

CCSU
DEPARTMENT OF MATHEMATICAL SCIENCES

COLLOQUIUM

Friday, April 25

2:00 – 2:30 PM

Davidson Hall, Room 207

**USING PREDICTIVE ANALYSIS
TO ENHANCE THE EFFICIENCY
OF COMMUTER TRANSPORTATION NETWORKS**

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(Data Mining MS Thesis Presentation)

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Abstract: In many US cities, single occupant vehicle (SOV) commuting has grown to 90%- for every 10 workers, there are 9 cars on the road. Clearly traditional methods of encouraging commute efficiency (an “efficient” commute being any commute mode other than SOV) have been unsuccessful. This research applies predictive analysis methods commonly found in consumer marketing campaigns to the public sector to help increase efficient commuting by identifying target population segments.

Given a massive spreadsheet of commuter demographic data, it is possible to confirm that several variables correlate with commute efficiency: route travelled, income, home ownership, industry, and others. Rules predicting efficient commuting were determined via logistic regression and decision trees. The performance of these rules was checked by making commute efficiency predictions on a testing data set, then comparing the expected results to actual results. The logistic regression performed adequately by identifying a sizeable percentage of efficient commuters, while the decision tree method successfully predicted high percentages of efficient commuters. The best algorithm identified employed a decision tree to recursively partition data and a linear model applied to each node. A feasible deployment of this model might involve subsidizing buses or vans along certain routes by focusing efforts at key employers.

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