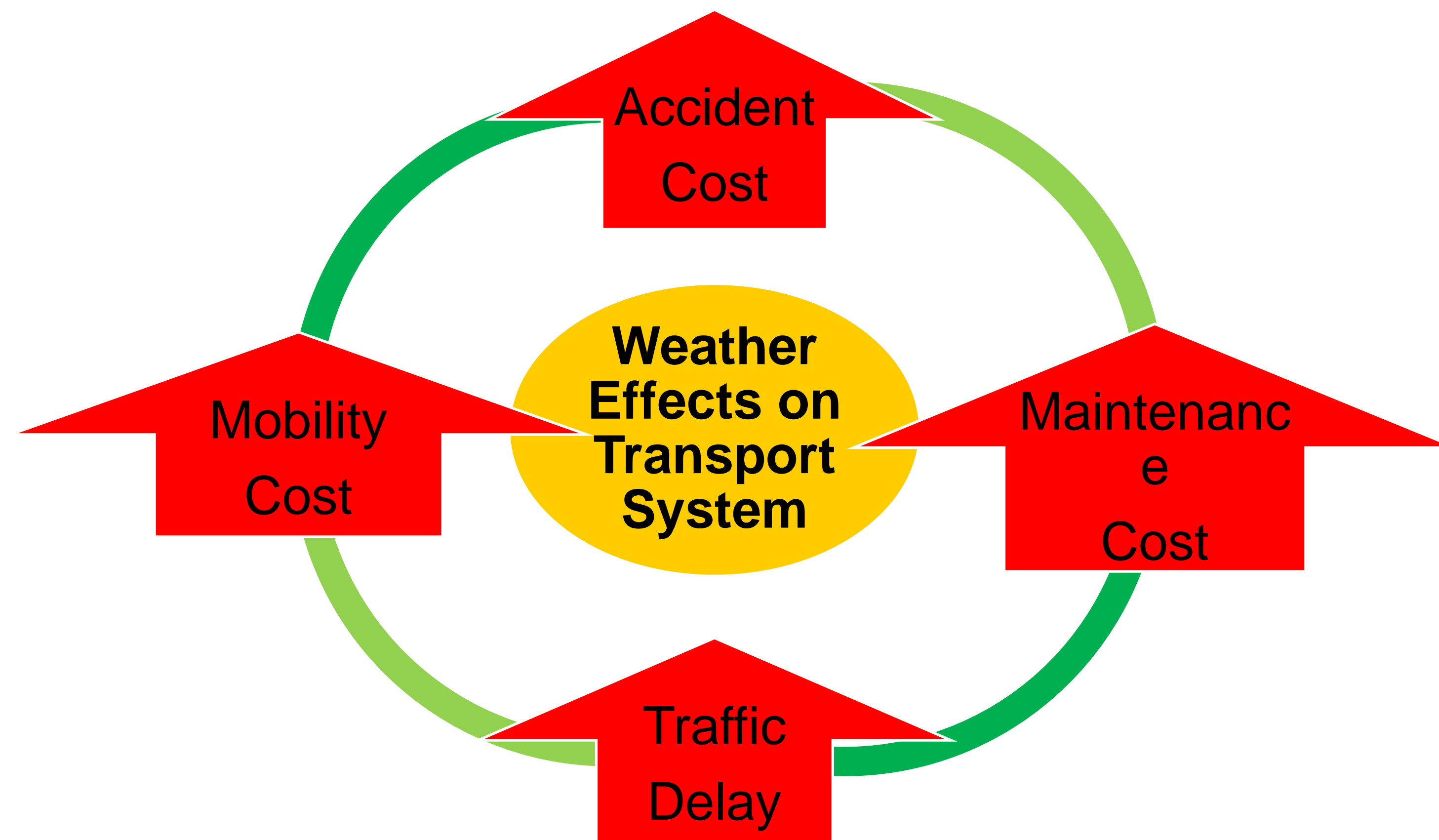


Background

A number of past efforts have been devoted to the development of a winter severity index (WSI) that can be used to capture the degree of effect of winter weather on a road transportation system. Motivated by the need for budgeting and benchmarking, past research has mostly defined WSI based on salt usage, which is then calibrated as a function of various weather variables such as storm duration, total snowfall and temperature using historical data. These indices have however several critical limitations, such as lack of a comprehensive perspective of the different impacts that winter weather could bring on the transportation system (e.g., safety, mobility and costs), poor transferability and comparability between different regions, and limited use for performance analysis and benchmarking at operational levels due to high spatial and temporal aggregation.



