

Disparities in Access to COPD Medications in Brazil - Impact of Geography and Socioeconomic Factors on Patient Travel Distances

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OBJECTIVES: Brazil, the fifth-largest country in the world, spans an area of 8,514,876 km². Chronic Obstructive Pulmonary Disease (COPD) is projected to affect 17% of the Brazilian population. Considering the critical role of pharmacotherapy in managing COPD and the geographical challenges associated with medication distribution, this study aimed to estimate the distances patients must travel to access medications provided by the Brazilian public health system, assessing whether patients living in rural areas would travel longer distances than the ones living in urban areas, and vice-versa. We also aimed to assess the distance for getting medications in terms of Human Development Index (HDI).

METHODS: Data on COPD medication dispensations were obtained from the Outpatient Information System, which records outpatient data from the Brazilian public health system. Zip codes of patients' residences and health facilities were extracted, and geodesic distances were calculated for each residence-facility pair. These zip codes were classified as urban or rural based on data from the Brazilian Institute for Geography and Statistics (IBGE) and further categorized by their HDI, stratified into quantiles.

RESULTS: Distribution of patients according to region of residence can be found in Figure 1. Patients in urban areas traveled a median distance of 6.7 miles (10.82 km) to access medications, compared to 35 miles (56.01 km) for those in nearby rural areas and 166.3 miles (266.08 km) for those in remote rural areas. Similarly, patients residing in regions with the highest Human Development Index (top 25%) traveled a median distance of 6.95 miles (11.18 km), whereas those in regions with the lowest HDI (bottom 25%) traveled 34.73 miles (55.88 km). These differences were statistically significant ($p < 0.05$) and are presented in Figure 2.

CONCLUSIONS: Patients in rural areas traveled 5 to 26 times farther than those in urban areas. A similar trend was observed with HDI data: patients in regions with the lowest HDI traveled approximately five times farther than those in regions with the highest HDI. This disparity highlights the inadequate availability of health services in certain regions, potentially compromising patients' adherence to treatment and negatively impacting health outcomes and COPD management.

