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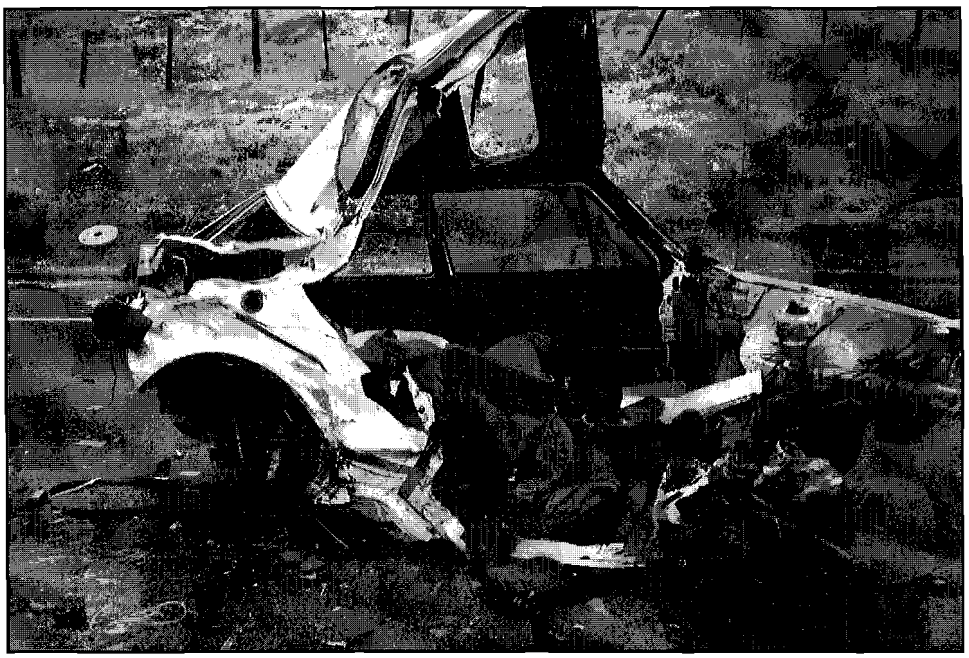
Roadway Aggression



Uncontrolled anger and aggression is a significant issue of driver behavior, but whether it is escalating is far from clear.

By Raymond W. Novaco, Professor of Psychology and Social Behavior at UC Irvine

"Aggressive driving" and its alias, "road rage," have become hot topics in the traffic safety field, especially in the United States and Britain, where eye-catching news stories have appeared in recent years. The World Wide Web yields thousands of matches on these terms. It is hardly incidental that American cars and trucks are marketed as they are, with names such as Stingray, Cutlass, Stealth, and Ram.

The concern over roadway aggression, however, is not about the thrills of driving or possession of a high-performance or fortified-looking automobile. The concern is with how people behave in and with their automobiles, particularly when that behavior involves intentional harm to other drivers or pedestrians. Uncontrolled anger and aggression on roadways do constitute a significant driver behavior issue, but whether or not the problem is escalating is far from being established, because its nature, scope and prevalence have not been well-defined.

Conflicting Statistics

Last year considerable news attention was given to two reports, both involving congressional testimony: The head of the National Highway Traffic Safety Administration (NHTSA) testified to a House of Representatives subcommittee that two-thirds of the country's traffic deaths (there were 41,907 deaths in 1996) are caused by aggressive driving. Adding to this, the AAA Foundation for Traffic Safety released a study that identified over 10,037 incidents of "violent aggressive driving" from 1990 through most of 1996, in which 218 people were killed. The president of the American Automobile Association

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How Much for the Manhole Covers?

People will buy anything. If you don't believe it, check out a municipal surplus store sometime.

Every few months, Craig Learner orders a shipment of brand-new signs that proclaim "No Firearms Allowed" in big, bright letters. Then, he takes out a gun and blasts every sign full of holes. Learner isn't crazy, or a criminal. He isn't even a gun zealot. He's just the manager of San Diego's surplus municipal goods stores, raising money for the local treasury.

Learner has discovered that a "no firearms" sign is a big seller at each of the three stores the city runs. But it can't be a fresh sign out of the box. Nobody wants that. It has to be damaged by gunfire. So he damages it. "They don't sell hardly at all without the holes," Learner says.