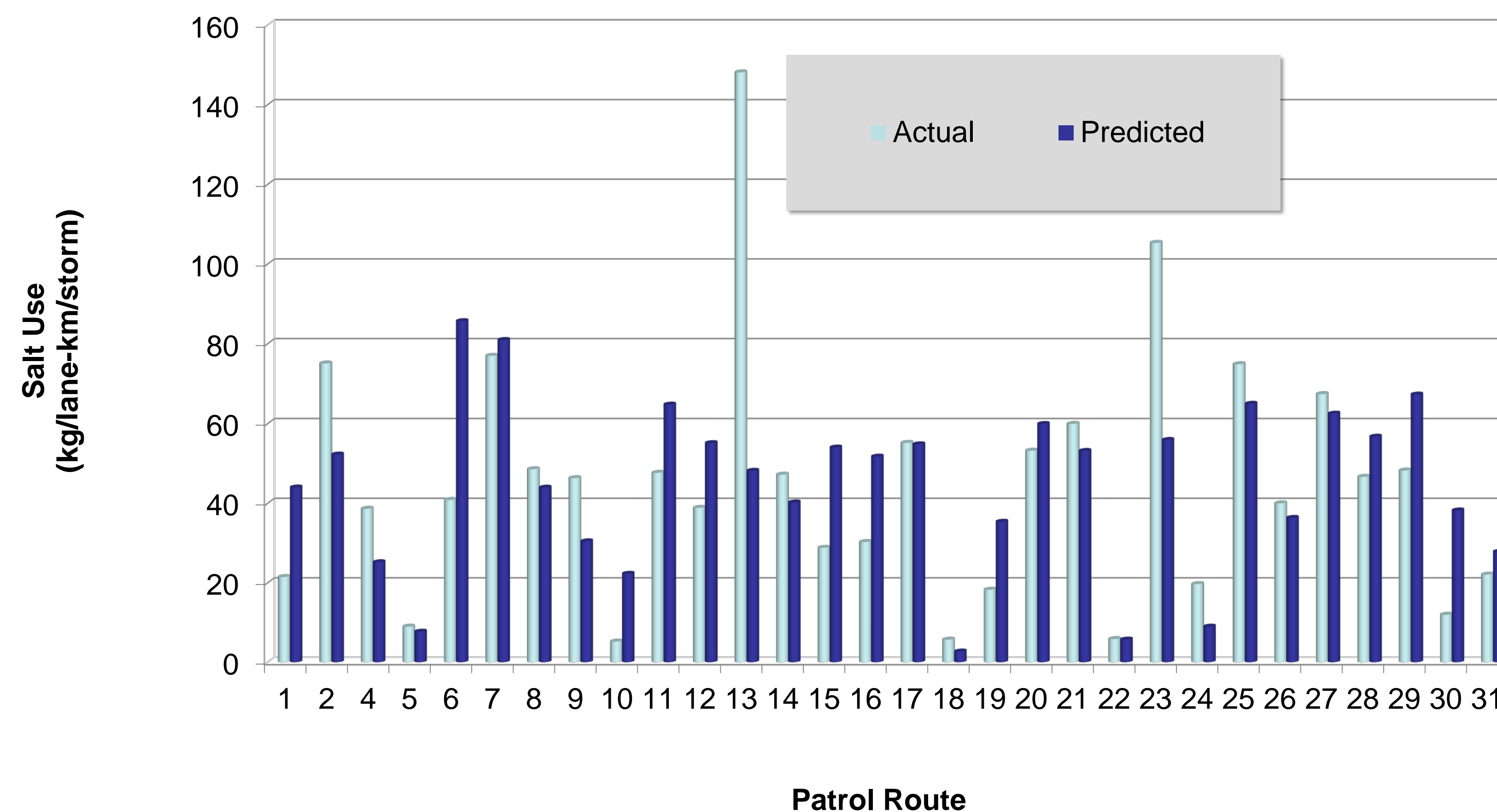
