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Project Title: Impact of Rain on Traffic Parameters in Southern California

Synopsis: This study will investigate the impact of rain on traffic characteristics in a dry region such as Southern California.

Abstract: With an increasing number of automobiles, safety and mobility are major concerns for professionals responsible for design and operation of freeway facilities. Along with other factors responsible for congestion, adverse weather is an important factor affecting it. Past studies have proved that rain certainly has a negative impact on Freeway capacity and operating speed. The primary purpose of this paper is to investigate the impact of rain on traffic in a dry area and see if there are any regional differences. Initially, traffic data from major freeways and rainfall data from nearby rain gauges has been analyzed using the procedures learned from past studies, and changes in Flow, Average Speed, Density, and Headway have been investigated to observe any variation in the trend for various rainfall intensity. Then, an automated tool has been used for calibration of a traffic model and key traffic parameters are estimated to plot fundamental diagrams for different rainfall intensities. Also, the spatial impact of rain has been demonstrated using contour plots of a section of the freeway by comparing traffic parameters during rain and normal conditions. It has been concluded that reductions in key traffic parameters were different from past studies that were carried out at some other locations which prove the existence of regional differences.