Used parking meters are another big item. Learner has sold hundreds of them.. In fact, they proved so popular that he ran out of San Diego meters, and now sells a collection he acquired from Santa Fe, NM, which happens to be replacing its stock. "We bought every parking meter in Santa Fe," he boasts.

One thing San Diego proves is that the private sector doesn't have a monopoly on wily retail techniques. But it also proves that city surplus stores can be a decent little cash cow, bringing in money and getting rid of discarded goods at the same time. San Diego's stores average $30,000 to $50,000 a month in sales, and the city receives 10 percent of the sales revenue.

Not every city has gone to the extreme of shooting holes in signs. The San Antonio city surplus store, a stone's throw from the Alamo, sells discarded merchandise from virtually every department of local government, including light posts, fire hats, law books and airport runway lights. The city and the concessionaire that operates the store share the revenue; most of the city's cut is returned to the departments the items come from.

The inventory of the San Antonio store consists mostly of goods that otherwise would be sitting in warehouses or thrown away. The store is no gold mine, but it does run a profit: it has made $40,000 in the three years it has been open. "We're trying to get a higher profit," says Julie Lipton, special projects coordinator in the Department of Asset Management.

Denver hopes to cash in by selling surplus items from its legendary Mile High Stadium, now that a new football stadium is being built to replace it. First, though, it has to overcome a couple of obstacles. A charter change will be required for the city to sell municipal goods. And it's uncertain which pieces of the city-owned stadium will be up for grabs and which will belong to the state-created authority, which is taking over the property.

Different cities go into the surplus business with different goals. San Francisco's two outlets don't bring in a great deal of money, but they employ several dozen of the city's homeless residents. Detroit held a municipal garage sale and sold off a city bus, water fountains, a shoeshine booth, a microfiche reader and police jackets, among other items. It got rid of what it needed to, declared victory, and went out of business. No repeat sale is planned anytime soon.

A few governments have found that succeeding in the junk business is harder than they thought it would be. Hartford, CT, opened a surplus store in 1997 across the street from City Hall, and lost money on it from the beginning. After a little more than a year, Hartford was out $100,000 to the operator, who had returned the city only $8,052. The operator complained that local officials hadn't provided the used parking meters and other items customers wanted. The whole matter is in litigation, and the city won't decide whether to try such a venture again until that is resolved.

If it does, however, it might learn a few lessons from San Diego, where Craig Learner seems to have an instinctive feeling for the municipal junk that shoppers are dying to have. He is currently offering street lamps and fire hydrants for a dollar a pound.

He's also running a special on signs. After his stores sold every sign the city had in its storage yard, Learner started ordering new ones from the company that makes them for the transit authority, a little smaller so they would fit in bedrooms, where people apparently like to put them.

All told, there are 100 different signs manufactured for sale by the San Diego city stores. The original edition of a "Swimsuits Optional Beyond This Point" sign sold for more than $300. More recent replicas are somewhat cheaper. "People love to use them around Jacuzzis and in bars," says Learner. "You see them all around town."

Reprinted with permission from Governing, Congressional Quarterly Inc., May 1999.

Long idling hard on newer diesel engines

Electronic diesel engines built since 1992 are a different breed of cat (or Cat) technicians say. Unlike older diesels that people tended to leave idling because they could be hard to restart, these new types should be shut down after 15 minutes.

Long idling shortens engine life by lowering running temperature. This leads to soot and carbon deposits forming on piston rings, valve stems, and injectors. The result is more oil consumption and low power along with accelerated engine wear, according to Cal Gilbertson at FABCO Caterpillar dealer.

In addition, it wastes fuel: "About half a gallon to a gallon per hour," says Lawrence Adlebush, Brown County Shop Superintendent. "We like to see a good five minutes of idle to cool down turbochargers and equalize the coolant temperature to get back to normal operating temperature." Brown County's fleet is equipped with Cummins engines.

One situation where drivers could shut down is while waiting in line to load or unload the dump body. "If they're working in a big crew and are the second or third truck in line, it's going to be 30 or 40 minutes till their turn so they don't need to let it idle," says Pat Brushafer, automotive mechanic supervisor, City of Milwaukee.

