A Review of Alcohol and Other Drug Control Policy Research

ANDREW J. TRENO, PH.D.,[a,*] MIESHA MARZELL, PH.D.,[a] PAUL J. GRUENEWALD, PH.D.,[a] AND HAROLD HOLDER, PH.D.[a]

[a]*Prevention Research Center, Oakland, California*

ABSTRACT. Objective: This article provides a historical review of alcohol and other drug policy research and its impact on public health over the past 75 years. We begin our summary with the state of the field circa 1940 and trace the development across the subsequent decades. We summarize current thinking and suggest possible future directions the field of alcohol and other drug policy may take. Specific topics discussed include the minimum legal drinking age, pricing and taxation, hours and days of sale, outlet density, and privatization effects. The future of drug policy research is also considered. **Method:** A comprehensive search of the literature identified empirical studies, reviews, and commentaries of alcohol and other drug policy research published from 1940 to 2013 that contributed to the current state of the field. **Results:** Our review demonstrates the historical emergence of alcohol problems as a public health issue over the early part of the 20th century, the public health policy response to this issue, subsequent research, and current and future research trends. **Conclusions:** Alcohol and other drug policy research over the last several decades has made great strides in its empirical and theoretical sophistication of evaluating alcohol policy effects. This history is not only remarkable for its analytic complexity, but also for its conceptual sophistication. (*J. Stud. Alcohol Drugs, Supplement 17,* 98–107, 2014)

ALCOHOL AND OTHER DRUG POLICY RESEARCH has emerged as a public health interest over the past 75 years, encouraged and supported by many research studies that appeared in the *Journal of Studies on Alcohol and Drugs* (JSAD) and related journals. A critical summary of what is currently known, an examination of the implications of current alcohol and other drug policies, and promising directions for future research are presented. Without this research, alcohol-control policy implementation, evaluation, and basic science in this area would remain undeveloped.

Method

To accomplish our goal, we first conducted a comprehensive search of the *Journal of Studies on Alcohol and Drugs* (and its previous iterations, the *Quarterly Journal of Studies on Alcohol* and the *Journal of Studies on Alcohol*), identifying empirical studies, reviews, and commentaries of alcohol and other drug policy research published from 1940 to 2013. We also included notable articles from other sources that further supported the importance of alcohol and other drug policy research for the improvement of public health. Although this review centers on alcohol and other drug policy research within the United States, we have also examined research from other countries as well. The scope of this review focused primarily on articles that highlighted alcohol-control policies such as the minimum legal drinking age, pricing and taxation, hours and days of sale, outlet density, and privatization effects; and policies aimed at reducing heavy alcohol consumption and related problems.

Results

Defining alcohol and other drug policies

Alcohol and other drug control policies consist of laws and regulations that affect the production, sales, and distribution of alcoholic beverages and other drugs. They may be understood as a subset of alcohol policies more broadly defined as "any purposeful effort or authoritative decision on the part of governments or non-government groups to minimize or prevent alcohol-related consequences" (Babor et al., 2003, p. 103). Further, these control policy laws may proscribe production and distribution other than for pharmaceutical use (e.g., opioids); regulate production, distribution, and sales state by state (e.g., alcohol-control laws); or leave production, distribution, and sales in some respects largely unregulated (e.g., as was the case with retail tobacco sales through the middle decades of the 20th century). Thus, alcohol-control policies refer to those aspects of the use environment that can be affected by regulating authorities; in this sense, alcohol-control policies are often seen as an extension of environmentally focused preventive interventions. With this in mind, the goal of the present review is threefold. We will (a) discuss the importance of alcohol policy to the public good, (b) highlight the significant contributions in the

Received: June 10, 2013. Revision: August 5, 2013.

Research for and preparation of this manuscript was supported by National Institute on Alcohol Abuse and Alcoholism Research Center Grant No. P60-AA06282.

*Correspondence may be sent to Andrew J. Treno, Ph.D., Senior Research Scientist, Prevention Research Center, Pacific Institute for Research and Evaluation, 180 Grand Ave., Suite 1200, Oakland, CA 94612, or via email at: andrew@prev.org.

field of alcohol and other drug policy research, and (c) conclude with our view of the direction future alcohol and other drug policy research is likely to take in the coming decades.

Historical background

The *Quarterly Journal of Studies on Alcohol* was created in 1940, 7 years after the end of National Prohibition, to address concerns about the sources of alcohol-related problems in the United States. It became the *Journal of Studies on Alcohol* (JSA) in 1975 and added "and Drugs" to the title in 2007; it is the oldest substance-related research journal published in the United States. Its heritage was shaped initially by interests in the etiology and treatment of alcoholism and related pathologies. For many years, it was one of the few scientific journals publishing articles exclusively dealing with issues of substance use. In the early years, articles tended to emphasize a concern with personality characteristics related to alcoholic dependence (e.g., Lewis, 1940), biological pathologies (e.g., Beazell and Ivy, 1940; Bruger, 1940; Connor, 1940), and the overall effects of alcohol on the individual (e.g., Jellinek and Jolliffe, 1940).

Interest in the broader area of alcohol policy research certainly predates the founding of the journal (Catlin, 1931; Warburton, 1932). However, by the 1940s, alcohol policy had emerged as an area of empirical study in the United States, and JSA was one of the first U.S. journals to discuss public policy's role in the reduction of alcohol and eventually other drug problems (Dent, 1942). Policy research continued to gain momentum in the 1960s and 1970s, with many novel policy research perspectives being noted. Articles originally published in JSA on topics such as alcohol distribution (de Lint and Schmidt, 1968) and the effects of alcohol sales policies (e.g., liquor by the drink; Bryant, 1954) were featured in the seminal alcohol policy book, *Alcohol Control Policies in Public Health Perspective,* edited by Bruun et al (1975). The "Purple Book," as it became known, was the first modern empirically based writing on alcohol policy research providing the broad outlines of alcohol policy research today.

Alcohol-control policy studies emerged as a critical research field in the 1950s, 1960s, 1970s, and 1980s as researchers became aware of the implications of these control policies for public health. These earlier studies included examinations of the impacts of controls affecting alcohol availability (Colón, 1981; Colón et al., 1982; Harford et al., 1979; Rabow and Watts, 1982; Rush et al., 1986; Watts and Rabow, 1983), price (Kuusi, 1957; Ornstein and Hanssens, 1985; Rabow et al., 1982; Seeley, 1960; Simon, 1966a), drinking age laws (Saffer and Grossman, 1987), on-premise drinking (Smart and Docherty, 1976), taxes (Cook, 1981; Cook and Tauchen, 1982; Levy and Sheflin, 1985), privatization (Holder and Wagenaar, 1990; Room, 1987; Simon, 1966b; Wagenaar and Holder, 1991), Sunday sales (Smith, 1987), sales of liquor by the drink (Blose and Holder, 1987a, 1987b), planning and zoning (Wittman and Hilton, 1987), and sales in supermarkets (Williams, 1975). A number of these articles advanced the field in the areas of regulations on availability on consumptions and problems (Blose and Holder, 1987b; Colón et al., 1982; Harford et al., 1979; Rabow and Watts, 1982; Rush et al., 1986; Smart and Docherty, 1976; Williams, 1975). We will discuss some of these contributions further below, but here it is important to note one great step forward for research in the field. The 1980s saw a blossoming of alcohol policy research with dramatic developments in the statistical models and methods that are now used to study policy effects.

