PROJECT NUMBER: 99113

PROJECT TITLE: Data Mining and Visualization of the Alabama Accident Database

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PROJECT OBJECTIVE:
The objective is to employ multivariate data exploration tools, and to develop new tools to analyze the Alabama accident database for interesting and useful information that may lead to improved highway safety and to reductions of traffic crashes.

PROJECT ABSTRACT:
The Alabama Department of Public Safety has developed and maintains a centralized accident database that contains traffic accident data collected from crash reports completed by local police officers and state troopers. The Critical Analysis Reporting Environment (CARE), developed by Dr. David Brown and the Computer Science Department of the University of Alabama, provides web-based access to this database along with some statistical summary capabilities. We propose to employ existing multivariate data exploration tools, and possibly develop new customized statistical tools,
to further analyze the Alabama accident database for interesting and useful information that may lead to improved highway safety and to reductions in the number and severity of traffic accidents.

PROJECT TASK DESCRIPTIONS:
This is a two-year effort, with each year funded as a separate UTCA project.
Phase I: transferring and reformatting the Alabama crash data base to prepare it for rigorous analysis
Phase II: graphical exploration of the database to gain insight into data relationships
End of Year One: limited data mining and preparation of final report for year one.
Phase III: data mining to identify complex data relationships
Phase IV: develop mathematical models to describe relationships
Phase V: develop final report

MILESTONES AND DATES:
Aug 1999 - start project
Feb 2000 - complete phase I
Jul 2000 - complete phase II
Aug 2000 - complete limited data mining and first year report
(The following tasks will be conducted during the second year, in a follow-on project).
Feb 2001 - complete phase III
Jun 2001 - complete phase IV
Aug 2001 - complete phase V

TOTAL BUDGET:
First-year of project (Phases I and II, limited data mining; UTCA funds $61,177; total budget $122,375.

STUDENT INVOLVEMENT:
Two graduate students will be assigned to this project on a quarter-time basis.

RELATIONSHIP TO OTHER RESEARCH PROJECTS:
This project has no direct relationship to any other UTCA project. However, it does support the multiple research projects conducted by Dr. David Brown at the University to develop and operate his CARE software.

TECHNOLOGY TRANSFER ACTIVITIES:
Presentations will be delivered to representatives of the Alabama Department of Transportation, and to interested safety groups. Articles will be targeted to journals such as the Journal of Transportation and Statistics, and The American Statistician.

POTENTIAL BENEFITS OF THE PROJECT:
This project will provide a more comprehensive analysis of the Alabama accident database than has previously been available. This will lead to new insights into the factors related to traffic accidents and models that provide general overviews of safety.
TRB KEYWORDS:
Education, safety, crash statistics, statistics, accident analysis, graphical analysis.