

**Can Local Action on Alcohol Reduce Harm? Results of the
Community Trials Project in the United States**

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OVERVIEW

The national effort, "Preventing Alcohol Trauma: A Community Trial" was a five-year research project with a goal to reduce local alcohol-involved injuries and death in three experimental communities of approximately 100,000 population each (one in Northern California, one in Southern California, and one in South Carolina). The communities contained quite diverse racial and ethnic diversity as well as a mix of urban, suburban, and rural settings. Each of these three communities had a control community that did not receive the prevention interventions. The project used an environmental policy approach to prevention and implemented five mutually reinforcing components: (1) community mobilization to develop communication organization and support, (2) responsible beverage service to establish standards for servers and owners/managers of on-premise alcohol outlets to reduce their risk of having intoxicated and/or underage customers in bars and restaurants, (3) a drinking and driving component to increase local drunk driving enforcement efficiency and to increase the actual and perceived risk that drinking drivers would be detected, (4) an underage drinking component to reduce retail availability of alcohol to minors, and (5) an alcohol access component to use local zoning powers and other municipal controls of outlet numbers and density to reduce availability of alcohol. Results show that the project has reduced alcohol-involved crashes, lowered sales to minors, increased the responsible alcohol serving practices of bars and restaurants, and increased community support and awareness of alcohol problems.

BACKGROUND

Many examples exist of local efforts to prevent chronic diseases that have yielded years of experience, notably those from cardiovascular disease (CVD) and lung cancer. See, for example, Carlaw *et al.*, 1984; Farquhar *et al.*, 1990; Lasater *et al.*, 1984). An entire issue of the *American Journal of Public Health* (Vol. 85, No. 2, February 1995) was devoted to recent health trials. These past studies are a rich source of technical expertise and practical experience but one cannot assume that medical trials are automatically relevant to designing and managing alcohol prevention programs because most knowledge of community-based public health interventions derives from programs to reduce high-risk medical conditions (Hennessy, 1991).

In the alcohol prevention field, while many community-based efforts have emphasized education and training to modify individual drinkers' behavior without changing structural features of the community (see summary in Casswell, 1995), some community projects have been designed to make structural or environmental changes. Examples are described below.

An early project was conducted in San Francisco in the early 1980s, where researchers worked with representatives of local agencies and interest groups to increase leaders' awareness of alcohol problems and stimulate local policy (see Wallack, 1984-85). A New Zealand project initiated in the mid-1980s emphasized both mass media and community organization in support of alcohol policy changes (Casswell & Gilmore, 1989). Subsequent evaluation found that mass media and community organization programs in local communities could be used to increase support for environmentally-based interventions (Casswell *et al.*, 1989). A community prevention trial implemented in Woonsocket, Rhode Island was based on the "Community Gatekeeper Model" (Stout, 1992). The study did find increased knowledge about alcohol-related injury and changed attitudes toward enabling drinking produced by the intervention program as well as modest effects in lower emergency room cases (see Stout, 1992, 1994).

A Western Australian project (Midford *et al.*, 1995; Harrison & Laughlin, 1993) was designed to reduce alcohol involved injuries. This project increased community support and interest in injury prevention.

Hingson *et al.* (1996) described the results of a six-community effort to reduce alcohol-involved driving crashes and deaths called "Saving Lives" in Massachusetts, U.S.A. This study found that the community interventions produced a 25% reduction in fatal crashes (comparing five years before and five years of the program) and fatal crashes involving alcohol decreased 42%. A six-county community project in northeast Minnesota (U.S.A.) had a goal to prevent or reduce alcohol use among young adolescents by using a multilevel, community-wide approach. At the end of three years, students in the intervention school districts reported less initiation of drinking and prevalence of alcohol use than students from reference districts, who served as controls (Perry *et al.*, 1996).

Holmila (1997) described a community action project in the City of Lahti, Finland. The project was composed of multiple prevention components, including local approaches to alcohol policy to increase key leaders' perception of alcohol as a social problem. The evaluation found that the project had increased local newspaper attention to alcohol issues, public perception of

alcohol as a social problem, and knowledge of alcohol content and the limits for risky drinking. Overall, Holmila and Simpura (1997) concluded that there were no clear changes in drinking patterns or problem drinking that could be attributed to the Lahti project. Wagenaar, et al. (1994) described a multi-community project to alter local alcohol policies concerning retail and social access to alcohol by young people in order to reduce drinking. The project found a decrease in perceived retail availability of alcohol and there was a reduction in sales to minors in the experimental communities.