The advances seen in the 1980s were largely in response to growing concerns about public health impacts of changes in the minimum legal drinking and purchase age (Wagenaar, 1982) and the continued "privatization" of alcohol-control systems by states. Privatization is the legal transfer of various aspects of the distribution and sales of alcohol from governmental agencies into private hands. As a result of the liberalization of control systems and the transfer of distribution of alcohol sales into private hands, a series of "natural experiments" took place in which relationships between naturally occurring policy changes and public health outcomes could be evaluated. For example, Wagenaar and Holder's (1991) study of the privatization of wine sales in Iowa using time series techniques sparked considerable controversy in JSA with those whose analyses produced different results (Mulford, 1992). Using similar techniques, a series of studies (Holder and Wagenaar, 1990; Wagenaar and Holder, 1991, 1995) subsequently found privatization steps associated with similar effects in five different states. In a related line of research, when the state of North Carolina liberalized its alcohol-control policies by allowing sales of distilled spirits on-premise "by the drink," Blose and Holder (1987a, 1987b) evaluated the impact of this change on alcohol-related crashes using (at the time rather novel) time-series analysis models. At about the same time, Cook and Tauchen (1982) and Levy and Sheflin (1985) introduced the first applications of time-series cross-section panel models to the assessment of the effects of alcohol taxes on alcohol use and related problems. Nevertheless, throughout the 1980s the theoretical foundations of policy effects remained relatively undeveloped. Explanations for policy effects were ascribed to the "full costs" for alcohol; costs that include both the direct economic costs (i.e., prices) and noneconomic costs of use (e.g., convenience costs related to ease of purchase), or the Ledermann model, a hypothesis which posited that the mean of consumption in a population was somehow proportional to measures of heavy drinking (Duffy, 1978; Ledermann, 1956; Single and Wortley, 1993). Skog (1985) provided a theoretical underpinning to the Ledermann hypothesis based on the concept of "drinking cultures," which linked consumption means to heavy drinking at the population level.

During the 1990s and into the 2000s, a number of further theoretical developments took place. First, it was difficult to determine causality: whether outlets were increasing consumption and resulting in problems or whether outlet densities themselves were a response to consumption (Gruenewald et al., 1993). This suggested that the availability issue needed to be considered dynamically as changes occurred within systems over time. Subsequently, research began to examine these complex relationships with advances in the development of community systems models (Holder, 1998; Holder and Edwards, 1995) and availability theory (Babor et al., 2003; Stockwell and Gruenewald, 2001) with the use of time series data analyses. We will return to theoretical advances below after we summarize what is currently known about the effects of specific alcohol-control policies on alcohol consumption and related problems.

Sales of alcohol

Minimum legal drinking age. The minimum legal drinking age (MLDA) aims to reduce youth drinking. Since the end of prohibition in 1933, individual states regulated the MLDA. During the 1970s, the general trend was toward reducing the MLDA. One of the first studies published in this area (Barsby and Marshall, 1977) revealed no statistically significant short-term increases of distilled spirits consumption following reductions in the MLDA. Almost a decade later, Smith and colleagues (1984) examined the raising of the legal drinking age in Massachusetts from 18 to 20 and its effect on 16- and 17-year-olds and found some reduction in teenage driving after drinking and traffic crash involvement following the increase in MLDA, but teenage drinking and driving remained a serious problem nevertheless.

Prompted by requirements for receipt of federal highway funds, all 50 states and the District of Columbia adopted a minimum legal drinking age of 21 in 1984 (U.S. Congress, 1984). leading to an intensification of policy research to evaluate the outcomes of this change. Prior studies indicated that alcohol use and related problems generally tracked in the predicted direction, but expected changes related to the MLDA did not happen in all 50 states (O'Malley and Wagenaar, 1991; Wagenaar and Wolfson, 1994). Subsequently, and with great improvements in statistical methods, studies for the years 1982 through 1997 concluded that, controlling for a number of potential confounding covariates, including driving exposures and other legal interventions, these laws were responsible for a 19% net decrease in fatalities. Further analyses of all studies, including those conducted outside of the United States evaluating the impact of the MLDA, found similar results (Wagenaar and Toomey, 2002). In fact, it has been estimated that consistent enforcement combined with media advocacy and other policy initiatives could reduce sales to minors by as much as 35%–45% (Holder, 2008).

Alcohol pricing and taxes

The relationship between alcohol price and consumption, or more frequently between beverage taxes and consumption, has been examined in research dating back to the 1950s (Bryant, 1954; Cook and Tauchen, 1982; Grossman, 1988; Ornstein, 1980; Skog, 1986). Moreover, the relationship appears particularly strong for young people (Grossman et al., 1994; Presley et al., 2002). Early concerns centered on establishing accurate price elasticities (i.e., the proportionate response of sales to a proportionate increase in price) and determining whether different groups of drinkers would respond to price changes in the same or different ways. Parker and Harman (1978) argued that different types of drinkers would be differentially responsive to price effects, whereas Schmidt and Popham (1978) argued that heavy drinkers might substitute one beverage type (i.e., beer, wine, or distilled spirits) for another in response to price changes. Ornstein (1980) reviewed what was then known about these issues and suggested that distilled spirits sales were elastic relative to price whereas beer sales were not. This review continued the debates about alcoholic beverage prices and consumption. Today, the effects of prices (and taxes) on sales are well established, and patterns of substitution between types of beverages are better understood, but we know very little about specific impacts on population subgroups. However, it does appear as if increases in prices tend to decrease problem drinking more than overall mean consumption rates. One explanation for this finding is that problem drinkers spend more of their discretionary income on alcohol and thus are more heavily affected by price increases than are those who consume less (Meier et al., 2010; Purshouse et al., 2009, 2010). Alternatively, heavier consumers may respond to price increases by shifting consumption from more expensive and riskier locations (e.g., bars) to less expensive and safer locations (e.g., their own homes). Indeed, some of these same arguments may be made with reference to younger drinkers, who presumably have less discretionary income than adults.

