The long queues of vehicles created by congesting traffic on almost every road leading to the city center are the daily view that can be seen during the peak hour periods in Bangkok. This problem comes from too many cars on the roads, and the most importance of all is that there are very few passengers in each car. This research therefore aimed at the study of afternoon peak’s vehicle occupancy rate of passenger cars leaving the city center through the city’s at-grade road network. This study also included occupancy rate of pick-up vehicle into its investigation due to its popularity for passenger usage especially during the peak hours period. Ratchadapisek Ring Road was used as the Cordon line surrounds this city center. Data collection for passenger was done on 24 intersections along this ring road that could be used to leave the city center. Vehicle occupancy rates were analyzed for different types of these passenger vehicles, which were classified into private passenger car, private pick-up, and public taxi. The difference between occupancy rate of private and public passenger vehicles were analyzed together with the overall vehicle occupancy rate for all of the vehicle types under this study. The time series analysis of occupancy rate of each type of vehicle was also done to inspect for the influence of time on occupancy rates during this afternoon peak period.