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**A Functional Evaluation of the Assessing
Community Traffic Safety (ACTS) Tool**

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September 2003

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16. Abstract This report presents the results of a functional evaluation of the ACTS tool. The tool is based on the concept that a community can assess its own traffic safety problems and resources and discover recommended programs using a single software tool combined with an active community coalition. In our evaluation of the ACTS components, we found that the software interface was acceptable, and we provided several suggestions for its improvement. We found the logic underlying ACTS to be reasonable. However, the functional implementation of this logic may mislead some communities regarding their assets and deficits. The survey data may not come from appropriate respondents and the coding of certain responses appeared to be inappropriate. We provide several suggestions for improving the community surveys. While the computation of scores based upon crash data is accurate and appropriate, the data used in the calculation are quite outdated, are not community specific, and only consider KA-level injuries. There seems to be a good balance between assets and deficits; that is, the listed assets are appropriate for the deficits. We suggest, however, other deficits that could be included. ACTS has some problems with the linkages between deficits, assets, and recommended programs. In many cases, we found that these links between programs and deficits were not appropriate. In other cases, the linked program did not match with the asset. Additionally, we found that there were biases and potential biases in ACTS. Primarily, these biases were most likely the result of errors in either coding of responses or computations. We conclude that the concept of ACTS could be extremely useful for communities interested in improving traffic safety and recommend that ACTS be extensively revised and further supported.					
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INTRODUCTION

In its continuing effort to reduce the number of traffic crashes, and associated deaths and injuries, the National Highway Traffic Safety Administration (NHTSA) developed the “Safe Communities” concept to promote traffic safety and injury prevention at the community level. As defined by NHTSA (2003) a “Safe Community” has four essential components:

- Use of multiple data sources to identify community injury problems;
- Involvement of the citizens;
- Expanded partnerships;
- A comprehensive and integrated injury control system.

In Michigan, the Safe Communities concept is supported by the Michigan Office of Highway Safety Planning (OHSP). As described by OHSP (2003), the Michigan Safe Communities program invites local community leaders, organizations, and citizens to collaborate with OHSP to improve traffic safety and reduce violence and substance abuse in their communities. OHSP lists the three steps required to become a Michigan Safe Community:

- 1) Have a coalition in place that consists of key local organizations or leaders;
- 2) Complete a problem identification process;
- 3) Implement an injury prevention program based on the results of the problem identification process.

Thus, a key step in becoming a safe community is to be able to assess the injury problems within the community. As suggested by NHTSA, this assessment should involve use of multiple data sources.

In order to provide assistance in problem identification, OHSP sponsored the development of the Assessing Community Traffic Safety (ACTS) tool (<http://www.townsafety.com/Actsweb>). According to OHSP (2003), the purpose of the ACTS tool is to assist communities in both problem and solution identification. The ACTS tool is intended to give community coalitions a method for identifying their traffic safety problems (called deficits) and the community resources (called assets) for solving such problems. ACTS also is intended to give community coalitions suggested practices and programs that could be implemented in the community. ACTS was developed with the

expectation that it would be used by community coalitions who are committed to reducing motor-vehicle crash-related injury in their community.

The ACTS tool consists of 25 surveys that coalition leaders and their members distribute to groups and individuals considered central to solving community traffic safety problems. Each survey requires about 5 to 10 minutes to complete. One intent of the survey distribution process is to build coalition support and unity, in that this activity is shared among coalition members. ACTS also utilizes 5-year crash-data trends from the county in which the community is contained. Only crashes in which a person was killed (K) or received an incapacitating injury (A) are used in analysis.

ACTS has several outcomes. The first is a computed score between 0 and 100 for each of the following 19 deficits:

- Drinking and Driving
- Adult Safety Belt Nonuse
- Youth Safety Belt Nonuse
- Child Safety Seat Nonuse
- Bicycle Helmet Nonuse
- Weak Traffic Enforcement Reputation
- Underage Access to Alcohol
- Court Practices
- Excessive Speed-Related Crash Profile
- Excessive Alcohol-Related Crash Profile
- Excessive 15-17 Year Old Crash Profile
- Excessive 18-20 Year Old Crash Profile
- Excessive 21-34 Year Old Crash Profile
- Excessive Older Driver (70+) Crash Profile
- Excessive Pedestrian Casualty Rate
- Motorcycle Crash Profile
- Excessive Heavy Truck Involved Crash Profile
- Fixed Object Crash Profile
- Violated Traffic Controls Crash Profile

The first eight of these deficits are derived entirely from survey responses while the remaining deficits are derived from the countywide crash data. Survey-based deficit scores are computed by dividing the number of positive responses to questions related to a given deficit by the total number of questions asked regarding that deficit across surveys (although the surveys are not identical, many have similar questions). Crash-based deficit scores are based upon a system of ranking counties by KA crash frequencies. Two

different methods of ranking counties are used to generate an average. In the first method, all Michigan counties are ranked based on the number of KA crashes in a given deficit category. Because this method uses frequencies and not rates, it is correlated with county population. The second method ranks counties by the percent of all KA crashes in the county that fall within the given deficit category, a method that is not related to county population. The two rankings are averaged to generate a deficit score. Any deficit with a score of 75 or greater is considered by ACTS to be a problem for the community.