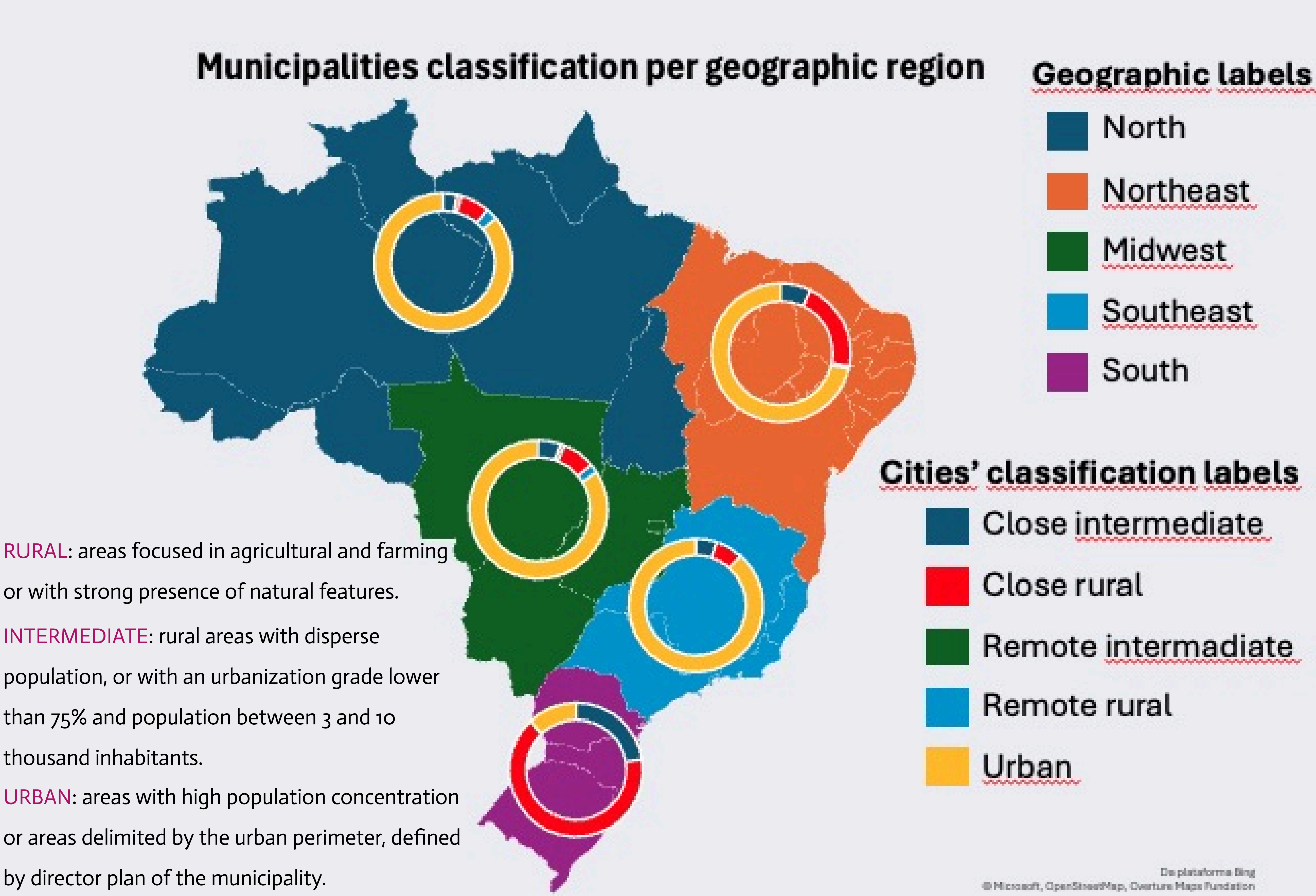


Figure 1. Distribution of patients according to Brazilian region and cities' category

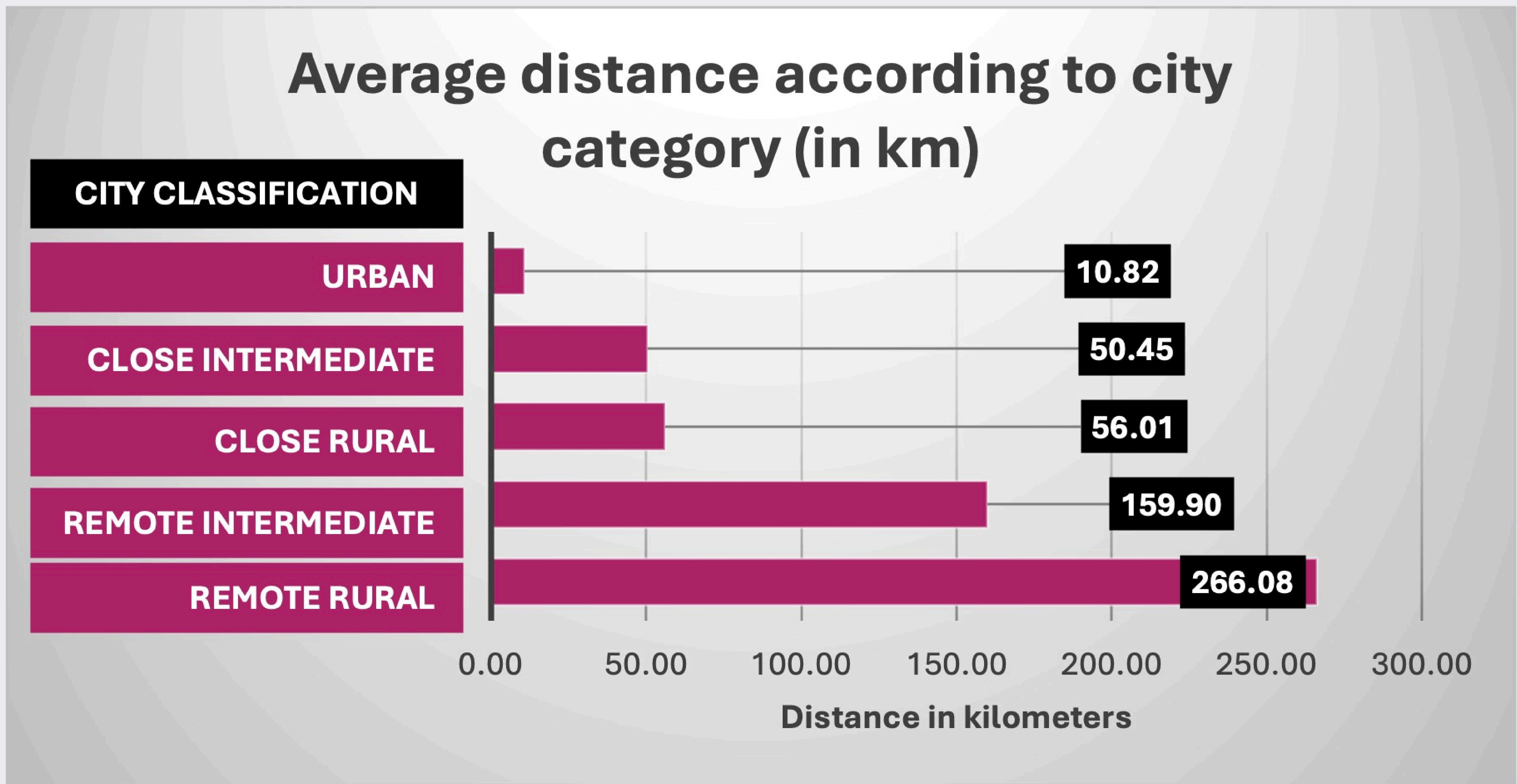


Figure 2. Average travel distance for drug dispensation according to cities' category.