SIMULATION METHODOLOGY

In order to obtain stochastic storage capacity of the PL, deterministic and stochastic parameters that will be used in using MC simulation should be determined first. These parameters and the treatments are explained step by step below.

As mentioned before, this study is based on the statistical data of a PL having a total capacity of 500 cars.

Car mobility between 7:00 a.m. to 00:00 am was found to be reasonable since the distributed capacity of the PL was not intended to be used during the night time. Car arrival times from 7:00 a.m. to 00:00 am is clustered in different time bins.

The departure time statistics are somehow more dispersed when compared with the arrival times. It is mainly because of the different parking durations of the car owners having different aims of parking. For example, the cars arriving during the morning times are generally belong to the people who prefer using mass transportation (subway) to their works after parking their cars in the PL. Therefore, those cars park all the day, up to the arrival of the owners by mass transportation. On the other hand, the cars arriving after 9:00 a.m. belong to the people who are not supposed to work during the day time (housewives, retired person etc.). This second group of cars generally park for shorter durations. Consequently, it is better to use two-dimensional statistics for departure time, more preferably for parking duration and departure time models will be constructed separately for each car arrival time bin. On the other hand, car arrival time bins are aggregated for this purpose, in order to limit the number of models.

For example, a Normal PDF is found to provide satisfactory results for the cars arriving during the morning bins (07:00- and 09:00 a.m.), mean 21h departure, std = 5;