Because alcohol is an addictive substance and when consumed can have negative public health effects, increases in price have often been directly associated with decreased alcohol-related problems (Sloan et al., 1994). In April 1992, prices were deliberately increased by a nickel a drink in the Australian Northern Territory. Subsequent analyses indicated a significant decrease in road deaths (34.5%) and other mortality (23.4%) as well as traffic crashes requiring hospitalization (28.3%) (Stockwell and Gruenewald, 2001). In British Columbia, where the alcohol-control system has been partially privatized, government stores have maintained a uniform price floor; increases in price over time have been linked to decreases in alcohol-related mortality (Stockwell et al., 2011). The most comprehensive, recent summary of what is known about price effects (Wagenaar et al., 2010) identi-

fied 50 articles containing 340 estimates for alcohol-related disease and injury outcomes, violence, suicides, crashes, crime, and other misbehavior estimates. Across these studies, the authors concluded that doubling the alcohol tax reduced alcohol-related mortality by an average of 35%, traffic crash deaths by 11%, sexually transmitted diseases by 6%, violence by 2%, and crime by 1.4%.

One other means to modify prices to reduce drinking and related problems has been the establishment of minimum prices for alcohol. Gruenewald and colleagues (2006) examined the impacts of changes in price distributions across beverages sold in Sweden and showed that consumers substituted not only between beverage types but between qualities of beverages of the same type (e.g., from higher to lower priced beers). Using their empirical model as a basis, they showed that increased minimum prices would most efficiently reduce alcohol sales. Recently, the Scottish Parliament set a minimum of £0.50 per 8 g unit of alcohol by April 2013. In addition, although there is a limited research base for assessing the effectiveness of this strategy for reducing use and problems, Stockwell et al. (2012) suggested that some reductions in sales and use followed from an increase in the minimum purchase price recently implemented in Alberta, Canada. Subsequent analyses of British Columbia data produced similar results (Stockwell et al., 2013).

Distribution of alcohol

Hours and days of sale. Restricting hours and days of sale is one approach to reductions in alcohol use and related problems that has been entertained as a policy option by many countries in the world (Bruun et al., 1975). Early studies suggested that the introduction of Sunday sales in Australia could lead to increases in homicides and casualty accidents (Smith, 1978), and banning happy hour sales in a Canadian province could reduce problems related to drinking (Smart and Adlaf, 1986). Two subsequent and more recent studies indicated that longer operating hours of alcohol outlets were related to increased levels of violence (Chikritzhs and Stockwell, 2002), and new Saturday openings in Sweden were related to a 3% increase in alcohol sales (Norström and Skog, 2003). Despite the results of these studies, however, there remains some concern that these effects may in large part be attributable to a redistribution of use across hours and days. Summarizing these findings and commenting on their relevance to college drinking, Toomey and Wagenaar (2002) suggested that reductions in hours and days of sale may be associated with reductions in some problems, and a number of more recent studies (Kypri et al., 2011a, 2011b; Wicki and Gmel, 2011) have noted the importance of time-based alterations in alcohol availability.

Alcohol outlet density. The literature addressing the associations between alcohol outlet densities and alcohol consumption and related problems emerged during the 1950s and has developed rapidly over subsequent decades. In general, across many studies and settings statistical associations between outlet densities, alcohol use, and related problems are robust (e.g., Freisthler et al., 2004; Gruenewald et al., 2002; Harford et al., 1979; Rabow and Watts, 1982; Rush et al., 1986; Scribner et al., 1994). The work of Livingston, who has linked alcohol densities to assaults, domestic violence, and other alcohol-related problems in Australian context, is of import (Livingston, 2008, 2011; Livingston et al., 2007). Overall, the general pattern of findings produced by these studies suggest that (a) whenever alcohol sales can be measured, greater densities are directly related to use; (b) greater densities of bars, taverns, and similar on-premise drinking places are directly related to assaults and violence; (c) greater densities of bars, taverns, and sometimes restaurants are directly related to drunken driving and alcohol-related crashes; and (d) because these effects arise in interactions between drinkers in drinking places, neighborhood effects can be important (Gruenewald, 2011).

Global and local policies

Global policies are often implemented and enforced at the local level. These include the availability of alcohol through outlets (e.g., often controlled through local planning and zoning regulations) and, of course, enforcement of drinking and driving and underage drinking laws. Over the past decades, a number of intervention efforts have been implemented within U.S. communities (Flewelling et al., 2005; Holder et al., 1997, 2000; Wagenaar et al., 2000), neighborhoods (Treno et al., 2007), college campuses (Saltz et al., 2010), and in border towns (Voas et al., 2002) to reduce availability, use, and problems. Moreover, similar community action programs have been examined in Australia (Homel et al., 1997), Sweden (Hansen, 2000; Romelsjö et al., 1995; Wallin and Andréasson, 2005; Wallin et al., 2003), Finland (Holmila, 1995), Italy (Allamani et al., 2003), and New Zealand (Caswell and Gilmore, 1989; Stewart and Conway, 1998). These intervention efforts targeted different populations in different sites, involved different implicit or explicit logic models, targeted different outcomes, used different evaluation tools (e.g., in-school surveys, roadside survey data on alcohol-related crashes), and ultimately produced different findings with different implications for program development and future research. More substantively, each was comprehensive and multicomponent, addressing the specifics of the local alcohol distribution system, based on prior research, and relied on local energies for implementation. Importantly, each demonstrated, across a variety of research and community settings, the potential impact of interventions targeting the sales and distribution. Clearly, this history demonstrates that alcohol-control policies implemented at the local level can work. Why it works, however, remains an important question.

Privatization effects

With the conclusion of National Prohibition, the states were required to set up individual alcohol-control systems; the possible options ranged from continued prohibition, to the monopolization of alcohol sales, to restriction of sales and use, to licensing private (and often quite profitable) sales through outlets. Under government monopoly systems, alcohol sales are either fully or partially monopolized. Such monopolies exist in several countries, including Iceland, India, Norway, Sweden, Finland, Canada, and (in some states) the United States. In the United States, no state currently operates a complete monopoly. Specifically, the production of alcohol is largely privatized even in so-called monopoly states. Taxes are levied at the wholesale level. However, various aspects of the distribution system may be controlled by state governmental agencies or held in private hands. Some states regulate which beverages can be sold privately, the hours or days when alcohol sales are permissible, or even who can purchase alcohol. Perhaps the most familiar illustration of the latter involves prohibition against selling to minors, although restrictions in some areas were in place even against sales to racial or ethnic subgroups (e.g., restrictions against sales to Native Americans).

Despite the myriad systems of alcohol control, the general trend in the United States in the wake of the repeal of National Prohibition has been toward privatization. Early empirical work evaluating the impact of such changes in alcohol control began with state-level analyses. Before such formal evaluation, there was much concern expressed about the potential problems associated with the dropping of controls around the distribution and sale of alcohol. One early *Quarterly Journal of Studies on Alcohol* "Medicolegal Note" titled "State Control of Trade in Alcoholic Beverage" (Anonymous, 1940) described the potential conflict between commercial and social interests, and although the article was a description of the New York system at the time, its early recognition of this issue is notable. By the late 1940s, a number of different distribution systems had emerged. In some cases, localities regulated the number and placement of outlets. In this environment, a number of policy questions emerged. Could alcohol taxes generate needed revenues? Would increases in the number of outlets lead to increased consumption?

