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PBCAT—Pedestrian and Bicycle Crash Analysis Tool Version 2.0

Publication No. FHWA-HRT-06-090

This TechBrief provides a summary of the computer software, Pedestrian and Bicycle Crash Analysis Tool (PBCAT) Version 2.0, which replaces PBCAT Version 1.0. The application manual for the software, *Pedestrian and Bicycle Crash Analysis Tool (PBCAT): Version 2.0 Application Manual*, FHWA-HRT-06-089, will be published by the Federal Highway Administration (FHWA).

What is PBCAT?

In 2004, 4,641 pedestrians and 725 bicyclists were killed in traffic crashes, accounting for more than 12 percent of all traffic fatalities in the United States. An additional 68,000 pedestrians and 41,000 bicyclists were reported to be injured as a result of incidents involving motor vehicles.[1,2] PBCAT is a software application designed to assist State and local pedestrian and bicycle coordinators, planners, and engineers in addressing pedestrian and bicyclist crash problems.

PBCAT accomplishes this goal by enabling users to develop a database of details associated with crashes between motor vehicles and pedestrians or bicyclists. One of these details is *crash type*, which describes the pre-crash actions of the involved parties. After developing a database of crash information, PBCAT users can analyze the data, produce reports, and select countermeasures to address the problems identified by the software.

Why Crash Typing?

The development of effective countermeasures to prevent bicyclist and pedestrian crashes is hindered by computerized State crash files that contain insufficient details about the crashes. Analysis of these files often provides data that includes where pedestrian and bicyclist crashes occur, such as the city, street, type of street, or intersection; when crashes occur, such as the time of day or day of the week; and the characteristics of the victims, such as their age, gender, and severity of injuries. These data, however, do not provide adequate detail to determine the sequence of events that lead up to and cause crashes.

During the 1970s, the National Highway Traffic Safety Administration developed methodologies for *typing* pedestrian and bicycle crashes to better define the sequence of events and precipitating actions leading to crashes.[3,4] In the 1990s, the methodologies were applied to more than 8,000 pedestrian and bicycle crashes in six States. The results provided a representative summary of the distribution of crash types experienced by pedestrians and bicyclists.[5,6,7] Over time, this method has evolved and was refined during development of PBCAT Version 1.0.[8]

Version 2.0 Features

PBCAT Version 2.0 includes significant improvements in functionality and has an enhanced design that makes the software easier to use.

Some features of PBCAT Version 2.0 include:

- **User-friendly environment and improved navigation**—PBCAT Version 2.0 operates in a Microsoft® Windows® environment and includes easy-to-use pulldown menus and toolbars.

- **Form Designer**—Users can customize the form for inputting crash data and design it to match the police crash reports used in their community. (See figure 1.)

- **Group Crash Typing**—An alternative version of crash typing is available for users who do not want the level of detail on crash type offered in PBCAT Version 1.0, which only included the standard version of crash types.

- **Location Data**—Users have the option of recording specific location information, such as approach and travel direction, for pedestrian crashes occurring at intersections. (See figure 2.)

- **Crash Reports**—PBCAT users can produce single variable and multivariable tables within the application and export the results to Microsoft Excel® for further customization and graphics production. (See figure 3.)

