Highway Safety Analysis Software

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Project Description

Highway Safety Analysis (HSA) Software is a new computer program for conducting motor vehicle accident studies on major highways or local roads. HSA Software is designed to assist engineers in analyzing accident data while performing highway safety investigations or other traffic engineering studies.

HSA Software features entering and editing accident data from the accident reports or datasheets, filtering data by multiple criteria, preparing accident data listing and summaries with proportional distribution of different accident categories, calculating accident rates for segments (using US customary or metric units for the segment length) or intersections, estimating safety benefits based on proposed safety improvements, and producing Collision Diagrams.

Collision Diagram is a unique and powerful feature of the HSA Software. Diagrams are generated using the accident data entered and filtered for the particular intersection or roadway segment. After the diagram is displayed, it may be edited to better reflect the existing conditions and accident locations. Accident symbols may be moved to more precise location, and/or copied to display the same accident type with the same vehicle direction(s) of travel at different locations within one diagram. For example, some right-angle accidents could occur at the intersection, and others at the driveway on the corner, etc.

Different accident categories, such as fatal, injury, wet road, or nighttime accidents may be highlighted on the diagram. This feature allows better identification of the problem areas. Collision Diagrams may be prepared for the preset roadway layouts, such as a 4-legged intersection (which may be converted into an offset intersection), a “T”-intersection, a segment, or for a custom geometry layout using a bitmap image as a background.

HSA Software has been written for the Windows operating system. It was developed using Microsoft® Access and can run under Access 97 or 2000 environment, or as a standalone program using Runtime Access 2000, which is included in the installation package.

Currently, a supplemental product for the HSA Software is being developed. It is called the HSA Data Transfer, and it converts the accident data files from the standard formats used by different states or countries, into the Microsoft® Access format recognized by the HSA Software. HSA Data Transfer procedure would eliminate manual data entry. However, it requires for accident database files to be detailed enough for producing reliable analysis results. HSA Data Transfer has already been developed and is being utilized in the states of Arizona and Connecticut, USA.

Additional information about the HSA Software may be found at the following website: www.x32group.com.

Discussion

HSA Software is a powerful, flexible, and user-friendly program. HSA Software allows saving a lot of time on accident analysis process by expediting data entry process, using data filtering, and producing various output forms, reports, and Collision Diagrams. It generates neat, informative, and presentable results of road accident investigation. HSA Software helps engineers and technicians in developing road safety improvements to reduce the number of traffic accidents.

The output forms may be generated for all accidents within the study section of road, as well as for selected intersection(s) or segment(s), or for different accident categories and conditions using data filtering feature. Accident Summary Sheets and Collision Diagrams produced for various locations and conditions allow identifying and visualizing accident patterns, and provide engineers with ideas on possible accident causes and ways to address them. HSA Software allows organizing the data to reveal existing accident patterns in the most effective way for developing highway safety improvements.

One Collision Diagram may display more than 300 accidents. Accident symbols are shown with arrow combinations. The number boxes next to arrows represent accident sequential numbers, assigned during data entry. With ability to move and copy accident symbols exact accident locations may be shown on the diagram. It is easy to identify accident patterns by the amount of accident number boxes, and by the amount of highlighted number boxes for various accident conditions.

HSA Software is also an ergonomic program. It features the Voice Assistant option for manual data entry or editing. When activated, it lets user know which

data entry box he is currently using, so that he does not have to look at the screen all the time. This reduces the negative effects of screen radiation, expedites data entry process, and increases overall productivity. Also, some controls on the Data Entry form have pull-down menus and/or on-screen help windows for assistance.

Today accident databases have various formats and structures, depending on State, Country, or other jurisdiction where they were compiled. It is quite possible that in the future accident data would be entered by police officers using electronic datasheets, and immediately be transferred into the Central nationwide or international database. Then it could be easily imported into the HSA Software, as it would have the uniform format for all jurisdictions. In this case there would be no need for manual data entry or transfer.

All output forms in the HSA Software may be printed out (color or gray-scale) and included in accident analysis report, or plotted in large format for presentations. Help file is provided for each software procedure, as well as the User's Manual. A free DEMO version of the HSA Software is available.

HSA Software appeared on the market less then a year ago. It is already being used by consulting companies and local government agencies in eight different states within the United States of America.