By the 1950s, a large number of state-level natural experiments were occurring and subsequently evaluated. In fact, government monopoly systems were present in the early part of the 20th century in Norway, Sweden, and Finland, with substantial powers over the production, sales, and distribution of alcohol (Babor et al., 2003). However, this general system of regulation weakened with the emergence of the European Union and subsequent treaties. In the United States, as previously noted, Wagenaar and Holder (1995) found that the elimination of state monopolies in five states was accompanied by increased consumption. In the subsequent year, Wagenaar and Holder (1996) summarized seven time-series analyses of six U.S. states and New Zealand. They examined the replacement of government stores with private stores and showed that privatization was consistently linked with increased alcohol consumption and alcohol-related problems. More recently, another series of studies conducted in British Columbia provided insight into what happens in the wake of privatization. Specifically, the introduction of large numbers of stores resulting from partial privatization was associated with increases in alcohol consumption (Stockwell et al., 2009), alcohol-related mortality (Stockwell et al., 2011), and lower alcohol prices (Treno et al., 2013). On the other hand, there have been contrary findings (Mulford et al., 1992; Trolldal, 2005a, 2005b). Thus, the data do seem to indicate that monopoly controls are typically associated with more positive public health outcomes. (For an earlier discussion of privatization and related methodological issues, see Her et al., 1999).

A number of factors likely account for the relatively consistent finding that privatization is associated with negative public health outcomes. First, privatization typically leads to increases in the sheer number of outlets. Under monopoly systems, outlets are usually few in number and spread apart. As a consequence, one could argue that the full cost of alcohol, which includes the cost of travel to obtain alcohol, is higher. Perhaps more important is the absence of competitive pressure to lower costs. This is important given the general finding that both young people and heavy drinkers are particularly responsive to price. Moreover, it may be that along with price competition, private systems compete for youths and intoxicated persons. Last, outlets under monopoly systems generally operate fewer hours, carry more standardized products, and engage in less questionable sales practices (e.g., selling refrigerated items, which may be consumed while driving).

Future directions

Pricing and taxes. Recent work has begun to examine differential effects of tax increases on problems related to alcohol use, and there is a growing interest in whether tax effects are the same or different across states. Certainly, with the rise of standardized sources of state-level price and tax data (National Institute on Alcohol Abuse and Alcoholism, 2013; Nelson et al., 2013), opportunities for continued study will grow. Most pressing will be the assessment of differential tax effects, as just noted; continued efforts to identify price and tax elasticities by beverage type related to sales and different problem outcomes; examinations of substitutions between use by type (beer, wine, and distilled spirits); and the impact of minimum prices provisions. Although manipulation of pricing structures through either taxation or price relation appears to be effective in reducing both consumption and

alcohol-related problems, the mechanisms through which these pricing structures operate are not clear. Specifically, although there do appear to be overall effects on outcomes of interest, we do not know whether these effects are restricted to specific subpopulations.

Density restrictions. Traditionally, since the repeal of National Prohibition, alcohol outlet densities have been regulated by states and local areas based on population (e.g., in California, one bar for every 1,200 persons). The inadequacy of this regulatory strategy is obvious when one looks at the availability literature. Problems with outlets are related to geographic densities; places where there are many outlets per square mile, for example, exhibit many problems and local populations in those areas drink more, use alcohol in more risky environments (e.g., bars), and are exposed to greater problems related to this form of urban clutter (e.g., motor vehicle traffic) (Cunradi et al., 2012; Freisthler et al., 2007; Mair et al., 2013; Ponicki et al., 2013). Population-based regulations, however, allow natural urban economic processes to operate, leading to extreme overconcentrations of alcohol outlets in poor neighborhoods and exposing those segments of urban populations to increased risks. Alcohol outlets play varied roles in the etiologies of a number of health problems in U.S. communities and, although these problems are beginning to be better understood, the full impacts of outlets on problems in communities are not known. Thus, the greatest challenge confronting availability theorists is how to establish density restrictions that ameliorate these problems in communities in the United States.

Policy enforcement, regulatory chains, and local versus global effects. An understudied area in alcohol policy research involves the consideration of policy implementation effects. Traditionally, evaluations of program effects have focused on the establishment of policies. Here, evaluations of the MLDA are of note (Wagenaar and Toomey, 2002). Although these evaluations have generally demonstrated the effectiveness of the MLDA, little is known of how or why they work, particularly given the relatively low levels of enforcement and the finding that is consistent throughout the literature that young people still manage to obtain alcohol (Grube, 1997, 2007; Johnston et al., 2013; Paschall et al., 2007a, 2007b; Wagenaar and Wolfson, 1994). Finally, the consequences of how policies targeting one group (e.g., minimum pricing strategies targeted largely at adults) may affect other groups (e.g., youths) merit consideration.

Drug policy research: Illegal and quasi-legal substances. Recent studies of policies related to the use of drugs other than alcohol provide new opportunities for health researchers. One such article (Kepple and Freisthler, 2012) examined the association between medical marijuana dispensaries and violent and property crime but found no such association controlling for other ecological covariates. On the other hand, another article (Freisthler et al., 2012) was able to demonstrate a clear association between drug sales and childhood abuse and neglect. Thus, it would appear as if drug policy studies will continue to be a concern.

Discussion

Perhaps the most obvious changes in alcohol policy research concerns the increasing empirical and theoretical sophistication of evaluations of alcohol policy effects. This history is remarkable not only for its analytic complexity but also for its conceptual sophistication. Although early studies could, somewhat atheoretically, consider whether policy changes could account for overall effects, they could not control for different shifts in exogenous measures of interest or the differential distribution of effects. Extrapolating these trends into the future, one can envision studies that place human activities responding to alcohol and policy initiatives within the context of broader ecological processes. To illustrate, studies could emerge that examine how various alcohol policies (e.g., outlet privatization) differentially affect different kinds of communities (e.g., low- vs. high-income) or different types of individuals (e.g., low- vs. high-income) and their relationship to various outcomes of interest (e.g., assault rates or individual risk of assault). To accomplish this, three lines of inquiry should be considered. The first is community systems theory. According to community systems theory, alcohol and other drug problems are related to the interaction of social and institutional features of the communities. Although this school of theory is explained in detail (Holder, 1998), the basic model posits the existence of structures operating at the community level that drive alcohol use and resulting problems. The second is social ecological theory (Gruenewald, 2007). According to social ecological theory, such problems are the result of specific social and person–environment interactions. Thus, the contribution of ecological theory is that it reincorporates the concept of individual traits into what is otherwise a model considered of interacting subsystems. This development ultimately leads to a consideration of differential public health impacts. Finally, we may look forward to the development of theory that conceptualizes policy studies in terms of the activity spaces in which individuals live out their lives. Density could be considered in terms of the peoples' use of activity spaces. To illustrate, placements of alcohol outlets in corridors linking schools to residential areas substantially increases availability for young people who traverse those corridors. From this standpoint, allowing the sale of alcohol on Sunday does not simply add an additional day for the purchase of alcohol but increases by a substantial amount of time opportunities for alcohol purchase during leisure hours.