Other international examples of community action projects designed to prevent alcohol problems have been described in Canada (Giesbrecht & Pederson, 1992), and Sweden (Romelsjö, Andren & Borg, 1993).

OBJECTIVES OF AN EFFICACY TRIAL

The objective of the United States Community Trials Project was to determine, through an efficacy trial, whether a comprehensive series of interventions can produce a statistically significant reduction in alcohol-involved injuries and death.

The Community Trials Project was based upon a public health environmental approach to prevention. The primary strategy of this trial was to make structural changes in each community that reduce the use of alcohol in conjunction with risky activities and situations that could lead to unintentional injury and death. The operating philosophy of the project was to assist each experimental community to make effective, long-term changes to reduce alcohol-involved injuries and death, not to change individual drinking patterns *per se*. This project tested the efficacy of alcohol policy strategies at the local level (see Edwards *et al.*, 1994).

To achieve the goal of reducing overall alcohol-involved trauma, the Community Trials Project implemented and evaluated five broad types of prevention activities referred to here as components. Each component addressed some aspect of the conceptual model, had its own set of prevention activities, and was designed to be mutually reinforcing with other components. Each of the five prevention components had been tested in other communities but never together within a comprehensive program to achieve mutual reinforcement or synergy. While each component had its own goals and objectives, this efficacy trial was designed to obtain as much mutual reinforcement across all components as possible.

The research study was designed to reduce as many realistic threats to internal validity (claims of attribution of causation to the prevention program and not some other exogenous process) as possible. Process evaluations provided information about relative contributions of various strategies that can guide future community prevention trials. If the comprehensive, multiple strategies yielded a significant effect, then treatment effectiveness trials can be undertaken later to identify the most efficient and effective combinations of these prevention strategies.

As an efficacy prevention trial, this study did not "randomly" assign intervention sites to treatment conditions. Rather, communities were purposely chosen as experimental sites if they

had existing coalitions that were interested in the proposed comprehensive strategies and if they also had sufficient population (approximately 100,000 persons) to provide adequate statistical power for evaluation of outcomes. These communities did not experience high or above-average alcohol problems. Comparison sites were matched to the intervention sites on the basis of similar local geographic area characteristics (e.g., within the same state and region), industrial/agricultural bases, and minority compositions. Three community pairs (experimental and control) were selected. The cities had populations of approximately 100,000 each and were located in Northern California, Southern California, and South Carolina in the United States.

The Northern California experimental site is located inland from Monterey Bay. The comparison site is located 90 miles from San Francisco in the northern part of the San Joaquin Valley. Both sites are commercial and agricultural centers. The largest minority population in both communities is Spanish-speaking (between 40-50%).

The Southern California experimental site is located 35 miles north of San Diego, in San Diego County, while its comparison city is 30 miles southeast of Los Angeles. Both are non-manufacturing, non-agricultural communities with diverse light industry, tourism, and office centers, and both have a significant (over 20%) Mexican-American population.

The South Carolina experimental site lies in the northeastern part of South Carolina in the Great Pee Dee River area. Its comparison community is located in east central South Carolina. Both communities are moving away from their former agricultural-textile manufacturing base to light and medium industry, manufacturing, and retail trade. Both sites have significant African-American populations (approximately 40%) that are actively involved in current local alcohol prevention activities.

FIVE PREVENTION COMPONENTS

The five prevention components are described below.

COMMUNITY MOBILIZATION -- Community Knowledge, Values, and Mobilization involved working with existing community coalitions and task forces to prepare for implementation of specific alcohol problem prevention; to develop public awareness focusing on alcohol-involved trauma and the relationship of drinking impairment, increased risk of death or injury; and to increase awareness of the individual component activities. Local news media and public information activities were used to support the overall goals of the project as well as those of individual components. Project organizers worked with existing community coalitions to implement specific alcohol problem prevention activities and to develop a public awareness and concern about alcohol-involved trauma and the increased risk of death or injury associated with drinking. Public communication via media advocacy supported the overall goals of the project as well as those of individual components.

RESPONSIBLE BEVERAGE SERVICE -- Responsible Beverage Service assisted alcohol beverage servers and retailers in developing and implementing beverage service policies to reduce the likelihood of customers becoming intoxicated or driving when intoxicated, and to eliminate service to underage customers. The goal of this component was to reduce the likelihood of

customer intoxication at licensed on-premise establishments through responsible beverage service practices and to prevent already intoxicated patrons from driving or engaging in other risky behavior while impaired.