However, for some work assignments, trucks must be kept idling, despite engine wear. "If we have a truck standing on a construction project, we almost always have to leave it running to keep the flashing lights going," says Adlebush. "If we shut it off the battery will go dead." Hydaulics operations and cab temperature control may be other reasons for longer idling.

Lack of mechanical background and concern for getting the job done may also lead drivers or their immediate supervisors to leave the truck idling. "Some crew managers don't have the mechanical background to understand that it's okay to shut these new trucks off," says Brushafer. "Also you don't see the engine wear right away. It's very minimal compared to what you could lose from a crew falling day or two behind because a truck wouldn't restart."

Considering the savings in engine life, oil life, and fuel consumption, it may be worthwhile to remind operators and supervisors to keep idling to a minimum.

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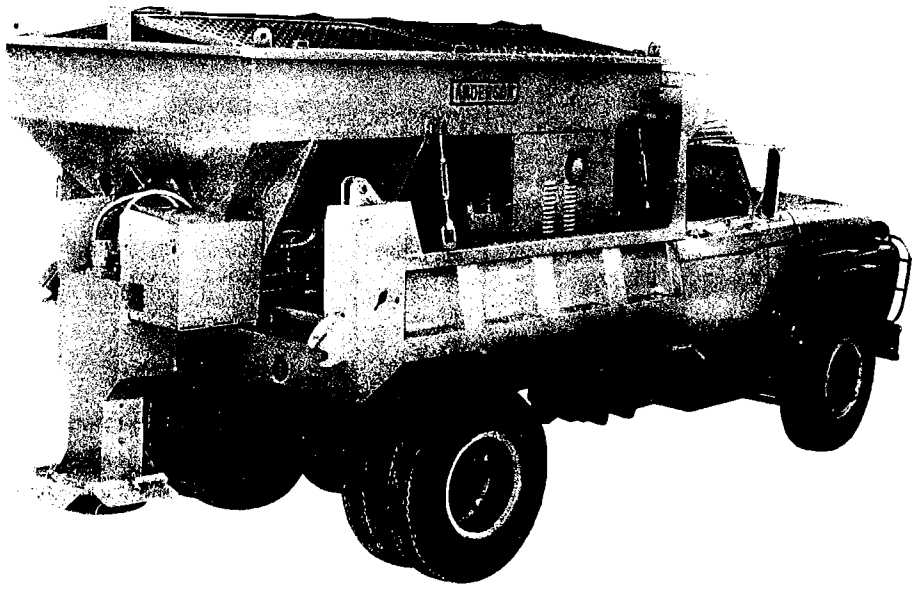


reported on the study to that same Surface Transportation Subcommittee.

But neither of these reports provides the appropriate data for understanding the nature and extent of the problem; and, if one actually attends to the numbers, it is easy to spot disparity, unnoticed in media news stories of these reports.

30 or 27,000 Deaths Per Year?

What does one make of the difference between the AAA report of 218 deaths in a roughly seven-year period versus the NHTSA claim of over 27,000 in one year? The problem is that the definitions and measurements of aggressive driving are ambiguous. The NHTSA report failed to specify the "aggression" observed or to clearly distinguish between "aggressive driving" and speeding, commonly named as the "number one" cause of motor vehicle accidents. It is unclear how reliably the classification of aggressive driving was determined.

In contrast, the AAA study did define aggressive driving in a way consistent with the scientific method - i.e. by restricting it to intentional harm-doing behavior, either actual or attempted. Its methodology, however, left much to be desired. Conducted by Mizell & Company, a security consulting firm, the AAA study did not claim that its results established the prevalence of aggressive driving nationwide, but its findings were presented as national in scope. Indeed, the report presented data for aggressive driving in yearly intervals from 1990 to 1996, highlighting progressive annual increases. However, the data were obtained from "30 major newspapers, 16 police departments, and insurance company claim reports." The AAA report gives no account of the reliability or validity of these data. One does not need expertise in research methodology to see the problem with talking about yearly increases when these are based on news or police reports in a relatively short time series. Changes in reporting behavior may very well be driving the differential rates.

