# Traffic Causal Relationship Analysis with Causal Density

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Summary:

Previous traffic congestion analysis studies have mainly focused on predicting future traffic congestion using past data. However, predicting future traffic congestion does not provide new insight for traffic engineers who want to resolve more fundamental causes of traffic congestion. In particular, urban traffic has various routes, such as intersections and alleys, signal times and road capacity make it more challenging to determine congestion causalities. In this paper, we apply causal density to identify the causal relationship between two different data and propose a novel visual analytics framework to analyze congestion causalities. Our proposed framework provides statistical causality to help analysts create traffic jam causal maps and discover possible origins of traffic jams. We evaluate the effectiveness of our proposed framework through real data set that are presumed to be origins of traffic congestion from the causal relationship analysis.

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