This component was designed to affect patterns of consumption and levels of intoxication or impairment among customers served at those establishments. The primary objective was to change the set of serving practices among on-premise alcohol licensees within the community, with emphasis on the manager's responsibility. Other targets for this component included professional hospitality associations (restaurant, bar, and hotel associations) and beverage wholesalers, to help gain their acceptance of the prevention program; Alcohol Beverage Control officers and local law enforcement officials, in order to increase enforcement of existing laws and to develop incentives for compliance; and voluntary associations related to alcohol and drunk driving (e.g., AA, MADD), to bring attention to the role of outlets in problem reduction.

The general operating policy of this component was to create a combination of incentives and disincentives that would strongly encourage on-premise licensees to provide server training in responsible beverage serving practices and to strengthen their policies related to preventing intoxication and keeping intoxicated patrons from driving.

DRINKING AND DRIVING -- The goal of this community component was to reduce the number of drinking and driving events by increasing both the actual and perceived risk of detection for driving while intoxicated (DWI). This component also increased DWI efficiency through training enforcement officers in new techniques for identifying DWI drivers, and the use of passive alcohol sensors to increase the probability of detection. This component also provided an environment that empowered significant others and retail establishments to intervene in order to prevent drunk driving.

UNDERAGE DRINKING -- The goal of this component was to reduce drinking among underage youth. Underage Drinking included community programs focusing on reducing sales and access to alcohol by minors, training off-premise alcohol retailers to prevent sale of alcoholic beverages to minors, and increased efforts to enforce underage sales laws. The goal of this component was to reduce sales and access to alcohol as a means to decrease adolescent drinking, drinking in conjunction with driving and other high-risk situations, and riding with drinking drivers. Three basic interventions were used: (1) enforcement of underage alcohol sales laws, (2) training of off-sale clerks, owners, and managers to prevent sale of alcohol to underage persons, and (3) media advocacy to bring news attention to the issue of underage drinking and easy retail access to alcohol by minors.

ALCOHOL ACCESS -- The goal of this component was to assist communities in increasing restrictions on access to alcohol, thereby reducing alcohol-involved trauma. Access to Alcohol involved the use of local zoning powers and other municipal control of outlet density to reduce the availability of alcohol that is related to alcohol-involved trauma.

Local zoning powers and other municipal controls of outlet density were used to reduce the availability of alcohol, which is related to alcohol-involved trauma. For example, such restrictions can affect alcohol outlet densities by preventing the establishment of new outlets.

Local authorities can change the behavior of outlets by more closely monitoring existing outlets for compliance with ABC regulations. Over time, these regulations can alter forms of alcohol consumption that are dangerous to the community and reduce heavier alcohol consumption, alcohol-involved traffic crashes, and non-traffic trauma. Changes in locations of outlets were considered a change in access, though they may not reflect a decrease in total access of alcohol in the community.

See Holder *et al.* (1997) for a discussion of the conceptual model that identified the antecedents for developing these components and the rationale for the aggregate problem indicators of this project.

PROJECT PHASES AND COMPONENT IMPLEMENTATION

This study had five phases over five years, 1991-1996.

Phase One: Baseline Measurement -- No prevention program interventions were undertaken during this period of baseline data collection (before any intervention) in the experimental and comparison communities. No extensive mobilization of the community occurred during this period, as this was the time for discussions and planning with the local coalition and key community informants.

Phase Two: Community Mobilization and Initial Implementation -- Community mobilization and public education were the first activities to be undertaken to obtain community organization, group support and participation in the project; to increase the awareness and concern of the general public about the risk of alcohol-involved trauma; and to develop public support for the environmental strategies to be utilized. Pre-intervention data were collected just prior to the implementation of any planned interventions during this phase. The routine monitoring of community alcohol-involved trauma and drinking patterns and roadside BAC monitoring were continued throughout this period.

Phase Three: Comprehensive Implementation -- This phase included additional intervention-specific training, other implementation activities, and continued monitoring of the community.

Phase Four: Reinforcement of Comprehensive Implementation -- This phase continued activities from phase three and included "booster activities" to maintain or rekindle interest in the interventions and community coalitions organized to implement them. Data collection, both process and outcome, were continued. Institutionalization efforts got underway and were intensified as necessary.

Phase Five: Institutionalization and Outcome/Intervention Assessment -- Institutionalization is the process by which prevention activities (desired by the community) are established within existing local structures to be continued after outside funding and technical support are ended. In phase five, institutionalization continued, the intervention components were documented and evaluated, and the project history was completed.