Another outcome of ACTS is a computed score, on a 100-point scale, for 39 assets from five general asset categories:

Coordination Assets

- Traffic Safety Coordination
- Enforcement Coordination
- Community Coordination
- Active Coalition Members
- Parent Networks
- Traffic Safety A Priority

Engineering Practices Assets

- Traffic Safety Plan
- Traffic Engineering Expertise
- Traffic Control Inventory
- Regional Traffic Safety Planning

Enforcement/Adjudication Assets

- Standard Alcohol Enforcement
- Intensified Speed and Alcohol Enforcement
- Underage Alcohol Enforcement
- School Safety Enforcement
- Pedestrian and Bike Enforcement
- Safety Belt Enforcement
- Enforcement Campaigns

Behavior Change Campaigns and Policy Assets

- Adult Safety Belt Campaigns
- Youth Safety Belt Campaigns
- Child Safety Seat Workshops/Inspections/Campaigns
- Underage Drinking Prevention Campaigns
- Alcohol Impaired Driving Prevention Campaigns
- Workplace Policies

- Elderly Mobility Policies
- Court Policy Support for Traffic Safety

Education and Training Assets

- Parent Education
- Heavy Truck Law Enforcement Training
- Driver Education Focused On Heavy Trucks
- Mature Driving Training Programs
- Young Driver Education Programs
- Civic Leader Training
- Traffic Engineering Training
- Bicycle/Motorcycle Education/Inspections
- Workplace Education
- Alcohol Server Training Programs
- Substance Abuse Offender Education
- Standardized Field Sobriety Test (SFST) Training
- Child Safety Seat Training
- Youth Pedestrian Training

Scores for all assets are derived from survey responses (usually one question from a few of the surveys). Asset scores are computed by dividing the number of positive responses to questions related to a given asset by the total number of questions asked regarding that asset. Any asset with a score that is lower than 75 is considered to be lacking in that community.

The asset and deficit scores are organized into a community profile. This profile is assembled so that deficits are shown with the assets that are assumed to be related to the deficit so that a community coalition can see which assets need to be developed to reduce the number KA crashes for that deficit category. The profile is intended to be used to create a Safe Community Asset Development Plan (ADP) for improving key community assets. For each asset, links are provided to programs and practices that, presumably, will help a community build that asset.

OHSP sponsors the Prevention Network in Lansing, Michigan to assist communities in the Safe Communities process, including assistance with ACTS. Because ACTS is an integral component of Michigan's Safe Communities program, it is important to determine if ACTS functions as intended. The purpose of this project was to perform a functional evaluation of ACTS; that is, to critically evaluate the tool itself rather than determine its

effect on injury reduction within a community. For this project, we critically evaluated the following components of ACTS: software interface; ACTS logic; community surveys; deficits; assets; and potential biases.

This evaluation entailed five information gathering activities. First, we met with William Donohue of the William Donohue Group, the company that developed ACTS, to obtain an overview of how ACTS was developed and how it functions. Second, three UMTRI researchers independently utilized ACTS and provided feedback on each of the components previously discussed. Third, we met with Laurie Bullock of the Prevention Network to discuss how ACTS was utilized by communities. Fourth, we contacted two community coalition leaders to discuss their use of the ACTS program. Finally, we entered test data into ACTS to see if appropriate outcomes were produced.

SOFTWARE INTERFACE

The ACTS tool is accessed through the world wide web at the following address: <http://www.townsafety.com/Actsweb>. Overall, we found the software interface to be acceptable. The interface seemed to function equally well with both Microsoft Internet Explorer and Netscape, except for some nonfunctional display problems with Netscape (links not changing color when used, etc.). The program enables users to download various modules for reference, view crash data, enter survey data, and see results. We experienced only minor problems with printing and downloading documents.

