Quantitative Analysis of Queue Length of Falah Roundabout (UAE, Sharjah)

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Abstract—Roundabouts have faced a huge development in terms of designing and operation, the reason behind that is to get the most safe and functional design. The functionality is affected by different factors e.g. line width, diameter of the roundabout…etc., when the capacity of the roundabout is fully utilized, queue length starts to form in the different approaches, which indicates of a minor or major issue that should be studied.

This paper discusses the different factors affecting the queue length of an approach on the roundabout (Al Falah roundabout), after obtaining the data, regression analysis was done to provide a model that can be used for estimating the volume capacity ratio from queue lengths or vice versa. Two other methods were used to compare the obtained model (HCM 2010 Method and Two Minute Rule Method), in addition to a field data collection of the actual timing needed to pass that queue length, which was assigned as the true value of the models and comparing depending on it.

Finally, the discussion of the term paper, will include the different concepts of advanced statistical analysis, the will (as expected) contain different types of distributions and the coloration between the keys of the roundabouts design, and will study the limitation and how it can be improved in future.

Keywords—Queue Length, Delay Time, Volume Capacity Ratio, Two Minute Rule, HCM and Two Minutes Methods.