SYNERGISM

The intent of the Community Trials Project was to encourage support and reinforcement between prevention components. The effectiveness of each component was greatly enhanced by the other components mutual reinforcement, or synergy. There were elements of each component that interacted with each of the other components in a two-way supportive relationship. For example, displaying DWI enforcement information at licensed bars and restaurants was intended to aid both the Responsible Beverage Service and the Drinking and Driving activities, and underage sale enforcement supported on-premise policy and server training.

EVALUATION DESIGN

The evaluation of the Community Prevention Trial can be categorized as either: (1) outcome measures or (2) process measures. Outcomes were the ultimate measures of success or "raison d'être" for any community project. In this community trial, outcomes were the indicators or counts of alcohol-involved problems at the community level, no matter their source. Thus, outcomes were not counts of problems within a target group. For example, visitors to the community might drink heavily at a local bar and produce an auto crash. Although not community members, they contributed to the overall levels of community problems and were legitimate targets of community-level interventions. Thus, problems in this project (i.e., alcohol-involved trauma) arose from the overall community structure.

Just as the heart disease and cancer prevention projects learned, however, some conditions are slow in response to prevention interventions, and intermediate factors, antecedents, or risk factors are more proximal. In the case of this community trial, the alcohol-involved problems that were to be reduced were relatively acute and immediate, i.e., impairment by a drinking driver resulting in a traffic crash was an immediate event. Nonetheless, community system changes take time to implement. Thus, the effects of structural and policy changes may often appear as a lagged effect. For example, changing the alcohol serving practices of local restaurants and bars can be documented as an intermediate variable, but the longer term effects of this change in reducing risk of alcohol-involved trauma may take much more time.

A central distinction made in this project was between "process" and outcome variables. This distinction separates measures of program effectiveness (e.g., reductions in outlets due to planning and zoning activities) from measures of intervention effectiveness (e.g., reductions in alcohol-related crashes attributable to the Community Trial intervention). For example, if regardless of all attempts, RESPONSIBLE BEVERAGE SERVICE programs failed to affect rates of service to intoxicated persons, they would be deemed ineffective not because they would not have had an effect on rates of intoxication if effectively implemented, but because the program simply failed to show effective implementation or even failed to get anyone trained. Thus, it is important to distinguish between intervention components that fail in the "process" of implementation from those that fail because the implementation itself is ineffective. (The latter would be shown to be the case if, given effective implementation of the intervention program demonstrated through increased refusals of service to intoxicated persons, average BAC levels of drivers at roadside coming from on-premise establishments remained constant.)

Process Evaluation

The success of the Community Trial relied heavily on the ability of community coalitions to mobilize key organizations (e.g., schools, law enforcement, health care agencies) to support and promote the goals of the project. As noted in the previous section, through the use of existing community coalitions organized around local alcohol treatment and prevention issues, study sites implemented the five research components. Based on the goals and strategy of this trial, the specific aims of the process evaluation were to: (1) monitor the implementation of the five research components to identify omissions or problems in the procedural design or actual implementation, and provide relevant feedback regarding the nature of these problems to the research team, (2) train and engage community coalition members and other citizens to participate in the process evaluation, (3) provide feedback to the community through the coalition regarding the progress of the project, (4) determine the extent to which the community builds capacity to prevent alcohol-related trauma and the extent to which the community was activated or motivated and components were sustained and institutionalized, (5) improve practical understanding of how communities became activated to establish community-wide health promotion programs related to alcohol-related trauma, and (6) monitor and assess new research inputs and outputs which were associated with program implementation and continuation.

There were two features of the ongoing process evaluations at the target sites that were important to note. First, without such evaluation the levels of implementation would be undocumented and largely unknown to project staff. Second, the process evaluation served as the only mechanism for qualitative evaluation of the continued progress of the implementations. As such, process data were essential to evaluation of essential community activities. They also provided quantitative measures of level of implementation over time to be used in modeling of Trial effects (Gruenewald, 1997).

Intermediate Measures

The intermediate measures provide a means of tracking targeted behaviors such as drinking and driving, youthful drinking, general alcohol availability, and consumption in the target and comparison communities. As noted above, these measures may be sensitive to the impact of several of the components so they cannot be clearly used for component specific evaluations. They do, however, serve as important bridges between component specific implementation measures and the outcome data. Measures of intermediate variables provide quantitative data that can be used in time series analyses of Community Trial outcomes through the period of program operation.

Intermediate measures were collected from the adult telephone survey, the youth telephone and school surveys (all documenting alcohol consumption among adults and youth), the roadside survey (indexing BACs at roadside) and the newspaper/TV coding analysis. While the newspaper/TV coding analysis measures did not provide a direct contact with citizens at risk, they were designed to describe events that could reflect changes in community norms and drinking, or drinking and driving behavior by target site residents.