We had some difficulty, however, in getting an overall understanding of the ACTS tool and navigating the program. We also noted that the site was inaccessible on several occasions during this analysis. In addition, we discovered a number of areas in which minor errors need to be fixed or improvements need to be made to increase user friendliness. These suggestions are listed below:

Logging On/Off

- Include the ability to log out so that a user can switch between being logged in as a registered user or as a guest without beginning a new session.
- Include a reminder system for those users who have forgotten their password or user name.
- Make clear what the difference is between logging in as a user and as a guest.
- If a user has their browser set to "High Security," many of the links do not display and the user cannot log on. The site should either be revised so that it will work even with the high security settings or a statement should be on the home page that security should not be set to "High."

Program Orientation

- Although the FAQ section of the site provides adequate procedural steps, as do the different modules, a numbered process relating the steps to complete ACTS would be more helpful to new users. The initial interface (after logging in) jumps right into the process of viewing or entering information from the surveys. It would make more sense for the introductory frames to briefly introduce users to ACTS and how a coalition can help to reinforce other traffic safety measures.
- Create a procedural page outlining the different steps with links to each step in the process.
- Include a site map outlining what is available on the site.

- Because the modules are somewhat essential to the understanding of ACTS, they must be quickly and easily accessed. Rather than appearing on “Help for the Home Page”, this information should appear when the user first logs in.
- During the registration process, if you select a community that already exists and proceed to the next page, the county is already filled in with Alcona County no matter what county the community is actually in. The proper county should be used.
- There are many typographical errors and missing words. The entire ACTS package should be carefully proof-read.
- Example surveys should be completed for each type of survey, not just a few.

Document Downloading

- Considering that some coalition members may not have Word or PowerPoint, it would be helpful to provide all documents in .pdf form with a link to download Adobe Acrobat Reader.

Printing

- When printing, some parts of documents are cut off if you do not manually change the orientation to landscape beforehand.

Linking/Navigation

- After checking links with both browsers, no broken links were found. However, under the Action Plan for Michigan Sample Community there is an example at the top of the page with a link that does not, and is not, supposed to work. This link does not seem necessary and can be confusing to novice users. The link should be removed.
- Ensure that all links change colors once accessed, as it is easy to get “lost” within the site (problem seems to appear using Netscape).
- A link to the main home page should be provided on every page. The user cannot get out of the help section unless the home link under the title “Helpful Links” is selected and then the Home link above the title “Helpful Links” is selected.
- If you follow the “Help” link, and you are in the deficits section, it takes you to “deficits help.” One must be on the home page to get to the “general help” page. There should be a link on every page to “general help.”
- From the home page, you can access a Strategic Planning Report in .pdf format. Once you do this, you cannot simply press the back button to return to the site. You have to use the down arrow which shows the history of pages you have been to, and select the home page in order to return to it. None of the other documents that appear in .pdf or in .ppt format have this problem.

- Users may get impatient; the less clicks it takes to find the information they need, the better. Reduce the number of links, if possible, and perhaps add a “How to Begin” page.

Ordering of Elements

- If you log in as a registered user, you can select from different communities that already exist in ACTS, yet the drop down menu is not in alphabetical order. This menu also has duplicate community names (Washtenaw County 1 and 2). In order to quickly find the correct community, the list should be ordered alphabetically. Similarly, all items in drop boxes should be alphabetically ordered.

Survey Data Entry

- When entering data into the electronic survey form, one can change his or her answer by clicking on another listed answer, but one cannot remove an answer altogether if he or she mistakenly entered something that the respondent had intended to leave blank. To correct this error, one must restart the entire survey. Users should be able to deselect answers.

ACTS LOGIC

As described previously, ACTS accepts survey inputs and utilizes county crash data to calculate scores for assets and deficits on a 100-point scale. Deficits with a score of 75 points or higher are deemed to be a community problem. Assets with a score less than 75 are considered to be lacking in the community. Deficit scores are based either on survey or crash data, while asset scores are based solely on survey data. The William Donohue Group provided us with the exact formulas for calculating the scores. Our analysis showed that these formulas calculate scores as intended and that the calculations are not biased by county population.

The ACTS concept of providing a community with a profile of traffic safety problems, and resources within the community that need to be developed to alleviate the problem, based on crash and survey data, is an attractive concept. However, the implementation of this logic in its present form, has the potential to mislead communities. We draw this conclusion based upon the following arguments.

