



Application of Demographic Analysis to Pedestrian Safety

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Current Situation

FDOT has been working diligently to improve its facilities for pedestrians and cyclists, including initiatives like the Complete Streets Policy and Implementation Plan. However, one of the challenges facing FDOT is targeting those areas of greatest need and allocating limited resources in order to have the greatest impact. Various studies have shown that pedestrians in lower-income areas are at significantly higher risk of injury than pedestrians in other income areas. Targeted identification can lead to greater increases in safety for cyclists and pedestrians.

Research Objectives

University of South Florida researchers used demographic-based methods to classify low-income areas according to their potential for pedestrian hazards. They also recommended engineering countermeasures and pedestrian safety education/outreach plans tailored to area demographics.

Project Activities

A literature review documented over 40 neighborhood factors that can contribute to increased pedestrian crashes. These factors were grouped into five general areas: demographic and social factors, road environment factors, neighborhood land use attributes, individual characteristics, and "other." Examples corresponding respectively to these groups are employment rate, lighting, mix of land uses, driver vs. non-driver, and safety education. The researchers identified the most important factors contributing to pedestrian incidents in each of the five groups. The researchers also examined available GIS databases and tools as well as methods used to quantify pedestrian crash rates. Data from a number of state and national sources were used to identify low-income areas.

At this stage, discussions were held with FDOT personnel to review findings and focus project activities. Based on these discussions, the researchers used the 40 factors to produce measures related to pedestrian incidents. For example, they correlated neighborhood income and the presence of sidewalks with pedestrian crash rate to develop more insight into the relationship between neighborhood factors and pedestrian safety. Maps were created to visualize these measures, and GIS was used with a number of statistical and other analytical methods to analyze the spatial patterns, clustering, and relationship of selected measures. This allowed the researchers to identify pedestrian hazard hot spots and to correlate these hot spots with the selected measures. Based on these analyses, recommendations were made for engineering countermeasures and pedestrian safety education/outreach plans best suited to the demographics of affected areas.

Project Benefits

The type of analysis used in this project can help focus resources and activities on areas that are likely to experience the most benefit, leading to an improved pedestrian environment and lower rates of pedestrian injury.

For more information, please see www.fdot.gov/research/.



A pedestrian waits to cross at a busy and complex intersection.