju therefore need not be treated as an exceptional case to be scientifically relevant. The article's

contribution is to show how a regional pattern of metropolitanization manifests itself locally and why urban planning for the capital must operate at a metropolitan rather than merely municipal scale.

Table 9 - Comparative chronology of metropolitan transition in midsized capitals of Northeast Brazil.

Case	Institutional milestone	Empirical timing of transition	Main evidence	Lesson for Aracaju
Natal	1997	1990s-2000s; maturation in 2010-2022	the Natal core loses population and surrounding municipalities such as Extremoz gain importance	examining the capital alone is insufficient: surrounding metropolitan municipalities may explain part of the urban pressure
João Pessoa	2003	2000s-2020s	the core grows and coastal/peripheral municipalities gain population	residential and tourism attractiveness can redefine the metropolitan scale
Maceió	1998; restructured in 2019	2000s-2020s, with the Braskem shock	the capital grows slowly and experiences intraurban displacement associated with the mining disaster	metropolitanization may be shaped by environmental, real-estate, and housing shocks
Aracaju	1995	intensification in 2010-2025*	the RMA grows faster than the capital; Barra dos Coqueiros grows by 80.87% in 2010-2025*; the RMA approaches 1 million inhabitants	planning Aracaju solely as a municipality is insufficient given the metropolitan scale

Source: Prepared by the authors based on state legislation, IBGE, and Observatório das Metrôpoles.

5.7 Interpretive synthesis: what phenomenon is occurring?

The data do not support the claim that Aracaju is experiencing a municipal population explosion. They do, however, provide consistent indirect evidence of metropolitan transition, peripheral residential growth, increased motorization, locational pressure in the rental market, and expanded tourist circulation. The demographic phenomenon is more complex than a simple mass influx of people taking up residence within the capital.

The most defensible synthesis is as follows: Aracaju is experiencing a phase in which metropolitan intensification is consolidating, characterized by faster growth in the surrounding municipalities than in the core, locational pressure in the rental market, continued functional centrality of the capital, increased tourist circulation, and a possible rise in migration and commuting flows that still require direct measurement using the 2022 Census. The capital appears to be under greater pressure because the metropolitan area that uses it has grown faster than the municipality's formally resident population. Traffic and prices reflect the combined influence of the census-defined municipal population, the formal RMA, and the functional use of the capital.



6 Methodological limitations and research agenda

This article should be read as an exploratory study in urban demography based on indirect and comparative evidence. Its main limitation is the absence, from the empirical analysis, of direct tabulations of the 2022 Census migration questions and of commuting data for work and education. The article therefore does not demonstrate migration from outside the metropolitan region, intrametropolitan migration, or a commuting population; rather, it supports an interpretation consistent with metropolitan intensification on the basis of clearly delimited indirect indicators.

The category of “functional pressure” also has an important limitation. It does not correspond to a formal estimate of the floating population or of service users, tourists, students, or workers. Its use is interpretive and derives from the combination of growth in the surrounding municipalities, the concentration of functions in the capital, motorization, and the rental market. Turning it into a direct demographic measure would require estimates of daily flows, service users, and journeys to work and education.

Another limitation concerns the real-estate market. FipeZAP tracks asking prices for completed apartments on property portals, not actual transaction prices or the entire housing stock. Its value lies in temporal and territorial comparability, but its results should be interpreted as a proxy for market pressure rather than as a comprehensive measure of the housing market.

The research agenda comprises five complementary stages: (1) extracting from SIDRA/IBGE and census microdata the 2022 Census migration tables for each RMA municipality, including place of birth, previous residence, duration of residence, and residence five years earlier; (2) estimating indirect net migration using the intercensal survival method, separating natural growth from net migration; (3) incorporating commuting for work and education to estimate the population that uses Aracaju on a daily basis; (4) compiling municipal indicators of real-estate production, such as building permits, occupancy permits, new developments, vacant dwellings, and occasionally occupied dwellings; and (5) conducting interviews or a survey with recent migrants and property buyers in Aracaju, Barra dos Coqueiros, São Cristóvão, and Nossa Senhora do Socorro.