PROCESS EVALUATION OF LOCAL ALCOHOL POLICY DEVELOPMENT

This paper describes a subset of policies that were implemented as part of the Community Trials Project where the definition of policy was much broader than simply limiting alcohol availability. Local policies were selected to be separately effective as well as mutually supportive. None of the alcohol policies were isolated from the specific effects of the others.

Enacting policy at the community level has a number of advantages. First, local citizens are close to the "scene of the action." While alcohol policies typically have been set at the state or national level in the U.S., the local level is where alcohol problems and responsibility for drinking access are experienced personally. The community must deal with drinking drivers, and injuries and deaths from crashes involving alcohol-impaired drivers. It must provide hospital services and emergency medical services, conduct autopsies, and work with personal rehabilitation and recovery. Alcohol problems are personal experiences for community members, and efforts to prevent or reduce future problems are also a personal matter. For example, parents' groups were being formed in the experimental communities for this trial around a concern about underage drinking. Such groups were, and in the future can be, mobilized to create public pressure against retail alcohol sales to underage persons and against access to alcohol at youthful social events. The consequences of such a policy, if it constrains local retailers or establishes priorities for local police enforcement, are experienced locally. We found that when local policy advocates advance such positions, they also encounter those who may oppose such policies (also members of the community). This means that policy can create, in a local forum, debate between opposing community groups and individuals and thus draw attention to such issues.

Second, we found that local funds to support extensive community alcohol problem prevention were either limited or nonexistent in all three experimental as well as the three comparison communities. If the implementation of an alcohol policy and its maintenance can be of low or no cost, then local leadership, especially elected officials who have a number of competing demands for tax revenue, are especially receptive. Local leaders wish to show that they are finding solutions to problems that require little local funds. Low-cost approaches help leaders win elections, increasing their power and influence, and make a real contribution to the community. A policy can be shown to the community to (a) have the potential to reduce alcohol problems, (b) be inexpensive to implement and maintain, and (c) have local citizen support (even if there is special interest opposition, e.g., local alcohol wholesalers). These three elements are especially attractive to local leaders.

Third, many strategic alcohol policies have generated evidence of effectiveness (often at the national or state/provincial level) that can be presented to local citizens. Evidence of potential effectiveness within a real community appeals to both citizens and their leaders. In current times, prevention programs are increasingly being asked to demonstrate that they work or have benefit. The research base for many alcohol policies demonstrates what can and cannot work.

And, of course there is the bad news, i.e., problems and limitations for alcohol policy at the local level. First, we found that local alcohol policies were rarely highly visible, lacking lapel

pins, balloons, posters, etc. Policies, by their very nature, do not usually naturally generate public spectacles or celebrations. However, news media coverage prompted by media advocacy strategies (Treno *et al.*, 1996) can stimulate public attention to the need for and support of specific policies. Public activities that bring attention to alcohol problems have a valuable place in a spectrum of prevention strategies, but they are almost certainly never sufficient. However, public activities such as an "Alcohol Awareness Week" produce personally satisfying experiences for citizens and leaders. Such programs generate enthusiasm and public recognition. The point here is that policies generally are not guaranteed to provide immediate personal satisfaction to their advocates, in the way that a campaign or visible service program can.

Second, local alcohol policies generate controversy. Such controversies occurred in each of the three experimental communities. Unless the local citizens who are supporting and leading efforts to implement special policies are prepared for opposition, the enthusiasm of local groups can be reduced. As opposition grows in response to a local alcohol policy, for example, to restrictions on new alcohol outlets, local volunteers can feel torn between wanting to be "good neighbors" and wanting to reduce alcohol problems in the community. This conflict can arise in cases of local restrictions on alcohol retail outlets, stores, or bars and restaurants, and opposition by retailers.

Third, in each of the experimental sites, policies were as easily understood and appreciated by community representatives as were service programs. A program that provides services or educational materials is more easily grasped than are proposed changes in local zoning requirements that establish minimum distances between alcohol outlets. Community leaders may require more convincing before they appreciate the importance of local policies.

Fourth, policies often took time to work. Increased enforcement of laws prohibiting alcohol sales to minors coupled with manager/clerk training are unlikely to immediately reduce youthful drinking. As a result, local advocates will not necessarily personally experience a quick success. The potential long-term effectiveness of a policy can be a difficult concept for people to accept.