- **Countermeasures**—PBCAT Version 2.0 provides users with access to detailed descriptions of engineering, education, and enforcement countermeasures that address specific types of crashes. Each countermeasure description includes a purpose, considerations, estimated cost, and real-world case studies. (See figures 4 and 5 for samples of a countermeasure description and matrix.)
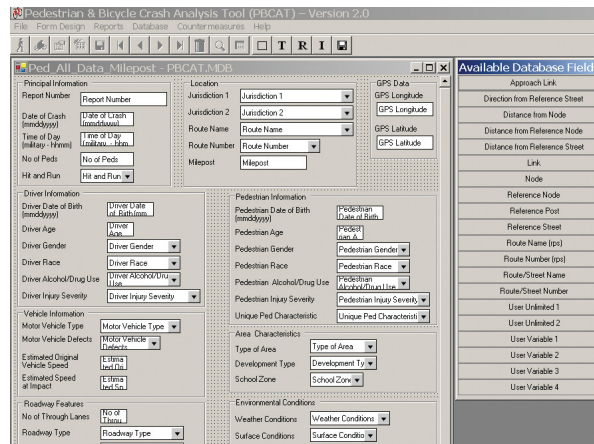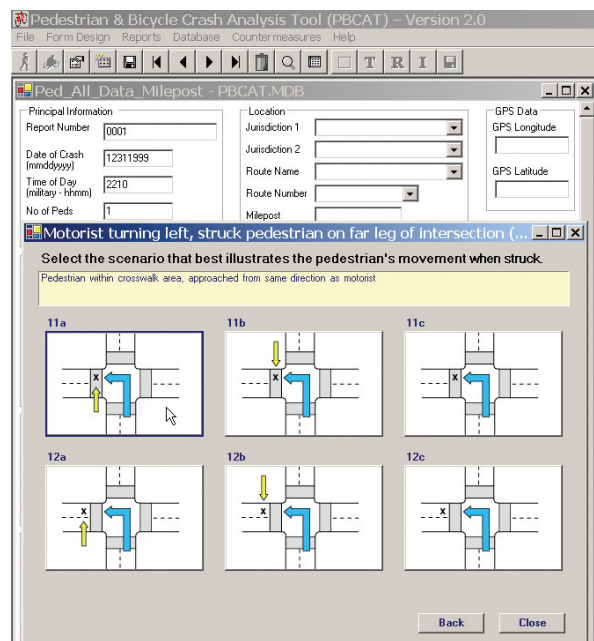

Figure 1: Form designer.
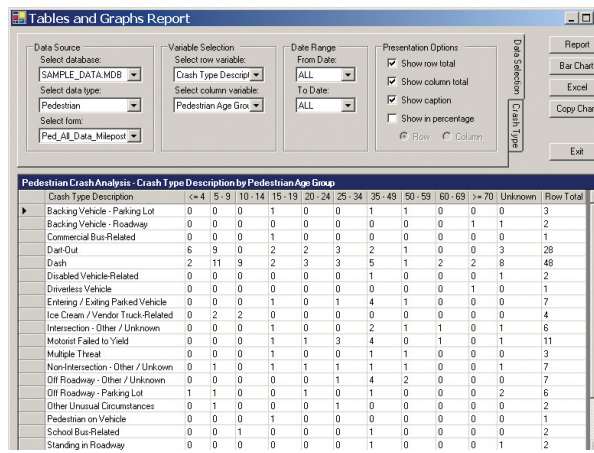

Figure 2: Location data.

Figure 3: Crash report.

Figure 4: Countermeasure description.

Figure 5: Countermeasure matrix.

- **Expert System Tools**—To help users select appropriate countermeasures, PBCAT Version 2.0 includes links to the Web-based Pedestrian Safety Guide and Countermeasure Selection System (PEDSAFE) and the Bicycle Countermeasure Selection System (BIKESAFE).[9,10]
- **Import/Export Capabilities**—The software includes a conversion utility that enables users to import data from PBCAT Version 1.0. In addition, users can export data from PBCAT Version 2.0 in several formats that allow for more sophisticated analyses with other applications, such as Excel and SAS® software.

Product Access

PBCAT Version 2.0 can be downloaded from www.tfhrc.gov, www.walkinginfo.org/pbcat, or www.bicyclinginfo.org/pbcat. The compressed file for PBCAT Version 2.0 is 40 megabytes and should be downloaded over a broadband connection. Using a 56K connection to download the software may take up to 2 hours. Users who do not have a broadband connection can request a copy of PBCAT Version 2.0 on CD–ROM by sending an e-mail to ann.do@fhwa.dot.gov.

For more information on PBCAT Version 2.0 or FHWA's pedestrian and bicycle research program, contact Ann Do of FHWA at ann.do@fhwa.dot.gov.

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