Surveys

As will be discussed in more detail in the next section, several of the respondents either do not appear to be appropriate for survey data collection, or were asked questions about things outside their area of expertise. These issues are of concern because they can affect the calculation of asset and deficit scores. For example, the asset and deficit scores that are based on the survey questions use a formula that calculates the number of positive responses for a given asset/deficit, divided by the total number of times a question was asked regarding that asset/deficit. Therefore, if a question about an asset is asked of someone who has no reason to be knowledgeable about the issue and cannot give an informed answer, that respondent's answer will unfairly affect the scoring of the asset/deficit because the answer will likely be a "Don't Know" or a blank (which is scored as a "No"), resulting in an inherent bias toward a more negative score. Because ACTS relies entirely on survey responses for calculating scores for assets and certain deficits, these scores could be greatly skewed by the respondents who should not have been asked the questions in the first place. This issue could be rectified by tailoring each survey more specifically to each respondent and their area of expertise and knowledge.

A more serious issue emerged while entering test data into ACTS to assess the outputs. We discovered that the program assumes that the entire set of 25 surveys have been completed. Therefore, if surveys are not returned, or are not sent out to certain individuals, ACTS assumes that they are “blank” responses and considers them to be “No.” In other words, if a community does not have a mayor/councilperson (resulting in no completed survey for this respondent), ACTS will still include them in the computation of assets and deficits as if they had responded “No” to each question. Therefore, the scores for assets and the survey-based deficits, can depend greatly on who is available and willing in a community to complete a survey. This issue is exacerbated by a recent change in the program recommendations in which community coalitions with limited resources are encouraged to focus only on the following core group of five surveys (called a Tier 1 evaluation): law enforcement leaders; city mayor/supervisor; traffic engineer/road commission leaders; community attitude survey; and the survey of youth attitudes and behaviors.

We illustrate this problem with the following example. The asset “Substance Abuse Offender Education” is an asset that is evaluated by dividing the number of “Yes” responses by eight, since there are eight questions that relate to this asset throughout all of the surveys. A problem arises when the coalition leader does not receive surveys back from all eight people. In our test data analysis of an example community, we conducted a “Tier 1” evaluation, so we only “sent” surveys to the Tier 1 respondents. However, out of our 5 Tier 1 respondent groups, only the mayor’s survey has a question about the “Substance Abuse Offender Education” asset. We assumed that he/she answered “Yes.” Rather than ACTS returning a score of 100 for the asset (since the only question that evaluated that asset was positive), ACTS calculated “one divided by eight” and returned a score of 12, indicating that the community lacked “Substance Abuse Offender Education.” There are 7 other people who would normally evaluate this asset, but in the Tier 1 evaluation, they did not even receive surveys; ACTS calculated these nonexistent respondents’ answers as “No” rather than just reducing the amount possible (or ‘n’) down to 1.

Crash Data

As previously discussed, ACTS uses county-wide KA crash data over a 5-year period. While we understand that county-wide crash data are what is readily available across the state, the use of county-wide data for a community can be misleading. All communities in the county will end up with identical scores for all crash-based deficits. One would expect that within certain counties, like Wayne, there would be widely varying crash profiles across individual communities. While the differences are undoubtedly less for certain types of crashes, such as drinking and driving, these differences will be great for other crash types, such as those involving heavy trucks. We suggest that future versions of ACTS attempt to assess the relevant crash-based deficits at the community level. This information might be obtained from the local police agency. Further, with the creation of geographic information systems (GIS), crash locations can be linked precisely using GPS coordinates, making it more likely that community-level crash data will be easily available in the future.

The choice to use only KA crash data is a curious one. According to the ACTS workbook, KA crashes are used “since they provide the most reliable estimate of an injury challenge in a county” (page 10). However, because these are relatively infrequent events, 5 years of data are used in order to “provide sufficient numbers to make reliable estimates of injury challenges for counties” (page 10). B-level crashes also involve injury and are much more frequent than KA crashes. It seems that B-level crashes should also be included, which would obviate the need for using so many years of data. Summing KA crash data over 5 years, without looking at any trends, may not give an accurate picture of the *current* traffic safety problem in a county, particularly considering the fact that there is at least a 1 year lag in crash data availability for the most updated information. ACTS, however, is currently using 1999 data, which means that current users of ACTS are partially basing their problem identification on information that is up to 9 years old. We suggest that future versions of ACTS include all known injury crashes (K-A-B), and utilize only 1 or 2 years of the most recent data. It is also imperative that crash data be updated as soon as they become available.

