Expenditures for winter maintenance materials for the Ohio Dept. of Transportation (ODOT) total nearly $20 million annually. During an average winter ODOT uses approximately 666,000 tons of rock salt and has the capacity to store roughly 617,000 tons of material at various locations. Availability of winter maintenance materials is the foundation upon which successful winter maintenance operations are built. Maintaining high levels of service during and following winter storms has a critical impact on sustaining economic activity and ensuring public safety.

This project investigated improved inventory management and procedures based on a study of usage of winter materials. This study used historical salt usage information at the county level, linked it with data on weather, and developed a model of weekly usage for each county with a major city. Figure 2 shows how salt usage is related to inches of snow. Other weather variables included in the models include: number of days of snowfall in a week, snow cover depth on the ground, number of days of freezing rain in a week, number of days of blowing snow in a week, minimum, maximum, and average temperatures. These guidelines specify when to order and how much to order in a systematic way, that achieves high levels of service and minimizes the inventory required. These guidelines were then used to support an analysis of storage capacity in each county.

A simulation methodology tested the implementation of these guidelines in a more realistic setting and led to recommendations for implementation of the guidelines in practice. Preliminary designs for inventory monitoring techniques were investigated for their appropriateness to support the goals of effective inventory management, as it relates to winter maintenance operations. The usage model for salt based on weather variables can be used to support predictions of usage even before the actual usage has been entered into the ODOT information systems. Further development of this capability may be helpful in identifying very quickly where supply shortages may be developing.