

Assessment of Performance, Subjective Rating and Workload on Various Parking Layouts*

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Abstract. The objective of this study was to apply questionnaire and experimental methods to examine the effect of parking layouts on performance, subjective rating and workload. Results of questionnaires indicated that 45% subjects considered the parallel parking layout as the most difficult. For parking experiment, present study applied four CCD cameras and digital recorder system in vehicle to record the driving behaviors for parking. Ten participants were asked to park in four layouts including parallel parking, forward and backward vertical parking, and free method. Measurements included parking time, physiological responses (HR, RR-interval and HRV) and driver's line of sight. Results of ANOVA revealed that drivers have higher mental workload as the shortest RR-interval and heart rate variability while park into the layout of parallel road. While parking into the layout of vertical road, driver need more time to perform. Thus, the difficulty of different parking layouts should be taken account in planning process.

Keywords: parking task, workload, driving behavior

Abstrak. Tujuan penelitian ini adalah menerapkan kuesioner dan metode eksperimen untuk meneliti efek tatanan parkir terhadap kinerja, penilaian subjektif dan beban kerja. Hasil kuesioner menunjukkan bahwa 45% subjek menganggap tatanan parkir sejajar sebagai yang paling sulit. Untuk eksperimen parkir, studi ini menerapkan empat kamera CCD dan sistem perekam digital dalam kendaraan untuk merekam perilaku mengemudi untuk parkir. Sepuluh peserta diminta memarkir menurut empat tatanan termasuk parkir sejajar, parkir vertikal ke depan dan ke belakang, dan metode bebas. Pengukuran meliputi waktu/lamanya memarkir, respons faali (denyut jantung, interval-RR dan variabilitas denyut jantung) dan garis penglihatan pengemudi. Hasil-hasil ANOVA mengungkap bahwa para pengemudi memiliki beban kerja mental lebih tinggi sebagai interval-RR terpendek dan variabilitas denyut jantung ketika memarkir ke tatanan jalan sejajar. Sedangkan waktu memarkir ke tatanan jalan vertikal, pengemudi membutuhkan lebih banyak waktu untuk melaksanakannya. Jadi, kesulitan berbagai tatanan parkir perlu diperhitungkan dalam proses perencanaan.

Kata kunci: tugas memarkir, beban kerja, perilaku mengemudi.

Every day, millions of people drive to work, to shop, to conduct business, or to be entertained in urban areas. For cities serving populations of 10,000-80,000 people, the number of inbound automobile trips ranges from 3,000 to 9,000 vehicles per day respectively (Jones & Grecco, 1973)

and it rises to about 30,000 vehicles per day for each square kilometer (Wilbur Smith and Associates, 1966). Every day, millions of people drive to work, to shop, to conduct business, or to be entertained in urban areas. For cities serving populations of 10,000-80,000 people, the number of inbound

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