COMMUNITY SURVEYS

ACTS utilizes self-reported data for the computation of some deficit scores and all asset scores. ACTS includes 23 surveys, each to be completed by at least one individual from the following groups in the community:

- Law Enforcement Leadership
- Local Court Judges, Magistrates, and Prosecutors
- Court Probation Officers
- Substance Abuse Treatment Facility Leaders
- County Health Department/Social Services Leaders
- Emergency Room/Trauma Specialists/EMS Leaders
- Hospital Administrators
- Medical Examiners/Coroners
- County Council or Commission on Aging Directors
- Public/Private School Administrators
- Higher Education Leaders
- School Transportation Directors
- PTO/PTA School Leaders
- Cooperative Extension and County 4-H Director
- City Mayor or Township Supervisor
- Regional Planners
- Liquor Control Commission Representatives
- Traffic Engineer/Road Commission Leaders
- Community Recreation Department
- Coalition Leadership
- Major Employer/Labor Union Leadership
- Local Media Editor/Publishers/Producers/Cable Distributors
- Service Organizations/Community Foundation Leaders

ACTS also has two surveys to be completed by a large sample of people from the following groups:

- Youth in the Community
- The Community at Large

Coalition members are to solicit survey participation, gather survey information, and enter the survey data into ACTS. Information for the large sample surveys is aggregated prior to entry into ACTS.

The inclusion of self-reported data into the community-assessment process is appropriate and invaluable, in particular in the assessment of community assets. ACTS appropriately intends to gather information from a wide range of community members. However, as already discussed, the information gathered from the surveys may not give

coalitions an accurate picture of the traffic safety problems or community assets. We draw this conclusion based upon the following reasons.

In general, the surveys to the different groups ask each group nearly the same set of questions. Many survey questions, therefore, do not seem appropriate for the intended audience. For example, many of the surveys ask respondents if promoting traffic safety is one of their top three priorities. This question may be appropriate for some respondents, but for others, like coroners, community recreation departments, substance abuse treatment facility leaders, traffic safety is not central to what they do and it would not be reasonable to expect them to consider it one of their top three priorities. Therefore, by asking them a question to which their only reasonable response would be “No,” their responses are given unfair weight in issues that really do not apply to them. As another example, many respondents are asked whether or not 75 percent or more of their group have received training in proper child safety seat use. This question is very appropriate for some groups, but it does not make sense to ask this question of groups such as probation officers.

For other questions, there is no reason to believe that the respondent should be knowledgeable about the issues being explored. For example, medical examiners/coroners are asked if any agency in the community offered first/repeat offender drunk driving education programs in the last 12 months. If a program did exist, is the coroner the appropriate person to ask? As another example, several surveys ask whether the largest employers in the community have substance abuse and traffic safety policies for employees. Many respondents, such as a 4-H director, would likely not know the answer to this question. This question makes sense to ask the union people or perhaps the mayor, but not other groups. Such questions are problematic because if the respondent answers “Don’t Know,” it is counted as a “No” in the ACTS computations and certain assets may be found to be lacking, when in fact they are present in the community. These issues could be resolved through careful pilot testing and revision of survey questions so that those people in the community who are best able to assess assets are queried about the asset. The general community’s knowledge about the asset/deficit can be assessed in the community-wide survey.

Listed below are other suggestions for improving the survey and survey process:

Overall

- The order of the surveys in the ACTS Workbook is different from the web site where the actual surveys are printed out. For consistency, make the order identical.
- There are several typographical errors and missing words. Over half of the surveys have a typographical error in the first question. Although this does not directly affect the functionality of ACTS, it can affect the perceived legitimacy of ACTS and of the coalition which ACTS helps to create. The surveys should be carefully proof-read and corrected.
- When a survey is given to a respondent like a county sheriff or health department (whose job entails working with a larger geographic region than just one specific community), it should be made clear whether questions should be answered based on knowledge of only the community of interest, or the region for which he or she is responsible.
- Many surveys ask if people in the agency in which the respondent belongs have received traffic safety training in the last 12 months. This is an unclear concept. "Traffic safety training" should be clearly defined and asked only of appropriate respondents.
- Many surveys ask about "server-training." While we think this refers to alcohol-server training, it should be defined.
- All surveys in the ACTS workbook have a place for comments and say "Thank You for Completing This Survey," while the actual surveys do not have either of these features. The instructions and software should be consistent.
- The wording of many questions are of the form "Has [event] happened." Respondents may answer "yes" assuming the event has happened even though they are not personally aware of it. It might be better to reword these questions to read, "Are you aware of [event]."
- In at least one question on all of the surveys, vaguely defined words are used. Examples include good, innovative, routinely, high-quality, many, most, and too much. These qualifying words are subject to interpretation and can mean different things to different people. The survey questions should be clearly defined and consistently and easily understandable.
- Several surveys end with questions regarding whether courts dismiss too many safety belt tickets, etc. The wording of these questions is different from the other questions and a yes/no answer is not appropriate, given the question. These should be changed to agree/disagree or the questions should be re-worded.
- Many surveys ask whether the community has a traffic safety coalition, but do not define this term. It may not be readily apparent what this refers to and could result in more "No" or "Don't Know" answers. The term should be defined.
- Grouping questions that are similar will make the questionnaire easier to complete and will also make the survey flow more smoothly. For instance, in the County Health Dept. survey, Questions 11 and 17 have to do with the

largest employers in the community, and therefore should be placed together on the survey.