To illustrate this, consider the example of "freeway violence" that appeared in California in the summer of 1987, when there was a series of over 100 roadway shootings throughout the state, mostly occurring on freeways. The summer episode (from mid-June to the end of August, with no reported shootings over Labor Day weekend) received national and international publicity. When it passed, it was largely viewed as an aberration, with national news reports implying that the shootings had been a new fad for California wackos. Even in California newspapers, shooting stories moved off the front page. For example, on August 26, the arrest of a shooting suspect and the death of a victim of another freeway shooting received two small paragraphs on back pages of the *Los Angeles Times*.

Searching for 'Trends'

With regard to the 1987 episode, two points are worth noting. First, sequential outbreaks of roadway shootings have periodically occurred in metropolitan areas before and after that episode; also, in the years since, such shootings have continued in California, with varying time patterns. Sometimes shootings have been bunched in time, but the media have either not noticed the clustering or have not chosen to present them as a trend. Secondly, the California Legislature, responding to the then ongoing summer episode, allocated funds for two Highway Patrol positions to track freeway violence. That tracking showed a fluctuating but steady increase in monthly incidents from 136 in January of 1988 to 325 in July of 1989, a significant escalation. But the state was in a recession, and the funding for those positions ended in the summer of 1989. The "problem" had "gone away." It is obvious that once it is established that there is something to be tagged, when procedures are put into place to tag it, and when people are disposed to pay attention to the tagging, then incident reports of the tagged activity increase. When attention is diverted elsewhere, the "problems" fade.

The above discussion is not intended to make light of the roadway aggression as a problem meriting attention. It is meant to highlight the need to define the problem. Indeed, when I began to study the phenomenon in the late 1980s, I speculated that aggression on roadways would

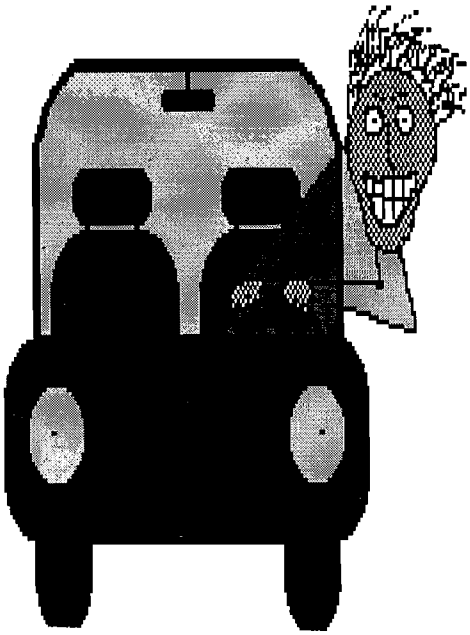
worsen in the coming decade, because the convergent factors that affected it would intensify. Most centrally, these factors concern the lessening of inhibitions that kept a lid on roadway aggression along with continuing mental preprogramming ("cognitive scripts") for aggressive behavior. To understand this, one must begin by recognizing some key determinants of human aggression and then see that the roadway is a catalytic context where these determinants can come into play.

Controlling Aggression

One of the most important things to understand about human aggression is that its expression is under two types of regulatory control, social and personal. Because aggression and anger have important survival functions, they are a necessary part of human nature. But because human nature is flawed, some people will always use aggression in harmful ways to get what they want. So society creates external forces to inhibit aggressive behavior, and individuals learn through socialization to internalize these prohibitions. Any weakening of these external and internal restraints increases the likelihood of aggressive behavior. This means that, in addition to aggression happening because a person has been "provoked" by some event whereby physiological arousal overrides self-control, it is also the case that aggression can be "released" by lessening controls.

When Controls Fail

Some settings encourage this erosion of self-control, and roadways are one of them - as are certain types of bars or pubs, crowded urban neighborhoods, and hotly contested football or soccer matches. Generally people lose self-restraint when they are not mindful of who they are and of their place in this rule-governed society. A highway, especially at night, provides anonymity and the opportunity to escape. Expectations of punishment are diminished, and aggressive impulses are more readily expressed. The chance to "get away with it" can release aggression that would otherwise have been held in check. This is evident in traffic jams, which produce few incidents of flagrant aggression, in spite of the stressful circumstances.