Based on the foregoing discussion, it is clear that research relative to the development of public policy can play a crucial role in an otherwise political process. For example, it can provide estimates of the impact of such policy changes on morbidity and mortality or on total external costs borne

by society as a whole. Moreover, it can provide these estimates for various subpopulations. It can tell us how these policy changes can differentially affect them. In sum, alcohol and other drug policy research will continue to evolve as societies/governments (local and global) approach the topic in radically different ways. Expanding beyond alcohol-control issues, it can examine the emergence of drug markets that link sellers to users and examine the impact of various polices on that relationship. However, strong scientific standards in the examination of alcohol and other drug policy will remain with journals such as JSAD, and these publications will play a vital role in this process. Along with disseminating information, they are critical to the development of a scientific community focusing on contemporary social problems. Through the process of linking authors, reviewers, readers, and ultimately policy makers, they provide a focal point for the social process that makes science possible.

References

Allamani, A., Basetti Sani, I., Voller, F., Cipriani, F., Ammannati, P., & Centurioni, A. (2003). Experiences from a community alcohol action research in Scandicci, Florence. *Nordic Studies on Alcohol and Drugs, 20, English Supplement,* 105–109.

Anonymous. (1940). Medicolegal notes: State control of trade in alcoholic beverages. *Quarterly Journal of Studies on Alcohol, 1,* 563–581.

Babor, T., Caetano, R., Casswell, S., Edwards, G., Giesbrecht, N., Hill, L., . . . Rossow, I. (2003). *Alcohol: No ordinary commodity—research and public policy.* Oxford, England: Oxford University Press.

Barsby, S. L., & Marshall, G. L. (1977). Short-term consumption effects of a lower minimum alcohol-purchasing age. *Journal of Studies on Alcohol, 38,* 1665–1679.

Beazell, J. M., & Ivy, A. C. (1940). The influence of alcohol on the digestive tract: A review. *Quarterly Journal of Studies on Alcohol, 1,* 45–73.

Blose, J. O., & Holder, H. D. (1987a). Liquor-by-the-drink and alcohol-related traffic crashes: A natural experiment using time-series analysis. *Journal of Studies on Alcohol, 48,* 52–60.

Blose, J. O., & Holder, H. D. (1987b). Public availability of distilled spirits: Structural and reported consumption changes associated with liquor-by-the-drink. *Journal of Studies on Alcohol, 48,* 371–379.

Bruger, M. (1940). The effects of alcohol on the normal and pathologic kidney: A review. *Quarterly Journal of Studies on Alcohol, 1,* 85–94.

Bruun, K., Edwards, G., Lumio, M., Mäkelä, K., Pan, L., Popham, R. E., . . . Österberg, E. (1975). *Alcohol control policies in public health perspective* (Vol. 25). Helsinki, Finland: Finnish Foundation for Alcohol Studies.

Bryant, C. W. (1954). Effects of sale of liquor by the drink in the State of Washington. *Quarterly Journal of Studies on Alcohol, 15,* 320–324.

Casswell, S., & Gilmore, L. (1989). An evaluated community action project on alcohol. *Journal of Studies on Alcohol, 50,* 339–346.

Catlin, G. E. G. (1931). *Liquor control.* New York, NY: Henry Holt.

Chikritzhs, T., & Stockwell, T. (2002). The impact of later trading hours for Australian public houses (hotels) on levels of violence. *Journal of Studies on Alcohol, 63,* 591–599.

Colón, I. (1981). Alcohol availability and cirrhosis mortality rates by gender and race. *American Journal of Public Health, 71,* 1325–1328.

Colón, I., Cutter, H. S. G., & Jones, W. C. (1982). Prediction of alcoholism from alcohol availability, alcohol consumption and demographic data. *Journal of Studies on Alcohol, 43,* 1199–1213.

Cook, P. J., & Tauchen, G. (1982). The effect of liquor taxes on heavy drinking. *The Bell Journal of Economics, 13,* 379–390.

Cook, P. J. (1981). The effect of liquor taxes on drinking, cirrhosis, and auto accidents. In M. H. Moore and D. R. Gerstein (Eds.), *Alcohol and public policy: Beyond the shadow of prohibition* (pp. 255–285). Washington, DC: National Academy Press.

Connor, C. L. (1940). Cirrhosis of the liver. *Quarterly Journal of Studies on Alcohol, 1,* 95–103.

Cunradi, C. B., Mair, C., Ponicki, W. R., & Remer, L. G. (2012). Alcohol outlet density and intimate partner violence-related emergency department visits. *Alcoholism: Clinical and Experimental Research, 36,* 847–853.

de Lint, J., & Schmidt, W. (1968). The distribution of alcohol consumption in Ontario. *Quarterly Journal of Studies on Alcohol, 29,* 968–973.

Dent, J. Y. (1942). Alcohol legislation and taxation in Britain in wartime. *Quarterly Journal of Studies on Alcohol, 3,* 221–229.

Duffy, J. C. (1978). Comment on "The single distribution theory of alcohol consumption." *Journal of Studies on Alcohol, 39,* 1648–1650.

Flewelling, R. L., Austin, D., Hale, K., LaPlante, M., Liebig, M., Piasecki, L., & Uerz, L. (2005). Implementing research-based substance abuse prevention in communities: Effects of a coalition-based prevention initiative in Vermont. *Journal of Community Psychology, 33,* 333–353.

Freisthler, B., Midanik, L. T., & Gruenewald, P. J. (2004). Alcohol outlets and child physical abuse and neglect: applying routine activities theory to the study of child maltreatment. *Journal of Studies on Alcohol, 65,* 586–592.

Freisthler, B., Gruenewald, P. J., Remer, L. G., Lery, B., Needell, B. (2007). Exploring the spatial dynamics of alcohol outlets and Child Protective Services referrals, substantiations, and foster care entries. *Child Maltreatment, 12,* 114–124.

Freisthler, B., Williams, N., & Holmes, M. R. (2012). The geography of drug market activities and child maltreatment. *Child Maltreatment, 17,* 144–152.

Grossman, M., Chaloupka, F. J., Saffer, H., & Laixuthai, A. (1994). Effects of alcohol price policy on youth: A summary of economic research. *Journal of Research on Adolescence, 4,* 347–364.

Grossman, M. (1988). *Health economics of prevention of alcohol-related problems.* Paper presented at the workshop on Health Economics of Prevention and Treatment of Alcohol-Related Problems, National Institute on Alcohol Abuse and Alcoholism, Washington, D.C.