- Several surveys ask if the “community” has conducted a particular activity. These questions should be reworded to refer to any agency or group within the community.
- The use of yes/no responses is potentially limiting. There is at least one question in nearly all of the surveys that asks respondents to answer “yes” or “no” on more than one dimension. For example, “Does your community have an active traffic safety coalition that represents many community interests?” If a respondent answers “no”, it could mean that there is a traffic safety coalition, but it may not represent “many community interests.” Another example includes the question “Do judges, prosecutors, and magistrates who deal with traffic safety issues for your community support innovative traffic safety programs?” One could agree that judges support traffic safety programs, but prosecutors and magistrates do not or that the programs are not innovative.
- Many, or perhaps all, of the surveys cannot be taken anonymously. This leads one to question how accurately certain individuals will answer questions. For example, a judge is asked to respond to statements such as “Most courts that serve our community seem to dismiss too many safety belt/child safety seat citations” or “plea-bargain too many drunk-driving cases.” Since most communities will have a single court, this survey is asking the judge to comment on his or her own court in an open survey.
- There is no guidance on how to interpret or compile the verbatim comments from the surveys.
- Most surveys use “Don’t know”, but the Community Attitude Survey and the Survey of Youth Attitudes and Behaviors use “Not sure”. Consistency among the surveys would be helpful.

Survey Specific

City Mayor or Township Supervisor:

- Question (Q) 1, 2, and 3 are all very similar. Since answering ‘Yes’ to all or ‘No’ to all will affect the score, it is important that any subtle differences are made more obvious.
- Q13 asks about community-wide media campaigns. Does a statewide campaign count when answering this question or just community-specific campaigns?

Coalition Leadership:

- It may be inappropriate to survey the coalition leadership. It is likely that all answers will be correlated based on discussion within the coalition.
- Q2 - If the coalition is newly formed, this question does not make sense.

Court Probation Officers:

- Questions for probation officers should address what these respondents are expected to be knowledgeable about such as drinking/driving. They are not likely to know about safety belt tickets.

Law Enforcement Leadership:

- Q30 asks if 75% of officers have received “Texas State Police-endorsed SFST training.” Is this the accepted type of SFST training? What does SFST stand for? Would officers know if their SFST training was the one endorsed by the Texas State Police? Should this, instead, read Michigan State Police?

Local Court Judges, Prosecutors, and Magistrates:

- Q5 asks about “officers,” but should read “police officers” as many court personnel are “officers” of the court.

Medical Examiners/Coroners:

- This respondent seems inappropriate for ACTS.

School Transportation Directors:

- Questions 10, 21, and 24 are very similar. There should be a better distinction between questions.

Community Attitude Survey:

- This survey is slightly different than the version contained in the ACTS Workbook.
- Q11 - Does any company ever do this?
- Q14 - Technically, respondents are penalized if they do not have any children under 5 years of age, since they would answer “No.” This question should be paired with Q15 and scored differently.

Survey of Youth Attitudes and Behaviors:

- Q1 seems like it would be confusing to the respondents.
- Q7 - “Big Trucks” should be defined. It could be interpreted as a Ford F-350. The phrase “heavy trucks” is used elsewhere.
- Q8 - How will youth determine if a driver education class offers “good” training as opposed to something else?

DEFICITS

As we have discussed, ACTS calculates scores for traffic safety problems (deficits). The deficit topics include drinking and driving, safety belt use, speeding, pedestrian safety, age related problems (both young and old), and court practices. These topics cover core areas in traffic safety and are appropriately utilized here. There are, however, other potential areas that ACTS may want to include in future updates. These topics include: aggressive driving, cell phone/distracted driving, and drowsy driving. In addition, there may be other deficits that could be identified to help a community locate specific problems, such as identifying specific locations (i.e. intersections) of the community that have a higher incidence of traffic safety related problems.

Some deficits seem to address the same issue. For example two of the deficits are “Drinking and Driving” and “Excessive Alcohol-Related Crash Profile.” The former is a deficit based on answers given to survey questions, while the latter is based on county-wide crash data. It is possible (as found in the sample data) for one to be identified as a deficit and the other not to be. When two measures of presumably the same issue do not agree, how does a coalition interpret this result? In addition, drinking and driving has more chances of being a community problem than other traffic safety issues, potentially leading to a bias toward this deficit. Perhaps for this deficit, it would make more sense to combine the survey-based and crash-data-based information into a single score.

