

Quantifying Correlations Between Winter Severity, Road Conditions, and VTrans' Snow and Ice Control Activities

PROJECT TITLE

Quantifying Correlations Between Winter Severity, Road Conditions, and VTrans' Snow and Ice Control Activities

STUDY TIMELINE

Oct 2021 – Sept 2021

INVESTIGATORS

Jonathan Dowds, UVM TRC
jonathan.dowds@uvm.edu

James Sullivan, UVM TRC
james.sullivan@uvm.edu

VTRANS CONTACTS

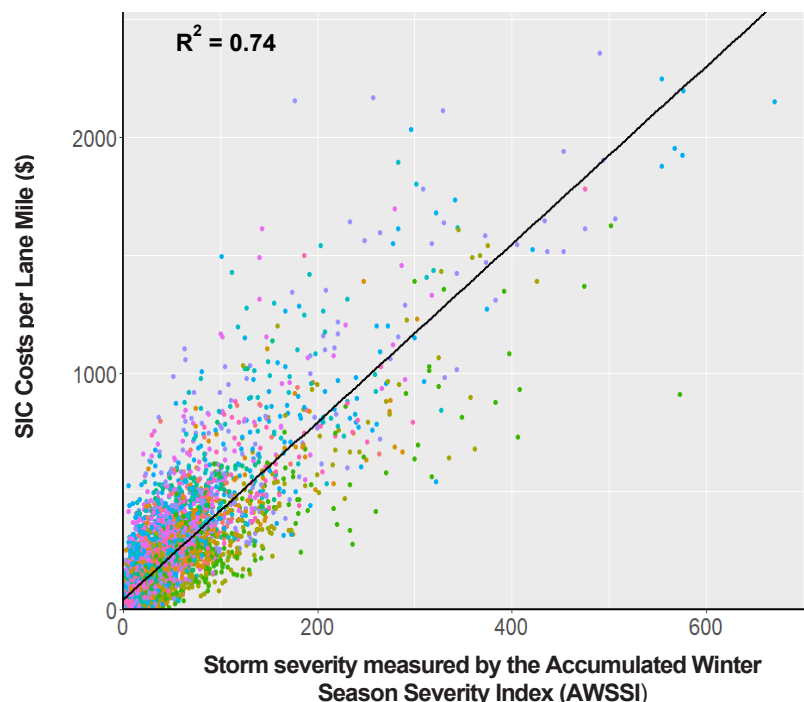
Ken Valentine,
Asset Management Engineer,
ken.valentine@vermont.gov

KEYWORDS

Snow and ice control
Winter maintenance
Performance measurement
AWSSI
Storm severity

Introduction

Planning for snow and ice control (SIC) activities is a persistent challenge for VTrans due to variability in winter severity and a limited understanding of the relationship between severity and SIC costs. The purpose of this project is to develop an implementation-ready tool suitable for estimating the cost of achieving the Agency's SIC performance targets across a range of weather conditions.



Methodology

Utilizing a decade of SIC cost data from VTrans MATS database and weather data from the National Oceanic and Atmospheric Administration (NOAA), the investigators explored the relationship between SIC costs and winter severity. Friction data collected at Road Weather Information System (RWIS) stations were used in conjunction with the NOAA data to create a SIC performance measure.

Next Steps

SIC costs showed a strong correlation with the Accumulated Winter Season Severity Index and the SIC performance measurements were consistent with the roadway prioritization levels in the VTrans Winter Maintenance Plan. The team is calibrating a final cost estimation tool.

Potential Impacts and VTrans Benefits

This tool will enable VTrans to make data-driven decisions about appropriate levels of investment in SIC for a given winter forecast and potentially improve SIC performance management by comparing actual SIC performance outcomes and cost-effectiveness to those seen in the historical data.

More information about the VTrans Research Program, including additional Fact Sheets, can be found at: <http://vtrans.vermont.gov/planning/research>