7 Final considerations

The analysis supports a conclusion that is both more robust and more faithful to the data. Exceptional migration-driven growth is not the central argument. Based on the available evidence, Aracaju is not experiencing a municipal population explosion. Growth of 5.53% between 2010 and 2022 is moderate. The Aracaju Metropolitan Region, however, grew by



11.53% over the same interval, reached 981,401 inhabitants in 2025, and showed proportionally faster growth in the surrounding municipalities, especially Barra dos Coqueiros.

The central phenomenon is metropolitan. Aracaju is the core that concentrates employment, consumption, healthcare, education, public services, leisure, tourism, and opportunities. Residents of neighboring municipalities may therefore affect traffic, prices, services, and infrastructure in the capital. The municipality had an estimated population of approximately 631,000 in 2025, while the formal four-municipality metropolitan region approached one million inhabitants. This difference is not a direct measure of the functional population, but it indicates that the municipal scale is insufficient for interpreting recent urban pressure and guiding public policy. From a planning perspective, the evidence reinforces the need for metropolitan governance, integration among land use, mobility, housing, and urban services, and coordination among the RMA municipalities.

The comparison with Natal, João Pessoa, and Maceió strengthens this interpretation when used appropriately. Aracaju need not grow faster than every other metropolitan region for the phenomenon to matter. What matters is that it locally expresses a process observed in other midsized capitals in Northeast Brazil: residential displacement toward peripheral areas, growth in peripheral municipalities, selective land appreciation, real-estate expansion, and the persistence of the core's functional centrality.

Real-estate data reinforce the economic dimension of the argument mainly through residential rentals. Aracaju does not stand out as the most expensive sales market or as the market with the greatest asset appreciation since 2022. Residential rents, however, rose by a cumulative 92.03% between 2022 and April 2026, above the FipeZAP rental average and the corresponding increases in Natal and Maceió. This suggests greater demand for the immediate use of housing, consistent with stronger functional pressure, residential mobility, and competition for location.

The next essential step is to tabulate the 2022 Census migration questions for Aracaju, Barra dos Coqueiros, Nossa Senhora do Socorro, and São Cristóvão. Only this step will make it possible to distinguish interstate migration, intrastate migration, intrametropolitan redistribution, and natural population growth. Until then, the argument must remain probabilistic: the available data suggest that Aracaju is experiencing less an exceptional phase of municipal growth than a recent process of metropolitan intensification. This interpretive key turns an everyday perception into a cautious scientific hypothesis that is useful for metropolitan planning.

References

ALAGOAS. Lei Complementar nº 18, de 19 de novembro de 1998. Dispõe sobre a criação da Região Metropolitana de Maceió - R.M.M. e dá outras providências. Maceió: Assembleia Legislativa do Estado de Alagoas, 1998.