Exposure to unpunished aggressive behavior can also weaken inhibitions. Watching other drivers vent anger, gesture obscenely, or maneuver their cars antagonistically without censure or arrest lessens the inclination for restraint. By extension, to routinely observe other drivers breaking the rules by following too closely, not fully stopping at red lights before turning right, greatly exceeding the speed limit, passing on the right at high speed, and so on, creates a sense that illegal behavior on the road is normal. On this point, bear in mind that even though few people engage in deliberate harmdoing, it takes only a slight increase in aggressive acts to magnify a societal problem.

Defense of Territory

The automobile is also highly territorialized, as a property to be defended and as a personal space zone that should not be encroached. Aggression is easily elicited by the perceived need to defend the car for what it is and what it symbolizes. Also, with vehicles becoming more performance-enhanced and fortified, "aggressive driving" entails less risk for the driver. More protection, more power, better braking and better handling create a greater sense of safety that enables aggression to proceed at a reduced sense of personal cost for engagement.

Physiological Arsenal

The activation of arousal is heightened by elevations in physiological arousal (e.g. blood pressure, heart rate and respiration), which serve to override inhibitory control. Driving an automobile involves many conditions that activate arousal. Simply being behind the wheel of a moving vehicle is arousing. Passing, braking, turning, lane changing, attending to other vehicles, sudden maneuvers, unexpected occurrences, and signage are even more potent activators of arousal. Driving in metropolitan areas involves recurrent exposure to various forms of impedance and travel constraints, and these roadway frustrations become magnified in their aggression-producing potential by the already elevated arousal state of the driver. In addition, because driving is typically a means to commute from one place to another, drivers can transport tension and anger from events that already took place at the travel origin location or are anticipated at the travel destination location. Thus, frustrations or perceived provocations on the road can evoke stronger feelings when added to the other frustrations of a driver's day. When these are combined with lessened inhibitions, aggressive acts can readily take place.

Need for Systematic Study

Lastly, and significantly, aggressive behavior on the road is decidedly under the influence of "cognitive scripts," another important determinant. A cognitive script for aggression is a mental programming of antagonistic behavior in a particular context where situational cues acti-

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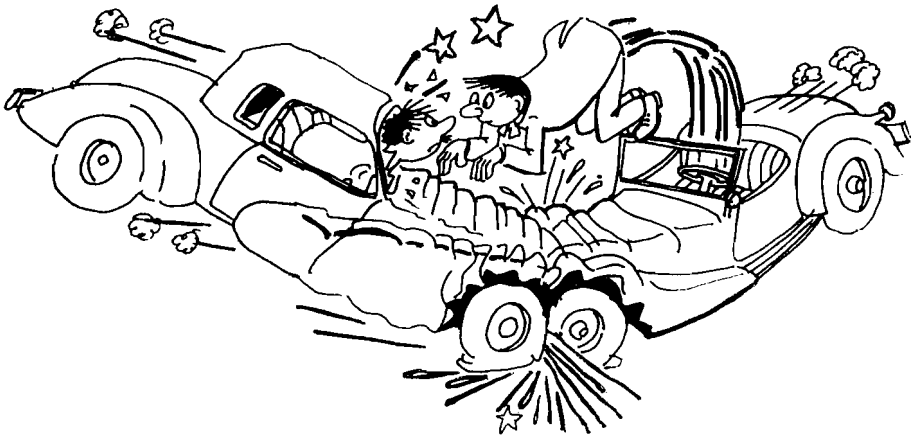

Roadway Aggression

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vate subroutines for behavior. A repertoire of images builds in the mind, whether it be a child's play fantasy or an adult's social interaction scenario. Automobile driving is impregnated with cues for aggressive scripts (as mentioned earlier), and this has been amplified by the now countless fictional and nonfictional portrayals of aggression in driving scenarios. The minds of drivers have been subtly programmed with images of aggression associated with driving, from movies,. television and print journalism, conversations and observed behavior. I am not saying that someone viciously tails or blasts at other motorists simply because of watching too many movies with hyped-up chase scenes or late night news broadcasts of police pursuits. The point is that many people already possess cognitive scripts for antagonistic behavior while driving, and these are readily triggered by events on roadways. I expect that eventually we will change the values attached to those scripts, making them less socially acceptable.