Local policies, like national and state or provincial policies, reflect citizens' priorities and desires. We found experimental communities did not historically recognize the value of local policy or the real potential to establish their own policies to reduce alcohol problems. Of course, policies were already indirectly expressed in funding of activities, priorities for use of local resources, and the structures that the community created to address local needs and reduce problems. If such local decisions can be seen as policies (subject to review and discussion) and, thus, influenced by local organizing and community action, then local citizens and advocacy groups have a set of tools for preventing alcohol problems which extends well beyond their historical dependence upon separately funded programs of service and/or education.

One important example of local alcohol policy is enforcement of laws concerning drinking and driving. Many competing demands are made on local police for enforcement priorities. The priority police give to DUI deterrence can be expressed to the community by the level of attention and resources the police commit to drinking and driving deterrence. This type of administrative (not regulatory) decision is an example of a local policy that can be very effective.

Another example of local policy is reflected in the alcohol serving practices of bars and restaurants and the sales of alcohol to underage persons by off-premise establishments. Alcohol serving practices reflect policy whether the policy is written or not for an establishment. By applying a broader definition of alcohol policy that goes well beyond the direct regulation of retail sales of alcohol by government, the prevention repertoire of the community is greatly increased.

EVALUATION RESULTS

The following summarizes the effectiveness of the Community Trials Project in terms of the components implemented.

Community mobilization, and its evaluation, was based upon a conceptual model and implemented by local staff working through existing community coalitions and task forces. The goal was to bring about community awareness of alcohol-related injury and generate support for project interventions among key community leaders. In the early stages project scientists designed the five components from an established scientific base. In each of the experimental communities, both local staff and community coalitions were trained in this project design. Additionally, training was provided in media advocacy. Technical assistance was given throughout the project. By late 1992, coalitions had adopted the project design. Local staff then worked with existing community organizations and agencies (e.g., local police, alcohol beverage servers, and local government) in pursuit of the desired policy changes. As a result of these efforts, policy initiatives were implemented for each of the components in each of the experimental communities.

Along with confirming the basic conceptual model, our evaluation of community mobilization in the Community Trials Project provided much new information. First, the importance of an established research base was clear. Not only did this base provide guidelines for program intervention, but it also provided legitimacy and a focus for community efforts. Second, the problematic nature of existing community coalitions was revealed. To the extent that such pre-existing groups came to the table with their own agendas (e.g., a treatment focus) they sometimes opposed implementation of prevention efforts. Third, we discovered early on that considerable support existed in the community for program interventions. Fourth, perhaps because of this broad support, key leader participation was present from the early stages of the project. In fact, each community coalition contained representatives from major organizations and local government. Fifth, existing community conditions at times provided unforeseen opportunities. Events such as community festivals and controversies over the licensing status of specific problematic outlets provided opportunities to galvanize public opinion, resulting in community action. Finally, local media not only influenced public opinion and community leaders but also served as a lightning rod for enthusiasm and provided local staff and project participants with a sense of efficacy and the potential for change.

As a result of community training in techniques for working with local news media, there was a statistically significant increase in coverage of alcohol issues in local newspapers and on local TV in the experimental communities over their matched comparison communities. A seemingly unrelated regressions modeling (SURE) was used to analyze time series data from

1992 through mid-1996. This analysis found that there was a statistically significant effect on local newspaper coverage of alcohol issues in the experimental communities ($t = 2.369$) but not in the comparison communities ($t = -0.312$) and this could be attributed to the media advocacy activities of the project. Increased media coverage was important to gain leaders' support of specific alcohol policies and to increase public awareness of drinking and driving enforcement.

There was increased adoption of responsible alcohol serving policies in the experimental communities over the comparison communities. As shown in Table 2, the pre and post test results of reports by bar and restaurant managers found that the experimental communities showed greater evidence of policy adoption than the comparison communities. There were limited but promising results in reducing alcohol service to heavy-drinking patrons. Such reductions in service may require longer follow-up than was possible at this time. The effect of the alcohol access component will require much longer follow-up to determine if there has been a reduction in the density of alcohol outlets that could lead to a reduction in heavy, high-risk drinking (see Saltz & Stanghetta, 1997).

TABLE 2. Adopting Formal Policies to Refuse Service to Intoxicated Patrons
Experimental vs. Control Communities—mean intervention score*

	Northern California		Southern California		South Carolina	
	Experimental	Comparison	Experimental	Comparison	Experimental	Comparison
Pre (1993)	.16	-.14	-.17	.15	.17	-.21
Post (1995)	.20	-.21	-.11	.11	.12	-.11
Post (1996)	.21	-.18	-.15	.16	.08	-.07

* Mean intervention score was standardized within community pairs each year.

