Culver Road and East Main Street Intersection

Traffic Analysis Report

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Group Name: "Three Degrees of Freedom"

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Introduction

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Data Analysis

To assess the traffic conditions at the Culver Road and East Main Street intersection, we determined the current state of the intersection in terms of federal DOT guidelines for this class of intersection, as well as analyses to examine trends and patterns in the traffic recorded and to predict occurances of traffic congestion based on time of day, day of the week, and the weather conditions present.

Traffic Analysis

There are a few common characteristics to examine when determining the traffic flow for a particular intersection. Namely, it is important to determine the amount of delay experience by drivers as they enter the intersection, the density of the vehicles as they pass through the intersection, and the velocity at which traffic flows through the intersection. With these three variables, it is possible to determine the effects of traffic congestions on the flow of traffic through the intersection.

The amount of time that vehicles wait at an intersection is refered to as the Level of Service (LOS). Ranked in letter grades from A to F, the LOS is an identifier for the overal health of the intersection. Ideally, an intersecton should be classified as being either A, B, or C, denoting free flow, reasonably free flow, and stable flow, respectively. The 2010 Highway Capacity Manual classifications for LOS can be seen in Table 1, in which grade A intersections have less then 10 seconds of vehicle control delay, whereas grade F intersections have more than 80 of vehicle control delay.

Table 1: Level of Service classifications published in the 2010 Highway Capacity Manual.

LOS	**Vehicle Control Delay (Sec.)**
A	≤ 10
B	$10 - 20$
C	$20 - 35$
D	$35 - 55$
E	$55 - 80$
F	≥ 80

We examined the

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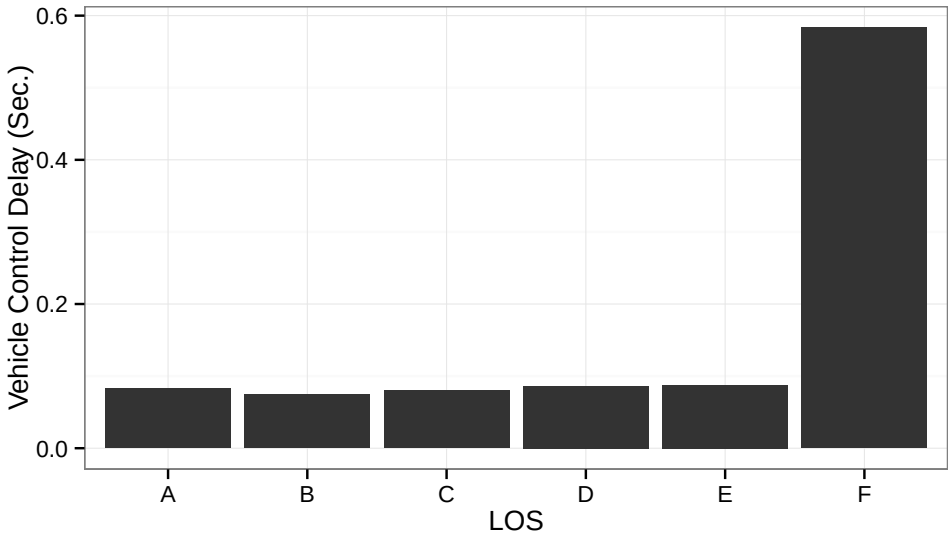

Figure 1: The Culver Road/East Main Street intersection has a poor Level of Service.

Trend and Pattern Analysis

To examine the general trend in the metrics we were provided, we performed linear and multivariate regression. These techniques allows us to approximate the traffic volume and delay. As shown in Figure 2. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec vitae nunc quis sem cursus luctus in at est. Etiam at augue ac libero interdum euismod non nec sem. Aliquam erat volutpat. Phasellus auctor urna purus, ac rutrum eros fermentum ut. Lorem ipsum dolor sit amet, consectetur adipiscing elit.

Bayesian Analysis

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Weather Analysis

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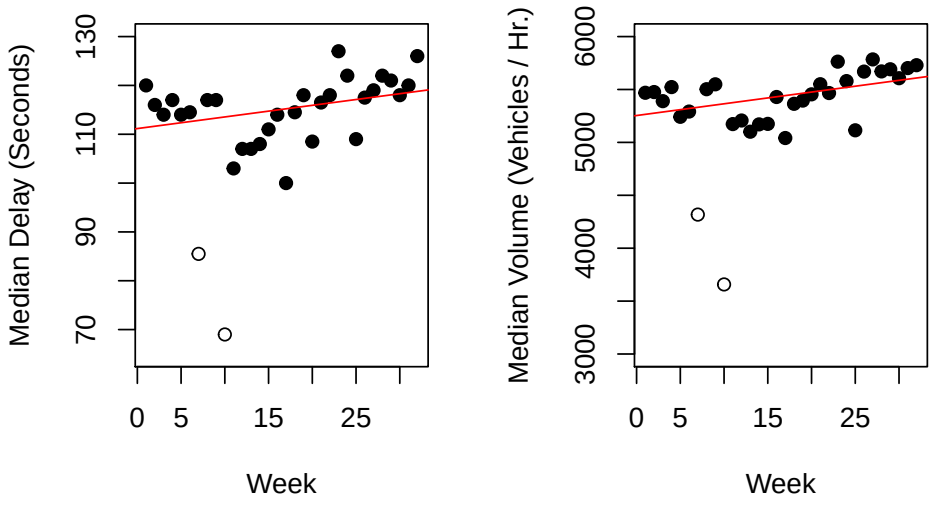

Figure 2: The median traffic delay and median weekly traffic volume are increasing over time. A linear regression of the median traffic delay for each week suggests that the traffic delay may be increasing 0.24 seconds per week ($R^2 = 0.13$). Similarly, a linear regression of the median number of vehicles to pass through the intersection per week suggests that the number of vehicles utilizing the intersection may be increasing at a rate of 11.08 vehicles per week ($R^2 = 0.24$).

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Recommendations

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Cited Literature

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