There are several age breakdowns throughout the deficits (e.g., Excessive 15-17 year old crash profile). ACTS utilizes these age categories to address new driver, young driver, and older driver problems separately. This approach is appropriate, as are the age groupings. However, the selection of 70 years of age or older as the definition of an elderly driver is counter to a large body of traffic safety literature, where elderly is defined as 65 years of age and above.

ASSETS

Based upon survey responses, ACTS calculates the level of 39 community resources (assets) for alleviating traffic safety problems. Assets are organized into five categories: 1) Traffic Safety Coordination; 2) Engineering Practices; 3) Enforcement/Adjudication; 4) Behavior Change Campaigns and Policies; 5) and Education and Training. The listed assets within each category are appropriate for the categories. The entire list is quite comprehensive and well conceived. Assets appear to be well-suited for combating the listed deficits.

Once asset scores are developed, ACTS users can select the asset to see a list of recommended programs or practices for developing this asset, which, in turn, should help solve the traffic safety problem (deficit); that is, ACTS links assets with deficits. The linkages between assets and deficits at times seems to be overreaching. For example, the drinking and driving deficit is linked with the workplace education asset. This connection makes sense and the description listed for the website also makes sense; the problem is that the question on the surveys that identifies (at least in part) whether this asset is present in the community is: "Has the community offered any workplace traffic safety education programs in the last 12 months?" General traffic safety education training is not very descriptive and could be interpreted as simply driver training, not anything related to drinking and driving. Survey questions that represent a certain asset should be more directly linked to that asset and its relationship to the deficit in question. There are other examples similar to this within the asset/deficit matrix, where assets seem only remotely relevant to a deficit in the asset development plan. A few other observations regarding the linkage between assets and deficits include:

- Substance abuse offender education might be useful under the 15-17 and 18-20 year old crash profile.
- Driver education focused on heavy trucks is an asset under the older and younger driver crash profiles, but not for other age groups and could be useful elsewhere.
- Fixed object crash profile includes adult safety belt campaigns but not youth related campaigns.
- There is an asset that does not seem to fit with the Excessive 21-34 Year Old Crash Profile listed in the Michigan Sample Community report. Underage alcohol enforcement is listed as an asset to offset this deficit. Because the legal drinking age in Michigan is 21, any asset having to do with underage drinking does not directly apply to this age group.

- There are no engineering assets for the “Drinking and Driving” deficit. What about ignition interlocks and other technology for combating drunk driving?

Users of ACTS can select an asset to see a list of programs to assist the coalition with the implementation of the asset development plan. This feature is one of the most attractive components of ACTS, since community coalitions are formed, ultimately, to implement a program. ACTS gives coalitions an easy way to select appropriate programs for their community. The list of programs, however, is not extensive, is somewhat outdated, and generally includes programs that have not been formally evaluated. Most of the programs listed are from Michigan (and supported by OHSP). While it is desirable to have local information, there are many new programs, programs that have been conducted in other parts of the county (and perhaps internationally as well), and with programs that have been evaluated and shown to be successful, that could be implemented on a local level. As evaluation results of programs become available, it is imperative that unsuccessful programs be removed from the list and successful ones added.

The connections between the programs and the deficit in question are occasionally confusing. ACTS users are really selecting programs to improve a deficit, however the programs sometimes do not seem to align with the deficit. For example, the deficit “Drinking and Driving” links to the asset “Traffic Safety Plan,” which, in turn, links to the program “AAA Road Improvement Project.” Drinking and driving could be affected by a traffic safety plan; the AAA project could be part of a traffic safety plan; but a road improvement project is not logically connected to drinking and driving. These connections should be analyzed carefully to improve ACTS usability.

In some cases, the linked program does not fit with the listed asset. For example under the asset “Mature Driver Training Programs,” a link points to a program called “Save It til the End of the Ride.” This program is designed to target snowmobile riders between 18 and 35 years of age. Also, there are certain programs that seem to appear in nearly every category regardless of what link is followed. Again, these links should be analyzed to make sure they are logical. Finally, there is also a link to the “Safe Communities” program which describes the ACTS Instrument. If users are at this point, they will already be familiar with the ACTS Instrument.