There was a significant reduction in alcohol sales to minors. Table 3 shows the overall effects of Community Trials on the percentage of off premise outlets selling alcohol to apparent underage buyers. Overall, off-premise outlets in experimental communities were half as likely to sell alcohol to minors as in the comparison sites (logistic regression modeling, $\chi^2(1) = 48.89$, $p < 0.001$). This was the joint result of special training of clerks and managers to conduct age identification checks, the development of effective off-premise outlet policies, and, especially, the threat of enforcement of lawsuits against sales to minors (see Grube, 1997).

TABLE 3. Percentage of Off-Premise Alcohol Outlets Selling Alcohol to Apparent Underage Buyers
Experimental vs. Comparison Communities

	All Communities		
	Comparison	Experimental (Enforcement with no training)	Experimental (Training only)
Pre (1995)	47%	53%	45%
Post (1996)	35%	19%	16%

It is too early to determine the effects on high-risk drinking and outlet density resulting from the Alcohol Access Component. At this stage, only the level of implementation of local policies can be described. The city councils in all three communities discussed local alcohol access policies and two of the three adopted policies that affected retail availability. The community coalition from the third community is still developing a written plan for alcohol

outlets to be presented to the city council. These policies included requirements for training of alcohol servers, reductions of alcohol on- and off-premise outlets, and review and approval processes for license applications. At least one community actually denied a new license application that would have increased the density in a minority neighborhood. In all three communities, there was increased local police enforcement of alcohol sales and alcohol service, especially targeting sales to underage persons and to intoxicated patrons.

Early findings show that the project reduced alcohol-involved traffic crashes. A statistically significant reduction in such crashes was found overall, comparing experimental communities with their matched comparison communities. The introduction of special and highly visible drink and drive enforcement--with new equipment and special training--produced the significant reduction. Key support came from increased news coverage (see Table 4). An estimate of prevented crashes can be derived by assuming that each experimental site is its own best control, by comparing expected future rates of SVN crashes against expectations from a no-intervention model, and by assuming that the results from the matched comparison sites represent the future expectations of experimental units. The first assumption generates an expected number of crashes for each experimental site based on projections from the past only. The second assumption generates an expected number of crashes for each experimental site based on projections from matched comparison sites. The overall reduction in alcohol-involved traffic crashes was 78 crashes over a 28-month intervention period from September 1993 through December 1995 (see Voas, Holder, and Gruenewald, 1997). This represents an approximate annual reduction in alcohol-involved crashes of 10%.

TABLE 4. Single Vehicle Nighttime Crashes: Experimental vs. Comparison Communities Using SURE Models. 1992-1995, Monthly

	Experimental		Comparison		
	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	
DUI Checkpoints	0.187	0.851	-1.648	0.099	$\Delta G^2 = 0.0178$
Breathalyzers in Field by Police	-1.312	0.189	2.062	0.038	$p = 0.018$ $\Delta df = 3$
Drinking & Driving News	-1.985	0.057	0.214	0.830	

n = 6 units, *t* = 15 quarters

Overall, the Community Trials Project has demonstrated that an environmentally directed approach to prevention, using policies as the form of intervention, can reduce alcohol problems at the local level.

ESTIMATE OF COST EFFECTIVENESS

Cost effectiveness evaluations of prevention efforts have a relatively short history. There have been recent proposals to do them and statements about the need for cost effectiveness analyses in prevention for the same reason that there has been a tradition of examining the cost/effects of alcoholism treatment. See Godfrey (1994), Godfrey & Maynard (1995), and Levy & Miller (1995).

As an example of the potential cost effectiveness of such a policy-based community trial, the following illustration is provided. Approximately \$90,000 U.S. each year was the cost of local prevention staff in each of the three experimental communities. A replication project would need three to four years in one local community at a cost of between \$270,000 to \$360,000 U.S. in total. In the Community Trials Project, the local community staff cost over four years was a total of \$1,080,000 U.S. (\$360,000 U.S. times three experimental communities). This included the staff cost for local implementation of all components. At this time, the distal effects of only the drinking and driving component are known, because of its early implementation. Across all communities over the first four years of the project, the net reduction in alcohol-involved traffic crashes was 78 crashes (Voas *et al.*, 1997).

If one uses an average cost of \$39,905 U.S. per crash (an estimate based upon medical, legal, and insurance costs as well as lost wages during rehabilitation but not lost productive years due to early death), then the savings from just these 78 fewer alcohol-involved traffic crashes in the three experimental communities relative to their matched comparison communities was \$3,112,590 U.S. (\$39,905 U.S. per crash times 78 crashes).