- ALAGOAS. Lei Complementar nº 50, de 15 de outubro de 2019. Dispõe sobre o Sistema Gestor Metropolitano da Região Metropolitana de Maceió - RMM e dá outras providências. Maceió: Governo do Estado de Alagoas, 2019.
- ANAC. Dados estatísticos do transporte aéreo. Brasília: Agência Nacional de Aviação Civil, 2024. Available at: <https://www.gov.br/anac/pt-br/assuntos/dados-e-estatisticas>. Accessed on: June 10, 2026.
- ARACAJU. Prefeitura Municipal. Com alta de 7,1%, Aeroporto de Aracaju supera 1,3 milhão de passageiros em 2025. Aracaju, 2026. Available at: https://www.aracaju.se.gov.br/noticias/115040/com_alta_de_7%2C1%2C_aeroporto_de_aracaju_supera_1%2C3_milhao_de_passageiros_em_2025.html. Accessed on: June 10, 2026.
- BAENINGER, Rosana. Rotatividade migratória: um novo olhar para as migrações internas no Brasil. *Revista Interdisciplinar da Mobilidade Humana*, Brasília, v. 20, n. 39, p. 77-100, 2012.
- BAENINGER, Rosana. Migrações internas no Brasil: tendências para o século XXI. *Revista NECAT*, Florianópolis, v. 4, n. 7, p. 9-22, 2015.
- BENSON, Michaela; O'REILLY, Karen. Migration and the search for a better way of life: a critical exploration of lifestyle migration. *The Sociological Review*, v. 57, n. 4, p. 608-625, 2009.
- BNB. Censo Demográfico 2022: primeiros resultados - Alagoas. Fortaleza: Banco do Nordeste do Brasil, 2023. Available at: <https://www.bnb.gov.br/>. Accessed on: June 10, 2026.
- BRASIL. Lei Complementar nº 14, de 8 de junho de 1973. Estabelece as regiões metropolitanas de São Paulo, Belo Horizonte, Porto Alegre, Recife, Salvador, Curitiba, Belém e Fortaleza. Brasília, DF: Presidência da República, 1973.
- BRASIL. Ministério de Portos e Aeroportos. Com o aumento da demanda de passageiros, Aeroporto de Aracaju ganha novas instalações. Brasília, 2024. Available at: <https://www.gov.br/portos-e-aeroportos>. Accessed on: June 10, 2026.
- BRASIL. Ministério dos Transportes. Secretaria Nacional de Trânsito - SENATRAN. Estatísticas de frota de veículos: frota por município e tipo, dezembro de 2024. Brasília: SENATRAN, 2024. Available at: <https://www.gov.br/transportes/pt-br/assuntos/transito/conteudo-Senatran/estatisticas-frota-de-veiculos-senatran>. Accessed on: June 10, 2026.
- CUNHA, José Marcos Pinto da. Mobilidade espacial da população: desafios teóricos e metodológicos para o seu estudo. Campinas: Núcleo de Estudos de População, Unicamp, 2015.
- FIPE. Índice FipeZAP de Venda Residencial: informe de abril de 2026. São Paulo: Fundação Instituto de Pesquisas Econômicas, 2026a. Available at: <https://downloads.fipe.org.br/indices/fipezap/fipezap-202604-residencial-venda-publico.pdf>. Accessed on: June 10, 2026.
- FIPE. Índice FipeZAP de Locação Residencial: informe de abril de 2026. São Paulo: Fundação Instituto de Pesquisas Econômicas, 2026b. Available at: <https://downloads.fipe.org.br/indices/fipezap/fipezap-202604-residencial-locacao.pdf>. Accessed on: June 10, 2026.
- HARVEY, David. The limits to capital. Oxford: Basil Blackwell, 1982.
- HARVEY, David. A produção capitalista do espaço. São Paulo: Annablume, 2005.
- IBGE. Censo Demográfico 2010. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística, 2010. Available at: <https://sidra.ibge.gov.br>. Accessed on: June 10, 2026.
- IBGE. Censo Demográfico 2022: população e domicílios - primeiros resultados. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística, 2023. Available at: <https://www.ibge.gov.br>. Accessed on: June 10, 2026.
- IBGE. Estimativas da população residente para os municípios e para as unidades da federação com data de referência em 1º de julho de 2025. Rio de Janeiro: IBGE, 2025a. Available at: <https://www.ibge.gov.br/estatisticas/sociais/populacao/9103-estimativas-de-populacao.html>. Accessed on: June 10, 2026.
- IBGE. Censo Demográfico 2022: fecundidade e migração - resultados preliminares da amostra. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística, 2025b. Available at: <https://www.ibge.gov.br>. Accessed on: June 10, 2026.
- LEE, Everett S. A theory of migration. *Demography*, v. 3, n. 1, p. 47-57, 1966.
- LENCIONI, Sandra. Referências analíticas para a discussão da metamorfose metropolitana. *Mercator*, Fortaleza, v. 10, n. 21, p. 51-63, 2011.
- LENCIONI, Sandra. Metropolização. *GEOgraphia*, Niterói, v. 22, n. 48, 2020.