Grube, J. W. (1997). Preventing sales of alcohol to minors: Results from a community trial. *Addiction, 92, Supplement 2,* S251–S260.

Grube, J. W. (2007). Alcohol regulation and traffic safety: An overview. *Transportation Research Circular, E-C123,* 13–30. Retrieved from http://onlinepubs.trb.org/onlinepubs/circulars/ec123.pdf

Gruenewald, P. J. (2007). The spatial ecology of alcohol problems: Niche theory and assortative drinking. *Addiction, 102,* 870–878.

Gruenewald, P. J. (2011). Regulating availability: How access to alcohol affects drinking and problems in youth and adults. *Alcohol Research & Health, 34,* 248–256.

Gruenewald, P. J., Johnson, F. W., & Treno, A. J. (2002). Outlets, drinking and driving: A multilevel analysis of availability. *Journal of Studies on Alcohol, 63,* 460–468.

Gruenewald, P. J., Ponicki, W. R., & Holder, H. D. (1993). The relationship of outlet densities to alcohol consumption: A time series cross-sectional analysis. *Alcoholism: Clinical and Experimental Research, 17,* 38–47.

Gruenewald, P. J., Ponicki, W. R., Holder, H. D., & Romelsjö, A. (2006). Alcohol prices, beverage quality, and the demand for alcohol: Quality substitutions and price elasticities. *Alcoholism: Clinical and Experimental Research, 30,* 96–105.

Hanson, B. S., Larsson, S., & Råstam, L. (2000). Time trends in alcohol habits. Results from the Kirseberg project in Malmö, Sweden. *Substance Use & Misuse, 35,* 171–187.

Harford, T. C., Parker, D. A., Pautler, C., & Wolz, M. (1979). Relationship between the number of on-premise outlets and alcoholism. *Journal of Studies on Alcohol, 40,* 1053–1057.

Her, M., Giesbrecht, N., Room, R., & Rehm, J. (1999). Privatizing alcohol sales and alcohol consumption: Evidence and implications. *Addiction, 94,* 1125–1139.

Holder, H. D. (1998). *Alcohol and the community: A systems approach to prevention.* Cambridge, England: Cambridge University Press.

Holder, H. D. (2008). Effective alcohol policy. In K. Heggenhougen and S. Quah (Eds.), *International encyclopedia of public health, Vol. 2* (pp. 303–309). San Diego, CA: Academic Press.

Holder, H. D., & Edwards, G. (Eds.). (1995). *Alcohol and public policy: Evidence and issues.* Oxford, England: Oxford University Press.

Holder, H. D., Gruenewald, P. J., Ponicki, W. R., Treno, A. J., Grube, J. W., Saltz, R. F., . . . Roeper, P. (2000). Effect of community-based interventions on high-risk drinking and alcohol-related injuries. *Journal of the American Medical Association, 284,* 2341–2347.

Holder, H. D., Saltz, R. F., Grube, J. W., Treno, A. J., Reynolds, R. I., Voas, R. B., & Gruenewald, P. J. (1997). Summing up: Lessons from a comprehensive community prevention trial. *Addiction, 92, Supplement 1,* 293–302.

Holder, H. D., & Wagenaar, A. C. (1990). Effects of the elimination of a state monopoly on distilled spirits' retail sales: A time-series analysis of Iowa. *British Journal of Addiction, 85,* 1615–1625.

Holmila, M. (1995). Intoxication and hazardous use of alcohol: Results from the 1992 Finnish Drinking Habits Study. *Addiction, 90,* 785–792.

Homel, R., Hauritz, M., Worthley, R., McIlwain, G., & Carvolth, R. (1997). Preventing alcohol-related crime through community action: The Surfers Paradise Safety Action Project. In *Policing for prevention: Reducing crime, public intoxication, and injury.* Nathan, Australia: Griffith University.

Jellinek, E. M., & Jolliffe, N. (1940). Effects of alcohol on the individual: Review of the literature of 1939. *Quarterly Journal of Studies on Alcohol, 1,* 110–181.

Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2013). *Monitoring the Future national survey results on drug use, 1975–2012: Volume I, Secondary school students.* Ann Arbor, MI: Institute for Social Research, The University of Michigan.

Kepple, N. J., & Freisthler, B. (2012). Exploring the ecological association between crime and medical marijuana dispensaries. *Journal of Studies on Alcohol and Drugs, 73,* 523–530.

Kuusi, P. (1957). *Alcohol sales experiment in rural Finland* (Vol. 3). (Westphalen, A., transl.). Helsinki, Finland: Finnish Foundation for Alcohol Studies.

Kypri, K., Jones, C., McElduff, P., & Barker, D. (2011a). Effects of restricting pub closing times on night-time assaults in an Australian city. *Addiction, 106,* 303–310.

Kypri, K., MacLennan, B., Langley, J. D., & Connor, J. L. (2011b). The *Alcohol Reform Bill:* More tinkering than reform in response to the New Zealand public's demand for better liquor laws. *Drug and Alcohol Review, 30,* 428–433.

Ledermann, S. (1956). *Alcool, Alcoolisme, Alcoolisation* (Vol. 1). Paris, France: Presses Universitaires de France.

Levy, D., & Sheflin, N. (1985). The demand for alcoholic beverages: An aggregate time-series analysis. *Journal of Public Policy & Marketing, 4,* 47–54.

Lewis, N. D. C. (1940). Personality factors in alcoholic addiction. *Quarterly Journal of Studies on Alcohol, 1,* 21–44.

Livingston, M. (2008). A longitudinal analysis of alcohol outlet density and assault. *Alcoholism: Clinical and Experimental Research, 32,* 1074–1079.

Livingston, M. (2011). A longitudinal analysis of alcohol outlet density and domestic violence. *Addiction, 106,* 919–925.

Livingston, M., Chikritzhs, T., & Room, R. (2007). Changing the density of alcohol outlets to reduce alcohol-related problems. *Drug and Alcohol Review, 26,* 557–566.

Mair, C., Gruenewald, P. J., Ponicki, W. R., & Remer, L. (2013). Varying impacts of alcohol outlet densities on violent assaults: Explaining differences across neighborhoods. *Journal of Studies on Alcohol and Drugs, 74,* 50–58.

Meier, P. S., Purshouse, R., & Brennan, A. (2010). Policy options for alcohol price regulation: The importance of modelling population heterogeneity. *Addiction, 105,* 383–393.

Mulford, H. A., Ledolter, J., & Fitzgerald, J. L. (1992). Alcohol availability and consumption: Iowa sales data revisited. *Journal of Studies on Alcohol, 53,* 487–494.

National Institute on Alcohol Abuse and Alcoholism. (2013). *Alcohol policy information system.* Retrieved from http://alcoholpolicy.niaaa.nih.gov

National Minimum Drinking Age Act of 1984, 23 U.S.C. 158 (1984).