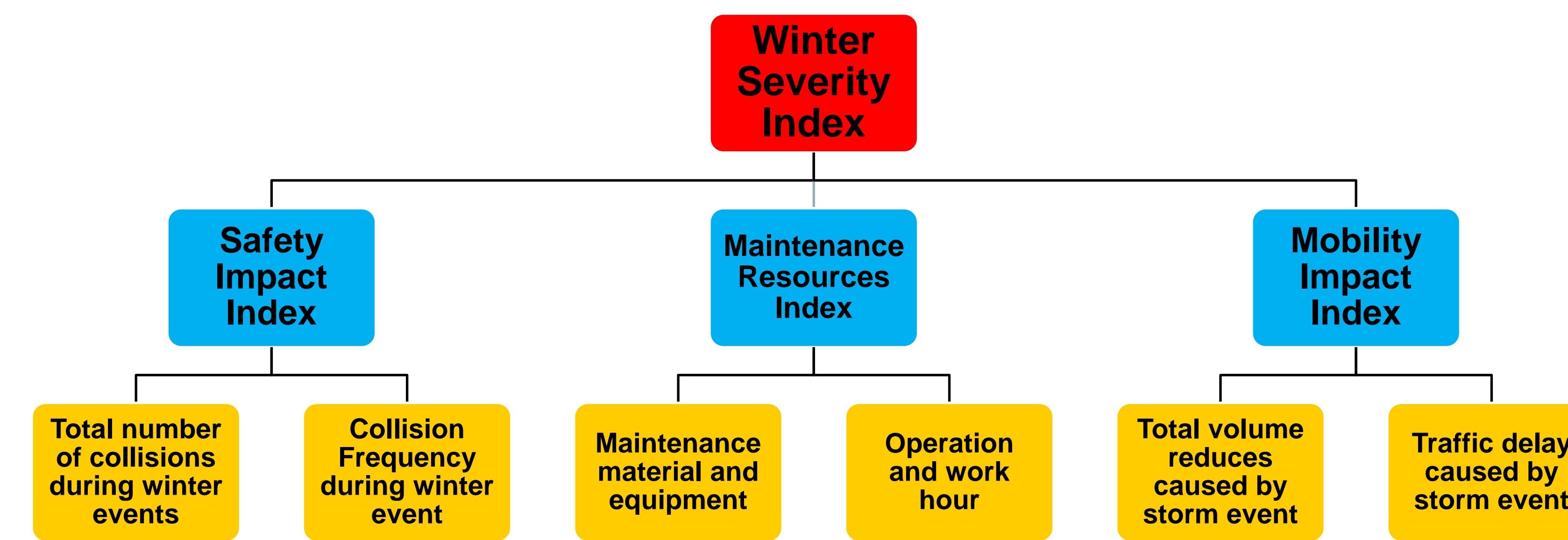