OBSERVATÓRIO DAS METRÓPOLES. Os dados preliminares do Censo 2022 na Região Metropolitana de Aracaju apontam novas tendências. Rio de Janeiro: Observatório das Metrópoles, 2023a. Available at: <https://www.observatoriodasmetrosoles.net.br/os-dados-preliminares-do-censo-2022-na-regiao-metropolitana-de-aracaju-apontam-novas-tendencias/>. Accessed on: June 10, 2026.

OBSERVATÓRIO DAS METRÓPOLES. Dinâmicas demográficas e imobiliárias: os primeiros dados do Censo 2022 para a Região Metropolitana de Natal. Rio de Janeiro: Observatório das Metrópoles, 2023b. Available at: <https://www.observatoriodasmetrosoles.net.br/dinamicas-demograficas-e-imobiliarias-os-primeiros-dados-do-censo-2022-para-a-regiao-metropolitana-de-natal/>. Accessed on: June 10, 2026.

OBSERVATÓRIO DAS METRÓPOLES. Análise da dinâmica populacional das Regiões Metropolitanas de João Pessoa e Campina Grande no Censo 2022. Rio de Janeiro: Observatório das Metrópoles, 2023c. Available at: <https://www.observatoriodasmetrosoles.net.br/analise-da-dinamica-populacional-das-regioes-metropolitanas-de-joao-pessoa-e-campina-grande-no-censo-2022/>. Accessed on: June 10, 2026.

PARAÍBA. Lei Complementar Estadual nº 59, de 2003. Cria a Região Metropolitana de João Pessoa. João Pessoa: Governo do Estado da Paraíba, 2003.

PEREIRA, Rafael H. M.; HERRERO, Verónica. Mobilidade pendular: uma proposta teórico-metodológica. Texto para Discussão. Brasília: Ipea, 2009.

RAVENSTEIN, Ernst Georg. The laws of migration. *Journal of the Statistical Society of London*, v. 48, n. 2, p. 167-235, 1885.

RIBEIRO, Luiz Cesar de Queiroz. A metrópole em questão: desafios da transição urbana. Rio de Janeiro: Letra Capital; Observatório das Metrópoles, 2018.

RIO GRANDE DO NORTE. Lei Complementar nº 152, de 16 de janeiro de 1997. Institui a Região Metropolitana de Natal e dá outras providências. Natal: Governo do Estado do Rio Grande do Norte, 1997.

SANTOS, Milton. A urbanização brasileira. São Paulo: Hucitec, 1993.

SANTOS, Milton. Técnica, espaço, tempo: globalização e meio técnico-científico-informacional. São Paulo: Hucitec, 1994.

SERGIPE. Lei Complementar nº 25, de 29 de dezembro de 1995. Cria a Região Metropolitana de Aracaju. Aracaju: Assembleia Legislativa do Estado de Sergipe, 1995.

SJAASTAD, Larry A. The costs and returns of human migration. *Journal of Political Economy*, v. 70, n. 5, part 2, p. 80-93, 1962.

VILLAÇA, Flávio. Espaço intra-urbano no Brasil. 2. ed. São Paulo: Studio Nobel; FAPESP; Lincoln Institute, 2001.

WILLIAMS, Allan M.; HALL, C. Michael. Tourism and migration: new relationships between production and consumption. *Tourism Geographies*, v. 2, n. 1, p. 5-27, 2000.

ZELINSKY, Wilbur. The hypothesis of the mobility transition. *Geographical Review*, v. 61, n. 2, p. 219-249, 1971.