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Regulatory median parking: a case study on Recanto das Emas Avenue, Brasília, DF, Brazil

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Abstract

This paper addresses the impact of median parking areas, implemented in 2007 along Recanto das Emas Avenue in Brazil's Federal District, on road safety. The analysis is grounded on Brazilian legislation, technical manuals, and data from the Statistics Division of the Federal District's Traffic Department (Gerest-Detran/DF) regarding types of accidents and traffic volume both before and after median parking in the area was regulated. The lack of a compulsory physical barrier and pedestrian traffic along the avenue are among the factors which have helped increase the number of accidents. Interference with the city's cycling network as well as parking policies also affect the application of sustainable mobility.

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1. Introduction

1.1. Research justification and aim

Research on Recanto das Emas Avenue was initially designed to provide supporting evidence for the revitalization assessment of Paranoá Avenue, which showed similar functional, geometrical, and hierarchical characteristics. The proposal in the revitalization project which most appealed to local shop owners foresaw a high number of parking vacancies along the road median.

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However, electing Recanto das Emas Avenue as object of study was based not only on the above-mentioned similarities to Paranoá Avenue, but also on the fact that median parking areas were put into effect there in 2007. It should also be pointed out that median bike lanes on both avenues have been in place since 2011. Therefore, this research aims to analyze the impact of regulated median parking on road safety in the region.

1.2. Recanto das Emas Avenue

Recanto das Emas Avenue, an 8km-long arterial road, is the main avenue within the administrative region of Recanto das Emas, whose population in 2015 was estimated to be 145,304 people (CODEPLAN, 2015). One end of the avenue connects to federal highway BR-251, an exit for those traveling to Brasília and other regions.

The road profile changes considerably along its length and sidewalks often exhibit damaged pavement, lack of accessibility, surface discontinuities, detours, and width variations caused by moving or fixed obstacles, all of which pose hazards for pedestrian flows. The avenue has four 3.5km-wide lanes, two in each direction, as well as boarding and alighting areas for bus passengers. Regulatory speed limit is 60 km/h, except in places with speed monitoring displays which indicate speed reduction to 50 km/h.

In addition to the median parking areas put into effect in 2007, another significant change to the avenue landscape was the construction of a two-way, 2.2m-wide median bike lane in 2011. The median is approximately 12 m wide, the sidewalk is 2 m wide, and the bike lane is 2,2 m wide, with the remaining area covered by vegetation (grass). Median parking areas offer drivers, in addition to the actual parking place, a 5 m area for maneuver with no physical barrier, an infringement of Brazilian traffic legislation. The bike lane is interrupted in the maneuvering area, leaving bikers of all ages traveling in both directions to face motorized vehicles in the left lane (to be used by high-speed vehicles) or vehicles entering the parking areas. Figures 1a and 1b show, respectively, the initial section of one of the median parking areas (with a vehicle blocking the bike line) and its end section (with a biker traveling against traffic).



Fig. 1. (a) Initial section of a median parking area; (b) End section of a median parking area.

2. Literature review

2.1. Legislation

The Brazilian Traffic Code (CTB), established by federal law number 9,503/1997 (Brasil, 1997), defines median as a “physical obstacle devised to separate two lanes, to be eventually replaced by road markings” (our translation). In accordance with CTB’s section 181, subsection VIII, parking vehicles “on sidewalks or pedestrian lanes, on bike lanes or bike paths, as well as on refuge islands next to or on central medians, lane dividers, channelling markings, grassy lawns or public gardens” constitutes a traffic violation. For parking to be permitted in these locations, markings under specific conditions are required.

Brazil’s Manual de sinalização vertical de regulamentação (CONTRAN, 2007), or Manual for Vertical Traffic Signs, states that the regulatory parking sign (R-6b) is used to allow parking in places where parking and/or stopping are normally prohibited. Medians are included in the application scope of this regulatory sign.

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