ABSTRACT

In developed countries, since there is controlled homogenous traffic therefore there are numerous models that helps in evaluating the flow and density of the traffic. On contrary, in developing countries such as Pakistan, designing any traffic model isn't easy task as the traffic is non- disciplined and heterogeneous. Traffic patterns can play a very important role in various aspects. In a country where nature of traffic is heterogeneous drivers do not follow lane discipline that leads to the formation of queue on a road or link that eventually results in traffic congestions, traffic delays, loss of fuel and great economic loss. In a field of traffic engineering, traffic modeling play vital role in contributing to the solution of traffic problems. Number of traffic models is being followed in countries where drivers follow lane discipline but most of the traffic models cannot be applied to streams where lane discipline is not followed. In order to solve traffic problems and to establish sustainability, traffic models are prepared. When it comes to sustainable traffic it need to fulfill existence cycle practical necessities of societal improvement and monetary increase whilst decreasing poor influences to the surroundings and intake of natural resources. Moreover, it should allow the basic access and development needs of individuals, companies and society which leads to a manner consistent with human and ecosystem health, and promotes equity within and between successive generations. For this purpose traffic models are essential area of study. Traffic models are efficient enough to increase road safety, decrease delays and provide efficient transport system. Therefore this paper is based on link transmission model (LTM) focusing on several simulations on the basis of symmetry models, implemented in practical cases in order to streamline vehicle density and reduce traffic congestion. The link transmission model is a macroscopic network traffic flow simulation tool. This theory uses differential equations combining conservation of vehicles with an equation flow density relationship referred to as fundamental diagram (FD). The field data is collected from selected arterial in Karachi by mounting cameras and recording data for purpose of developing fundamental diagram. This paper proposes a numerical solution method for a dynamic network that is consistent with the first order kinematic wave theory. Link transmission model (LTM) only requires calculations at network nodes. Link transmission model has benefit over cell transmission model that it makes complexities of equation much smaller as compared to complexities in cell transmission model with the same level of accuracy.