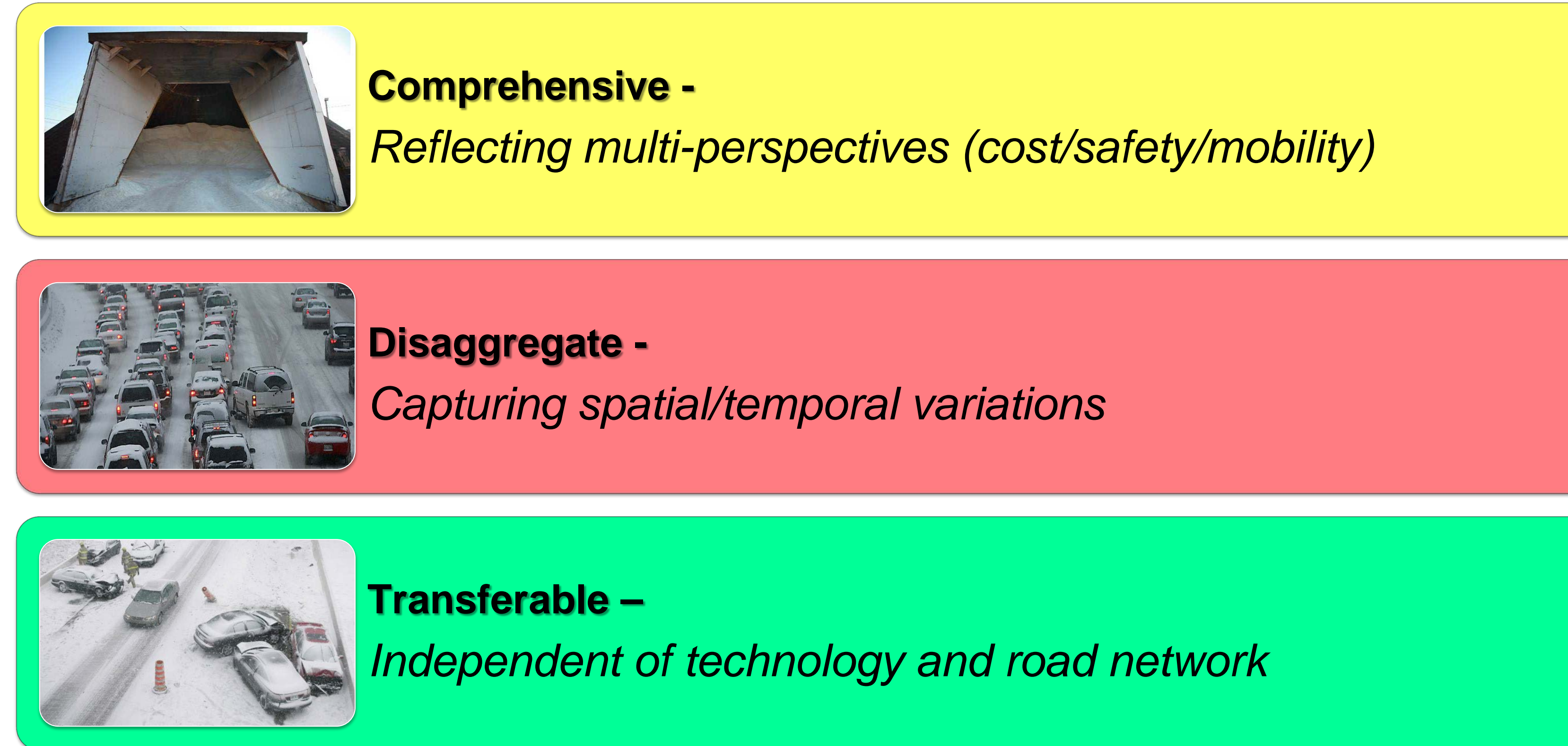
Objectives

