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Disambiguating Transportation Authors with Unique ORCID(r) Identifiers

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DISAMBIGUATING TRANSPORTATION AUTHORS WITH UNIQUE ORCID IDENTIFIERS

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Changing sea ice conditions and marine transportation activity in Canadian Arctic waters between 1990 and 2012

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Abstract Declining sea ice area in the Canadian Arctic has gained significant attention with respect to the prospect of increased shipping activities. To investigate relationships between recent declines in sea ice area with Arctic maritime activity, trend and correlation analysis was performed on sea ice area data for total, first-year ice (FYI), and multi-year ice (MYI), and on a comprehensive shipping dataset of observed vessel transits through the Vessel Traffic Reporting Arctic Canada Traffic Zone (NORDREG zone) from 1990 to 2012. Links to surface air temperature (SAT) and the satellite derived melt season length were also investigated. Between 1990 and 2012, a statistically significant increase in total Arctic transport activity occurred.
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4. Title and Subtitle

Quantifying Inefficiency in Real Time Performance Measurement for Highway Winter Maintenance Operations - Phase 2

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16. Abstract

Winter weather in Iowa is often unpredictable and can have an adverse impact on traffic flow. The Iowa Department of Transportation (Iowa DOT) attempts to lessen the impact of winter weather events on traffic speeds with various proactive maintenance operations. In order to assess the performance of these maintenance operations, it would be beneficial to develop a model for expected speed reductions based on weather variables and normal maintenance schedules. Such a model would allow the Iowa DOT to identify situations in which speed reductions were much greater than or less than would be expected for a given set of storm conditions and make modifications to improve efficiency and effectiveness.

The objective of this work was to predict speed changes relative to baseline speeds under normal conditions, based on normal maintenance schedules and winter weather variables (snow type, temperature, and wind speed), as measured by roadside weather stations. This allows for an assessment of the impact of winter weather conditions on traffic speeds, and estimation of the effort of regular maintenance practices.

The research was done using data from Adair County, Iowa and fit a linear model incorporating the variables mentioned earlier. A Bayesian analysis was conducted to estimate the values of the parameters in this model. Finally, the analysis produced a distribution for the parameter values that represents the impact of maintenance on traffic speeds. The effect of maintenance is not a constant, but rather a value that the researchers have some uncertainty about, and this distribution represents what they know about the effects of maintenance. Similarly, estimates of the distributions for the effects of winter weather variables are possible. Plots of observed and expected traffic speed changes allow a visual assessment of the model fit. Future work involves expanding this model to incorporate many more variables and situations, and eventually identify locations and times in which maintenance could be improved.

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- Traffic flow
- Winter maintenance

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Questions / Discussion

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