기본연구보고서 2020-17

노상주차의 전략적 관리를 통한 가로공간 개선방안 연구

Strategic On-street Parking Management for Sustainable Streetscapes

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SUMMARY

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Illegal on-street parking in urban street spaces is still common, although the ratio of parking lots to the number of cars in Korea is almost 100%. Indiscriminate illegal on-street parking comes with various social costs, such as inconveniencing pedestrians, road congestion, safety threats, and poor quality of the street environment, while proper on-street parking provides benefits such as reducing vehicle speed and revitalizing street space. Therefore, it is necessary to strategically manage on-street parking to guarantee equity among various users of the street and to raise the public nature of street spaces.

Currently, attached parking lots occupy 82% to 98% of parking spaces in Korean metropolitan areas, but the supply of on-street parking lots is quite small compared to the demand. Meanwhile, surveys on parking supply and demand (which are conducted every three years by local governments under the Parking Lot Act) show that there are parking management areas (areas within an approximately 10 to 15 minutes on foot) where illegal on-street parking occurs frequently even though the total parking supply is greater than the total parking demand. Therefore, to effectively manage illegal on-street parking, it is necessary to develop integrated parking management systems for each area considering the characteristics of parking, roads, and buildings in the area and drivers' parking behavior instead of simply expanding the total number of parking

spaces or cracking down on illegal parking.

Given this background, this study attempted to promote the safety and convenience of street spaces and to revitalize streets by presenting basic directions, detailed strategies, and physical improvement measures for street parking management that can be used by local governments. To this end, first, the concept and status of on-street parking were examined, and implications and basic directions for on-street parking management were derived through an analysis of domestic and foreign policies related to on-street parking.

Next, a case city (Seo-gu, Daejeon) was selected and the characteristics of street parking at the city level were analyzed. In order to identify the factors influencing the occurrence of on-street parking in quantitative and qualitative terms, urban environmental factors were derived using multiple regression analysis, and a survey was conducted to identify drivers' parking behavior. The results of the multiple regression analysis are as follows. The number of illegal on-street parking events during the daytime is positively related to the total length of roads over 9 meters wide, floor area of detached houses, floor area of second-class neighborhood commercial facilities, and floor area of office facilities, while the number of illegal on-street parking events during the daytime is negatively related to the number of attached parking spaces, the number of on-street parking spaces, the total length of roads less than 9 meters wide, and the floor area of educational, research and welfare facilities. Meanwhile, the number of illegal on-street parking events during the nighttime is positively correlated with the total length of roads over 9 meters wide and the floor area of detached houses, while the number of illegal on-street parking events during the nighttime is negatively correlated with the number of on-street parking spaces and the number of old buildings built before 1990.

According to a survey given to 300 citizens of Seo-gu on their parking behavior, commercial and business areas were overwhelmingly the most frequent on-street parking areas, and the on-street parking spots were usually located within 100 meters of the destinations (about 1 – 2 minutes on foot). In addition, the survey showed that people preferred to make use of on-street parking spots when their destination was a building of 3 floors or less or when their destination was located on the first floor of a building. The average time spent in an on-street parking spot in an area with detached houses was more than four hours, while the time spent in a commercial and business area or a general residential area was within one hour. This suggests that on-street

parking management strategies need to differ depending on the characteristics of the area. Especially in commercial and business centers, it is necessary to allow short-term parking and to increase parking turnover. By combining the above results and presenting detailed strategies for on-street parking management at the city level, specific guidelines can be developed for on-street parking policies of local governments.

Finally, a plan to improve street space through street parking management in each area was specifically sought. Five case areas (two areas in Seo-gu, Deajeon, and three areas in Sejong) were selected and the parking, road, and building environment were analyzed. Based on this analysis, the direction of parking management for each area was identified and a physical improvement plan for the street space was presented.

The results of this series of analyses will prove useful when designing policies for the installation, operation and crackdown on on-street parking. When the direction of parking management for each area is determined, it is possible to plan and improve physical road facilities on the street, in which case, various street space design techniques that consider safety and convenience can be applied. In order to identify techniques suitable for the unique situation of each local government, verification efforts through various experiments in the actual street space should be made in the future. Furthermore, more diverse follow-up studies need to be conducted to enhance the effectiveness of on-street parking policies.

Keywords :
On-street Parking, Environmental Factors, Parking Behaviors, Parking Management, Streetscape