Nelson, T. F., Xuan, Z., Babor, T. F., Brewer, R. D., Chaloupka, F. J., Gruenewald, P. J., . . . Naimi, T. S. (2013). Efficacy and the strength of evidence of U.S. Alcohol control policies. *American Journal of Preventive Medicine, 45,* 19–28.

Norström, T., & Skog, O.-J. (2003). Saturday opening of alcohol retail shops in Sweden: An impact analysis. *Journal of Studies on Alcohol, 64,* 393–401.

O'Malley, P. M., & Wagenaar, A. C. (1991). Effects of minimum drinking age laws on alcohol use, related behaviors and traffic crash involvement among American youth: 1976–1987. *Journal of Studies on Alcohol, 52,* 478–491.

Ornstein, S. I. (1980). Control of alcohol consumption through price increases. *Journal of Studies on Alcohol, 41,* 807–818.

Ornstein, S. I., & Hanssens, D. M. (1985). Alcohol control laws and the consumption of distilled spirits and beer. *Journal of Consumer Research, 12,* 200–213.

Parker, D. A., & Harman, M. S. (1978). The distribution of consumption model of prevention of alcohol problems; a critical assessment. *Journal of Studies on Alcohol, 39,* 377–399.

Paschall, M. J., Grube, J. W., Black, C., Flewelling, R. L., Ringwalt, C. L., & Biglan, A. (2007a). Alcohol outlet characteristics and alcohol sales to youth: Results of alcohol purchase surveys in 45 Oregon communities. *Prevention Science, 8,* 153–159.

Paschall, M. J., Grube, J. W., Black, C. A., & Ringwalt, C. L. (2007b). Is commercial alcohol availability related to adolescent alcohol sources and alcohol use? Findings from a multi-level study. *Journal of Adolescent Health, 41,* 168–174.

Ponicki, W. R., Gruenewald, P. J., & Remer, J. G. (2013). Spatial panel analyses of alcohol outlets and motor vehicle crashes in California: 1999–2008. *Accident Analysis and Prevention, 55,* 135–143.

Presley, C. A., Meilman, P. W., & Leichliter, J. S. (2002). College factors that influence drinking. *Journal of Studies on Alcohol, Supplement 14,* 82–90.

Purshouse, R., Brennan, A., Latimer, N., Meng, Y., Rafia, R., Jackson, R., & Meier, P. (2009). *Modelling to assess the effectiveness and cost-effectiveness of public health related strategies and interventions to reduce alcohol attributable harm in England using the Sheffield Alcohol Policy Model version 2.0: Report to the NICE Public Health Programme Development Group.* Retrieved from http://www.ias.org.uk/uploads/pdf/UK%20alcohol%20reports/univ-sheffield-am.pdf

Purshouse, R. C., Meier, P. S., Brennan, A., Taylor, K. B., & Rafia, R. (2010). Estimated effect of alcohol pricing policies on health and health economic outcomes in England: An epidemiological model. *The Lancet, 375,* 1355–1364.

Rabow, J., Schwartz, C., Stevens, S., & Watts, R. K. (1982). Social psychological dimensions of alcohol availability: The relationship of perceived social obligations, price considerations, and energy expended to the frequency, amount, and type of alcoholic beverage consumed. *Substance Use & Misuse, 17,* 1259–1271.

Rabow, J., & Watts, R. K. (1982). Alcohol availability, alcoholic beverage sales and alcohol-related problems. *Journal of Studies on Alcohol, 43,* 767–801.

Romelsjö, A., Leifman, H., & Nyström, S. (1995). A comparative study of two methods for the measurement of alcohol consumption in the general population. *International Journal of Epidemiology, 24,* 929–936.

Room, R. (1987). Alcohol monopolies in the U.S.: Challenges and opportunities. *Journal of Public Health Policy, 8,* 509–530.

Rush, B. R., Gliksman, L., & Brook, R. (1986). Alcohol availability, alcohol consumption and alcohol-related damage. I. The distribution of consumption model. *Journal of Studies on Alcohol, 47,* 1–10.

Saffer, H., & Grossman, M. (1987). Drinking age laws and highway mortality rates: Cause and effect. *Economic Inquiry, 25,* 403–417.

Saltz, R. F., Paschall, M. J., McGaffigan, R. P., & Nygaard, P. M. (2010). Alcohol risk management in college settings: The safer California universities randomized trial. *American Journal of Preventive Medicine, 39,* 491–499.

Schmidt, W., & Popham, R. E. (1978). The single distribution theory of alcohol consumption; a rejoinder to the critique of Parker and Harman. *Journal of Studies on Alcohol, 39,* 400–419.

Scribner, R. A., MacKinnon, D. P., & Dwyer, J. H. (1994). Alcohol outlet density and motor vehicle crashes in Los Angeles County cities. *Journal of Studies on Alcohol, 55,* 447–453.

Seeley, J. R. (1960). Death by liver cirrhosis and the price of beverage alcohol. *Canadian Medical Association Journal, 83,* 1363–1366.

Simon, J. L. (1966a). The price elasticity of liquor in the U.S. and a simple method of determination. *Econometrica, 34,* 193–205.

Simon, J. L. (1966b). The economic effects of state monopoly of packaged-liquor retailing. *Journal of Political Economy, 74,* 188–194.

Single, E., & Wortley, S. (1993). Drinking in various settings as it relates to demographic variables and level of consumption: Findings from a national survey in Canada. *Journal of Studies on Alcohol, 54,* 590–599.

Skog, O.-J. (1985). The collectivity of drinking cultures: A theory of the distribution of alcohol consumption. *British Journal of Addiction, 80,* 83–99.

Skog, O.-J. (1986). An analysis of divergent trends in alcohol consumption and economic development. *Journal of Studies on Alcohol, 47,* 19–25.

Sloan, F. A., Reilly, B. A., & Schenzler, C. (1994). Effects of prices, civil and criminal sanctions, and law enforcement on alcohol-related mortality. *Journal of Studies on Alcohol, 55,* 454–465.

Smart, R. G., & Adlaf, E. M. (1986). Banning happy hours: The impact on drinking and impaired-driving charges in Ontario, Canada. *Journal of Studies on Alcohol, 47,* 256–258.

Smart, R. G., & Docherty, D. (1976). Effects of the introduction of on-premise drinking on alcohol-related accidents and impaired driving. *Journal of Studies on Alcohol, 37,* 683–686.

Smith, D. I. (1978). Impact on traffic safety of the introduction of Sunday alcohol sales in Perth, Western Australia. *Journal of Studies on Alcohol, 39,* 1302–1303.

Smith, D. I. (1987). Effect on traffic accidents of introducing Sunday hotel sales in New South Wales, Australia. *Contemporary Drug Problems, 14,* 279–294.