This research aims at developing a systematic and comprehensive approach to gauging the effects of winter weather on the road users and the demand for winter maintenance resources. This research has the following specific objectives:

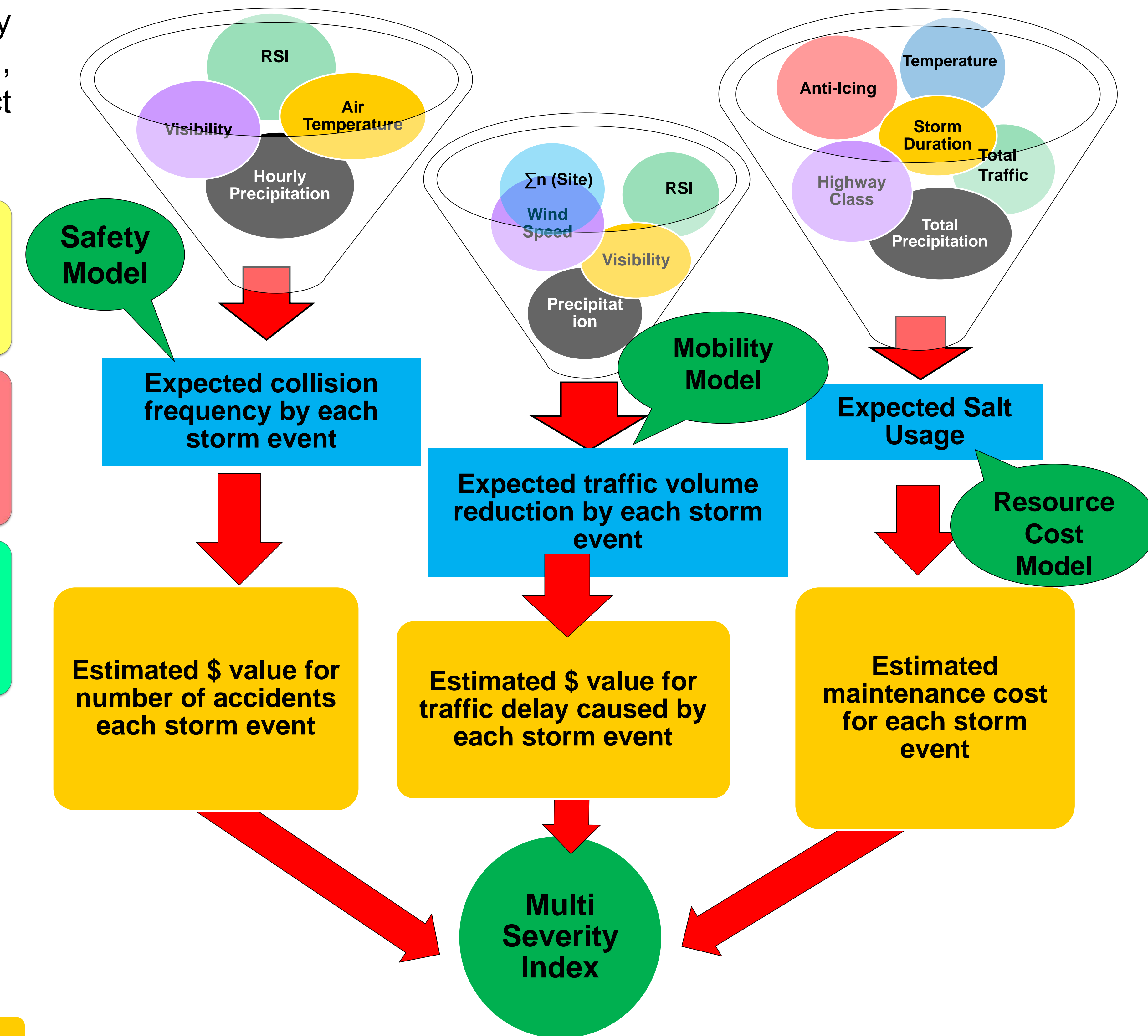
- Identify the effectiveness of winter road maintenance performance based on storm characteristics;
- Evaluate the winter maintenance cost efficiency with a disaggregate model to benchmark the snow and ice control performance;

Methodology

This poster introduces a new approach that includes three severity indicators defined at a disaggregate spatial and temporal level, including resource index, safety impact index, and mobility impact index.



Results



Conclusions

- ❖ This model could be used at any spatial or temporal level.
- ❖ Base on this model some area might experience sever winter event more often than other area based on geographical situations.
- ❖ All expected values are calculated in dollar unit to summarise the expected direct and indirect cost of each storm.
- ❖ This model could be used for planning and forecasting future events.
- ❖ This model could potentially be used by government agencies to report to public and budgeting to future seasons.

Acknowledgements

