

## Executive Summary

Traffic engineers, transportation planners, and countless other professionals need accurate, timely data to make proper decisions. Whether one is considering re-timing a signal, widening an arterial, or building a new freeway, current traffic volumes are among the most critical pieces of information required. The Statewide Planning Branch of the Division of Highways of the North Carolina Department of Transportation (NCDOT) collects traffic volumes at thousands of locations along North Carolina's roadways.

The project's primary objectives are to benefit the:

1. Update and validation of existing seasonal roadway assignments used in the estimation of annual average daily traffic volumes,
2. Update and validation of seasonal traffic adjustment factors and the seasonal grouping of continuous data collections sites,
3. Accuracy and validity of traffic demand models and traffic forecasts, and
4. Accuracy and validity of all traffic data being provided to the NCDOT, urban transportation agencies, and other transportation management systems.

The first primary task was the reassignment of the current seasonal groupings to each of the approximately 200 short-term counting stations along the US Highway 70 corridor in eastern North Carolina. Dr. Tom Johnston of the Department of Statistics at North Carolina State University examined the methodology and data requirements of the Statewide Planning Branch and developed recommendations to the preferred data collection and statistical analysis procedure for the project.

An ArcView Geographic Information System application was programmed to allow the traffic survey sites to be analyzed by their spatial nature as well as by their statistical profiles. This program was created using the Avenue programming language.

The program offers a user-friendly GIS interface that can aid analysts with updating the current seasonal groupings for traffic survey points across North Carolina. The user is able to select a site and display an attribute table listing its current seasonal assignment, its new seasonal assignment based on the best "best guess" as determined by the statistical analysis, and all the "best guesses" determined by that analysis. The user is also able to summon displays of the seven Seasonal Profiles, and the graphs and charts produced by the statistical analysis. Finally, the user is able to update the new seasonal assignment based on the results of the statistical analysis and its geographical proximity to the other stations, highways, and municipalities.