POTENTIAL BIASES

One purpose of our analysis was to discover whether or not any biases exist for identifying deficits. As discussed in previous sections, there are potential biases for any asset or deficit based upon survey responses. What these biases are, however, depends upon which surveys are completed, which questions are answered, and the characteristics of the respondent (some may be more knowledgeable than others). These potential biases are all related to how “No,” “Don’t Know,” and blank answers are scored as well as the use of set numbers of surveys (n) for the denominator in the calculation of survey-based scores. These issues have been discussed in previous sections.

Our analysis utilizing example community data revealed some biases in how scores are calculated for the following deficits: Adult Safety Belt Nonuse; Drinking and Driving; and Weak Traffic Enforcement Reputation. We found that there is very likely an error in the coding for computation of scores for these deficits, because they do not calculate properly when different data are entered into the system. We found that each of these deficits had scores to start off with, even though no data had been entered (the scores should all be 0, as with the other survey-based deficits). When data were entered, these deficits did not calculate as they were supposed to; rather they tended to show up as more of a problem than the data warranted. Therefore these three deficits are more likely to show up as a problem in any given community, even though survey data may indicate that they are not a problem.

One of the two questions used to assess the “Child Safety Seat Nonuse” deficit reads “Do you have any children under five years of age?” Since this is a stand-alone question, it is calculated into the deficit score. This means that if 200 people are asked this question (it is part of the mass survey of Community Attitudes) and 100 people do not have a child under 5 years of age, the deficit already has a score of 50. Therefore, the more people that do not have a child under 5, the higher the deficit score will be, and the more likely ACTS will reveal a problem in the community with a lack of child safety seat use. Thus, this deficit is biased in the direction of the community’s demographics.

CONCLUSIONS

This report presents the results of a functional evaluation of the ACTS tool. The tool is based on the concept that a community can assess its own traffic safety problems and resources and discover recommended programs using a single software tool combined with an active community coalition. We conclude that the concept of the ACTS tool could be extremely useful for communities interested in improving traffic safety and we recommend that ACTS be further supported and developed.

In our evaluation of the ACTS components, we found that the software interface was acceptable, and we provided several suggestions for its improvement. We found the logic underlying ACTS (i.e., the calculation of scores for assets and deficits based upon survey and crash data) to be reasonable. However, the functional implementation of this logic may mislead some communities regarding their assets and deficits. The survey data may not come from appropriate respondent groups and the coding of certain responses (Don't Know and blanks) appears inappropriate. We provide several suggestions for improving the community surveys. While the computation of scores based upon crash data is accurate and appropriate, the data used in the calculation are quite outdated, are not community specific, and are limited to KA-level injuries.

There seems to be good balance between assets and deficits; that is, the listed assets are generally appropriate for the deficits. We suggest, however, other deficits that could be included. ACTS has some problems with the linkages between deficits, assets, and recommended programs. Because, ultimately, users of ACTS are looking for programs to combat identified deficits, the programs should link well with associated deficits. In many cases, we found that these links were not appropriate. In other cases, the linked program did not match with the asset.

We found that there were biases and potential biases in ACTS. Primarily, these biases resulted from errors in either coding of responses or computations. The fact that ACTS considers all "Don't Know" and blank responses on surveys as "No" is the main source of bias. Another potential bias arises for "Child Safety Seat Nonuse," because if a respondent does not have a child under 5, ACTS counts this answer against the deficit.

Three other deficit categories are biased toward being a problem in a community (Adult Safety Belt Nonuse; Drinking and Driving; and Weak Traffic Enforcement Reputation) because of what appears to be a software problem in that default scores for these deficits are sometimes used in score computation.

Note that this evaluation was restricted to how the program functioned technically rather than to how ACTS was used by communities. During our analysis of the ACTS process, however, the users we talked with had positive comments about ACTS. In particular, users thought that the ACTS process was a useful way to build traffic safety support within the community and that many of the issues we have identified were not a problem for them because they ignored that component of the tool (e.g., recommended programs) or used other data (e.g., local police crash data). Collectively, we think that the ACTS program has great potential to be an invaluable resource for communities, not only for building community support but also for accurate problem identification and program recommendation. Most issues we discovered could be resolved by changes in software coding and careful analysis of linkages. Other issues could be resolved through use of KAB-injury-level crash data that is updated yearly. The most difficult issue to resolve is the appropriateness of surveys and survey respondents. Thorough pilot testing would be a great benefit here. With many or all of these revisions, the ACTS tool could be highly prized by communities.

REFERENCES

National Highway Traffic Safety Administration (2003). *Safe Communities: The First Six Months*. Accessed August 15, 2003. www.nhtsa.gov/safecomunities/

Office of Highway Safety Planning (2003). *Safe Communities*. Accessed August 11, 2003. www.michigan.gov/msp/0,1607,7-123-1593_3504_22760-13680--,00.html