It would be an exaggeration to say that antagonism and aggression are a routine part of automobile driving, but evidence suggests that such behavior is not uncommon among United States and British drivers. Aggression on roadways exists in many forms. I previously suggested (*in Novaco, 1991*) a sixfold typology: roadway shootings/throwings, assaults with vehicles, sniper/robber attacks, drive-by shootings, suicide/murder crashes and roadside confrontations. These were mapped according to targets, perpetrators and context. In general, the roadway is a catalytic context for aggressive behavior, and the societal conditions that encourage it are not diminishing.

The topic merits concerted attention by social science researchers and traffic safety professionals. While human aggression springs from many causes, a central idea suggested here is that aggression on roadways is a product of various disinhibitory influences (such as anonymity, fortified vehicles, escape and arousal) and cognitive scripting. However, the first step in seeking to understand and respond to a phenomenon is to obtain a solid description of it. If aggressive driving is to be claimed as a societal problem, we must first reliably establish its defining properties, variations, magnitude and extent. We should begin by being grounded in systematic, reliable and validated observation.

Thanks to the California Highway Patrolman for the photos used on pages 1 and 4 . Reprinted with permission from the ITS Review, Institute of Transportation, University of California, Vol. 21, No. 4, August-October 1998.

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RAGE IN WORCESTER

Pertinent to this article is the apparent road rage incident which occurred on October 28 in Worcester when a truck driver rolled his tanker spilling 100 gallons of butyl acrylate, a highly toxic substance. The crash happened at 8:30 a.m. on the entrance to Interstate 190 from westbound Interstate 290 creating massive traffic delays for most of the day. The driver was charged with operating as to endanger, following another vehicle too closely, and travelling at speeds greater than reasonable and proper.

Aggressive driving by both the trucker, who was enraged after being cut off, and the driver of the passenger car, who has disappeared, ended after a high speed chase when the truck crashed on a sharp curve on the ramp where the speed limit is 35 mph.

Although minor injuries were sustained by the trucker and a state trooper and 12 hours were required to contain the spill and transfer 6,100 remaining gallons to another vehicle, there existed the potential for severe danger to many people.

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publications and videos

PUBLICATIONS

WET-10	Fluidized-Bed Adsorption Bioreactor for the Treatment of Groundwater Contaminated with Solvents at Low Concentration
PLA-49	Transportation Action: A Local Input Model to Engage Community Transportation Planning
REC-35	Deformability of Shredded Tires
TRA-67	3M Microloop Field Evaluation Report
BIK-16	Guidebook on Methods to Estimate Non-Motorized Travel: Overview of Methods

VIDEOS

LL-101	How to Give a Deposition
LL-102	Local Government on Trial, Part 1, the Background
CDROM-21	Geonsynthesis: Use in Streets and Highways
PA-156	Torts are Everybody's Business
PA-158	Air Quality Conformity in Transportation Planning
PA-157	Local Government on Trial, Part 2, The Trial

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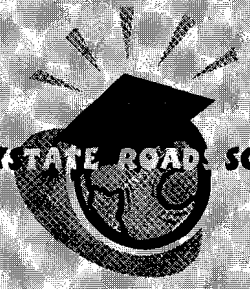

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12/16/99 - Crowne Plaza, Pittsfield

Presentations

1/19/00 - Sheraton Plymouth, Plymouth
1/20/00 - Holiday Inn, Worcester
1/21/00 - Hotel Northampton, Northampton

Pavement Management Systems

1/25-1/27/00 (3-day workshop) Holiday Inn, Worcester

in this issue...

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In addition to publishing *Mass Interchange*, the Baystate Roads Program facilitates information exchange by conducting workshops, providing reports and publications and videotapes on request, and offering one-to-one technical assistance on specific roadway issues. Because the program relies on input from many sources, inquiries, articles, and ideas are encouraged.

LTAP Local Technical Assistance Program

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