It should be carefully noted that this is a simplistic cost effectiveness analysis. The costs shown do not include opportunity costs such as taking law enforcement officers away from other duties to do DUI enforcement. There is no estimate of the contributed value of the time of many community volunteers. This illustration does not include the cost of data collection used for evaluation but also partially used as management information to aid community staff.

If we subtract the cost of the intervention across all three communities (noting that this implementation cost includes the costs of the other prevention components whose effects are not yet accounted for), then we get a net total savings of \$2,032,590 U.S. Thus, every U.S. dollar invested in this Community Trials Project returns \$2.88 U.S. in savings, just from reduced traffic crashes alone. Again, this is a very simple example of cost effectiveness analysis. A more complete analysis would require more complex adjustments and calculations. The full cost effectiveness of the Community Trials Project will not be known until much later when all archival data on alcohol-involved injuries and deaths are available for analysis. The total community program cost remains constant as described in this simple calculation. Any further reductions in injuries or deaths will improve the cost effectiveness ratio.

FINAL THOUGHTS ABOUT LOCAL ALCOHOL POLICIES AS MEANS TO REDUCE HARM

Science can help inform local policy. In general, many alcohol policy approaches (which usually are environmental strategies) have demonstrated evidence of potential effectiveness. Evidence has been collected for policies related to retail price, availability of alcohol, location and type of alcohol outlets including hours and days of sale, retail and social access to alcohol by young people, and enforcement and sanctions against high-risk alcohol use, e.g., drinking and driving. See Edwards *et al.* (1994) for a review. Many such policies have local analogs. Thus, policy at the local level can have a base of science on which to rest. This is not to imply that all policies are locally tested, only the potential may have been demonstrated. In all three

experimental communities, coalition members quickly wanted to move beyond problem definition to discussion of what science could say about what works. Members embraced the contribution of project scientists and were quick to understand the utility of project data collection for mid-course correction of intervention efforts.

Most community prevention efforts involve the delivery of prevention "services" to individuals such as students or high-risk youth. These activity-based prevention efforts require an organizational structure, philosophy, and resources very different from the organizational base of policy-based interventions. Policy-based interventions require a coalition to be more thoughtful, strategic, and purposeful and require a different perspective than do activity-based program interventions. In our experience, attempts to combine these efforts can sabotage policy-based initiatives.

In the Northern California site, the project coalition contained several alcohol and drug service providers, including those providing prevention services. The chair of the coalition stated that members were able to unite behind policy initiatives because "members leave their programs at the door" when they attend coalition meetings. In the South Carolina site, policy-based interventions could not be initiated until the host agency restructured to create two prevention divisions, one exclusively service-oriented and one exclusively policy-oriented.

Media is essential to local policy development. Media advocacy is the strategic use of media to advance policy goals (Wallack, 1990). See paper by Holder and Treno (1997). Without skillful media work it is very difficult (perhaps impossible) to create policy-driven structural changes within a community. When our project began, community leaders absolutely did not believe that they could get even a letter to the editor printed. Today, project personnel know that they can absolutely ensure that their issues and positions receive widespread media coverage. The difference was the training we provided staff and community members in media advocacy, along with initial technical support. In the Northern California site, after project staff were out of the community for a week of training, representatives of both print and electronic media walked into project offices to ask where they had been--they were looking for stories.

Local policies can have lower costs. There are few cases in which the actual cost of prevention programs or policies has been documented. However, on the average, alcohol policies as they involve changes in rules and regulations or increased emphasis on enforcing existing laws can be lower in cost than specially funded local prevention programs (such as treatment or education), which require long-term investment in staff, materials, and other resources. For example, the cost of teacher and school administrator time, curriculum materials, and other costs for a school-based educational program likely exceed the cost of a local retail policy by off-premise establishments to reduce retail sales of alcohol to underage persons and reinforcement of this policy by increased law enforcement. Raising the retail price of alcohol at a local level through local special-purpose taxes can both generate increased revenue and act as a low-cost prevention strategy. Of course, a local policy that raises the priority of regular high-intensity activities targeting drinking and driving represents a true "cost" to the community, as such a policy competes with other priorities of law enforcement.

Policies can be self-sustaining because they can have a longer life, once implemented, than prevention programs, which must be maintained and, thus, funded each year. A policy of required training for alcoholic beverage servers in bars and restaurants through an existing adult education system has a potentially longer period of effectiveness than does a professionally planned public education campaign which must be funded and implemented each year. Even when the potential effectiveness of a policy decays over time due to lower compliance or lowered regulation or enforcement, policies can continue to have sustaining effect, even without reinforcement.

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