Smith, R. A., Hingson, R. W., Morelock, S., Heeren, T., Mucatel, M., Mangione, T., & Scotch, N. (1984). Legislation raising the legal drinking age in Massachusetts from 18 to 20: Effect on 16 and 17 year-olds. *Journal of Studies on Alcohol, 45,* 534–539.

Stewart, L., & Conway, K. (1998). *Community action on rural drink driving: The Waikato Rural Drink Drive Pilot Project 1996–1998 formative evaluation report.* Auckland, New Zealand: Alcohol and Public Health Research Unit.

Stockwell, T., Auld, M. C., Zhao, J., & Martin, G. (2012). Does minimum pricing reduce alcohol consumption? The experience of a Canadian province. *Addiction, 107,* 912–920.

Stockwell, T., & Gruenewald, P. J. (2001). Controls on the physical availability of alcohol. In N. Heather, T. J. Peters, & T. Stockwell (Eds.), *Handbook on alcohol dependence and alcohol related problems.* New York, NY: John Wiley & Sons.

Stockwell, T., Zhao, J., Macdonald, S., Pakula, B., Gruenewald, P., & Holder, H. (2009). Changes in per capita alcohol sales during the partial privatization of British Columbia's retail alcohol monopoly 2003-2008: A multi-level local area analysis. *Addiction, 104,* 1827–1836.

Stockwell, T., Zhao, J., Macdonald, S., Vallance, K., Gruenewald, P., Ponicki, W., . . . Treno, A. (2011). Impact on alcohol-related mortality of a rapid rise in the density of private liquor outlets in British Columbia: A local area multi-level analysis. *Addiction, 106,* 768–776.

Stockwell, T., Zhao, J., Martin, G., Macdonald, S., Vallance, K., Treno, A., . . . Buxton, J. (2013). Minimum alcohol prices and outlet densities in British Columbia, Canada: Estimated impacts on alcohol-attributable hospital admissions. *American Journal of Public Health,* e1–e7. Advance online publication. Retrieved from http://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.2013.301289

Toomey, T. L., & Wagenaar, A. C. (2002). Environmental policies to reduce college drinking: options and research findings. *Journal of Studies on Alcohol, Supplement 14,* 193–205.

Treno, A. J., Gruenewald, P. J., Lee, J. P., & Remer, L. G. (2007). The Sacramento Neighborhood Alcohol Prevention Project: Outcomes from a community prevention trial. *Journal of Studies on Alcohol and Drugs, 68,* 197–207.

Treno, A. J., Ponicki, W. R., Stockwell, T., Macdonald, S., Gruenewald, P. J., Zhao, J., . . . Greer, A. (2013). Alcohol outlet densities and alcohol price: The British Columbia Experiment in the partial privatization of alcohol sales off-premise. *Alcoholism: Clinical and Experimental Research, 37,* 854–859.

Trolldal, B. (2005a). An investigation of the effect of privatization of retail sales of alcohol on consumption and traffic accidents in Alberta, Canada. *Addiction, 100,* 662–671.

Trolldal, B. (2005b). The privatization of wine sales in Quebec in 1978 and 1983 to 1984. *Alcoholism: Clinical and Experimental Research, 29,* 410–416.

Voas, R. B., Lange, J. E., & Johnson, M. B. (2002). Reducing high-risk drinking by young Americans south of the border: The impact of a partial ban on sales of alcohol. *Journal of Studies on Alcohol, 63,* 286–292.

Wagenaar, A. C. (1982). Aggregate beer and wine consumption; effects of changes in the minimum legal drinking age and a mandatory beverage container deposit law in Michigan. *Journal of Studies on Alcohol, 43,* 469–487.

Wagenaar, A. C., & Holder, H. D. (1991). A change from public to private sale of wine: Results from natural experiments in Iowa and West Virginia. *Journal of Studies on Alcohol, 52,* 162–173.

Wagenaar, A. C., & Holder, H. D. (1995). Changes in alcohol consumption resulting from the elimination of retail wine monopolies: Results from five U.S. states. *Journal of Studies on Alcohol, 56,* 566–572.

Wagenaar, A. C., & Holder, H. D. (1996). Correspondence: The scientific process works: Seven replications now show significant wine sales increases after privatization. *Journal of Studies on Alcohol, 57,* 575–576.

Wagenaar, A. C., Murray, D. M., Gehan, J. P., Wolfson, M., Forster, J. L., Toomey, T. L., . . . Jones-Webb, R. (2000). Communities mobilizing for change on alcohol: Outcomes from a randomized community trial. *Journal of Studies on Alcohol, 61,* 85–94.

Wagenaar, A. C., Tobler, A. L., & Komro, K. A. (2010). Effects of alcohol tax and price policies on morbidity and mortality: A systematic review. *American Journal of Public Health, 100,* 2270–2278.

Wagenaar, A. C., & Toomey, T. L. (2002). Effects of minimum drinking age laws: Review and analyses of the literature from 1960 to 2000. *Journal of Studies on Alcohol, Supplement 14,* 206–225.

Wagenaar, A. C., & Wolfson, M. (1994). Enforcement of the legal minimum drinking age in the United States. *Journal of Public Health Policy, 15,* 37–53.

Wagenaar, A. C., Wolfson, M. (1995). Deterring sales and provision of al-

cohol to minors: A study of enforcement in 295 counties in four states. *Public Health Reports, 110,* 419–427.

Wallin, E., & Andréasson, S. (2005). Effects of a community action program on problems related to alcohol consumption at licensed premises. In T. Stockwell, P. J. Gruenewald, J. W. Toumbourou, & W. Loxley (Eds.), *Preventing harmful substance use: The evidence base for policy and practice* (pp. 207–223). Chichester, England: Wiley.

Wallin, E., Norström, T., & Andréasson, S. (2003). Alcohol prevention targeting licensed premises: A study of effects on violence. *Journal of Studies on Alcohol, 64,* 270–277.

Warburton, C. (1932). Prohibition and economic welfare. *The Annals of the American Academy of Political and Social Science, 163,* 89–97.

Watts, R. K., & Rabow, J. (1983). Alcohol availability and alcohol-related problems in 213 California cities. *Alcoholism: Clinical and Experimental Research, 7,* 47–58.

Wicki, M., & Gmel, G. (2011). Hospital admission rates for alcoholic intoxication after policy changes in the canton of Geneva, Switzerland. *Drug and Alcohol Dependence, 118,* 209–215.

Williams, G.P. Off-licenses in supermarkets open a new door to liquor for many. (1975). *Journal of Alcoholism, 10,* 122–131.

Wittman, F. D., & Hilton, M. E. (1987). Uses of planning and zoning ordinances to regulate alcohol outlets in California cities. In H. Holder (Ed.), *Control issues in alcohol abuse prevention: Strategies for states and communities, Supplement 1.* Greenwich, CT: JAI Press.